ICR Treatment Study Summary Report

City of Topeka

West End Plant

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Evaluation of Granular Activated Carbon Adsorption of Disinfection Byproduct Precursors for Compliance with the Information Collection Rule

Conducted during the period of 2/12/98 through 11/17/98

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Attachment: 1 compact disc containing *Data Collection Spreadsheet*, *Treatment Study Summary Report Spreadsheet*, this report in portable document format (PDF), and laboratory reports listing all analytical results and QC data

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°C	degrees Celsius
µg	microgram
µL	microliter
µm	micrometer
A_0	logistic function parameter
A_f	logistic function parameter
B	logistic function parameter
BCAA	bromochloroacetic acid
BDCM	bromodichloromethane
BMRL	below minimum reporting level
BV	bed volume
BV_{50}	bed volumes to 50 percent TOC breakthrough
C	concentration
$\overline{C}$	blended effluent concentration
C1	larger of two observed values for RPD calculation
C2	smaller of two observed values for RPD calculation
CCC	continuing calibration check
CCI	construction cost index
CDBAA	chlorodibromoacetic acid
$CHBr_3$	bromoform
$CHCl_3$	chloroform
Cl^-	chloride
CLD	chlorine demand
cm	centimeter
cu	cubic
CUR	carbon usage rate
D	column inner diameter
d	day
d	diameter
D	logistic function parameter
DBAA	dibromoacetic acid
DBCM	dibromochloromethane
DBP	disinfection byproduct
DCAA	dichloroacetic acid
DCBAA	dichlorobromoacetic acid
DS	distribution system
EBCT	empty-bed contact time
EC	enhanced coagulation
EPA	Environmental Protection Agency
ft	feet
g	gram
GAC	granular activated carbon
gal	gallon

gpm	gallons per minute
HAA	haloacetic acid
HAA5	sum of five haloacetic acids: MCAA, DCAA, TCAA, MBAA, DBAA
HAA6	sum of five haloacetic acids: MCAA, DCAA, TCAA, MBAA, DBAA, BCAA
HAA9	sum of five haloacetic acids: MCAA, DCAA, TCAA, MBAA, DBAA, BCAA, DCBAA, CDBAA, TBAA
hr	hour
$_i$	individual contactor
ICR	Information Collection Rule
in.	inch
$_{inf}$	influent
l	bed length
L	liter
$_{LC}$	large column
m	mass
$_{max}$	maximum
MBAA	monobromoacetic acid
MCAA	monochloroacetic acid
MCL	maximum contaminant level
mg	milligram
MG	million gallons
MGD	million gallons per day
$_{min}$	minimum
min	minute
mL	milliliter
mm	millimeter
MRL	minimum reporting level
MtBE	methyl tert-butyl ether
$_n$	number of contactors
NA	not applicable
NA	not analyzed
NB	not backwashed
ntu	nephelometric turbidity unit
O&M	operations and maintenance
$_p$	particle
PE	performance evaluation
PPI	Producers Price Index
Q	flow rate
QA/QC	quality assurance/quality control
Re	Reynold's number
RPD	relative percent difference
RSD	relative standard deviation
RSSCT	rapid small-scale column test
$_{RT}$	run time
$_{SC}$	small column
SDS	simulated distribution system

sec	second
SF	scaling factor
SM	*Standard Methods*
SUVA	specific ultraviolet absorbance
t	time
$_T$	total
TBAA	tribromoacetic acid
TCAA	trichloroacetic acid
THM	trihalomethane
THM4	sum of four trihalomethanes: $CHCl_3$, BDCM, DBCM, and $CHBr_3$
TOC	total organic carbon
TOC_0	influent total organic carbon
TOX	total organic halide
TSUVA	total specific ultraviolet absorbance
UV	ultraviolet absorbance
UV_{254}	ultraviolet absorbance at 254 nm
ε	bed porosity
ν	kinematic viscosity
ρ	density

4 *Conclusions and Recommendations*

4 Conclusions and Recommendations

As required by the Information Collection Rule (ICR), a treatment study was conducted by Summers & Hooper, Inc. (S&H) to evaluate the removal of disinfection byproduct (DBP) precursors by granular activated carbon (GAC) for the West End Plant, operated by the City of Topeka. The rapid small-scale column test (RSSCT) was utilized as the bench-scale method to simulate full-scale GAC performance. The treatment study was performed off-site at S&H's laboratory facilities in Cincinnati, Ohio. It was designed and conducted as required by section 141.141(3) of the ICR, published in the May 14, 1996 Federal Register. A bituminous coal-based GAC, F-400, manufactured by Calgon Carbon Corporation was investigated. DBP formation by disinfection with free chlorine was simulated by utilizing site-specific chlorination conditions designed to match distribution system conditions. The procedures followed were those contained in the *GAC Precursor Removal Studies* section of the *ICR Manual for Bench- and Pilot-Scale Treatment Studies* (USEPA, 1996a), and all analyses were conducted following approved methods and as required by the *ICR/DBP Analytical Methods Manual* (USEPA, 1996b).

An electronic deliverable is included as an attachment to this report. It includes: this report in portable document format (PDF) along with a laboratory report listing all data analyzed during this treatment study and all required QA/QC information; the *ICR Treatment Studies Data Collection Spreadsheets*, with all data input as required by EPA; and the *Treatment Study Summary Report Spreadsheet*, with all data input as required by EPA.

Four quarterly sessions were conducted to evaluate the impact of seasonal variability in source water quality on DBP precursor control by GAC. During each session, two empty-bed contact times (EBCTs) were evaluated (10 and 20 minutes). The primary source water to the West End Plant during the treatment study was the Kansas River.

Based on compliance with Stage 1 or the placeholders for Stage 2 DBP maximum contaminant levels (MCLs), with a 20 percent safety factor, the formation of total trihalomethane (THM4) was the controlling parameter for determining GAC reactivation frequency. During all runs, the Stage 1 or placeholder for Stage 2 MCL for THM4 was exceeded prior to that for the sum of five haloacetic acids (HAA5), likely due to the high SDS chlorination pH used which favored the base-catalyzed formation of THMs. To meet the Stage 1 THM4 MCL, (64 µg/L based on a 20 percent safety factor) GAC run times ranged from 31 to 94 days for 10 minute EBCT contactors and 79 to >258 days for 20 minute EBCT contactors. In practice, multiple contactors are operated in staggered fashion and their effluents are blended prior to chlorination. Therefore, run times to a given effluent criterion are extended as compared to a single contactor, because the poorer quality water from "older" contactors is blended with water from "newer" contactors. In this report, the blended effluent water quality of multiple contactors operated in staggered fashion was modeled to estimate run times. Based on this configuration, GAC run times for compliance with Stage 1 THM4 MCL ranged from 72 to 225 days for 10 minute EBCT contactors. For 20 minute EBCT contactors, run times ranged from 197 to 643 days. To meet the placeholder for Stage 2 THM4 MCL (32 µg/L), GAC run times based on multiple contactor configuration ranged from 30 to 58 days for 10 minute EBCT contactors and from 72 to 138 days for 20 minute EBCT contactors.

All run times given reflect meeting the Stage 1 and placeholder for Stage 2 THM4 MCL with a 20 percent safety factor, 64 and 32 µg/L, respectively. Run times given in this report for compliance with Stage 1 and the placeholder for Stage 2 HAA5 MCL also incorporate a 20 percent safety factor, 48 and 24 µg/L, respectively.

The total costs for GAC treatment were estimated using an EPA model, which included capital and operation and maintenance (O&M) costs, based on GAC reactivation frequencies. For 10 minute EBCT contactors, the estimate for total costs for GAC treatment averaged 33 and 44 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively. For 20 minute EBCT contactors, total costs averaged 43 and 70 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively. The costs for 20 minute EBCT contactors were higher due to the higher capital costs associated with the larger contactors.

Costs were higher to meet the placeholders for Stage 2 MCLs due to shorter GAC run times. For 10 minute EBCT contactors, total costs averaged 44 and 56 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively. For 20 minute EBCT contactors, total costs averaged 53 and 81 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively.

A relative measure of GAC performance is the number of bed volumes to 50 percent total organic carbon (TOC) breakthrough, BV_{50}. This parameter can correlate GAC performance to the influent TOC concentration for an average water, based on GAC runs for over 20 source waters reported in the literature. Typically, GAC performance improves with decreasing influent TOC concentration, as the loading on the GAC contactor is decreased. The measured BV_{50} values for GAC runs in this study were compared to the BV_{50} of an average water, correlated to the influent TOC concentration. For the 10 minute EBCT contactors, mean GAC performance based on BV_{50} values was similar to that predicted for an average water, although BV_{50} values ranged from 22 percent below predicted to 26 percent better than predicted. At a 20 minute EBCT, BV_{50} values averaged 21 percent higher than predicted. The improvement in performance of the 20 minute EBCT contactors over the 10 minute EBCT contactors as compared to an average water was greater than that expected based on the increase in EBCT alone. GAC performance was better than predicted as compared to an average water even given the relatively high pH, 9.0, in the influent to GAC used during the treatment study.

Influent to GAC TOC concentration varied from 2.4 to 3.2 mg/L during the four sessions evaluated , while bromide concentration varied from 80 to 150 µg/L. Higher bromide levels can yield higher concentrations of brominated DBP species, because of the high bromide to TOC ratio. GAC treatment does not remove bromide, while TOC is adsorbed, resulting in higher GAC effluent bromide to TOC ratios as compared to the GAC influent. Due to this increase, GAC effluent formed DBPs may undergo shifts in speciation to higher concentrations of the more brominated DBP species. In some cases, such as for bromoform, effluent formed concentrations were measured higher that formed in the influent. It is important to track the breakthrough behavior of specific DBP species, because some may be of potential health concern and a MCL could be set for a specific DBP species.

By plotting effluent concentrations divided by their respective influent concentrations, a normalized breakthrough evaluation can be performed. This evaluation yields insight into the relative breakthrough patterns of TOC, ultraviolet absorbance at 254 nm (UV_{254}), and simulated

distribution system (SDS) DBPs, indicating whether DBP surrogates can serve as direct or conservative indicators of SDS-DBP breakthrough. The evaluation performed during this study showed that SDS-THM4 breakthrough usually exceeded TOC breakthrough, and TOC breakthrough did not consistently serve as a conservative indicator of SDS-HAA breakthrough. TOC did serve as a conservative indicator of normalized SDS total organic halide (TOX) breakthrough. UV_{254} served as an excellent direct indicator of SDS-TOX breakthrough.

5 *Background Information*

5 Background Information

5.1 Treatment Plant Description

The City of Topeka operates the West End Plant, a softening plant that provides water for 137,700 in the City of Topeka and surrounding communities. The state approved plant capacity is 60 MGD; average flow during 1998 was 22 MGD. The primary source water for the treatment plant is the Kansas River. The West End Plant consists of three treatment trains: East Train, North Train, and South Train. The three trains contain very similar treatment processes. The North Train and South Train share rapid mix and primary presedimentation. The clearwell receives water from all three trains.

Figure 1 shows a simple schematic of the North Train of the West End Plant. The North Train was used as pretreatment for the treatment study water sampled. Treatment consists of organic polymer addition at rapid mix, followed by primary presedimentation. After secondary presedimentation, alum, quicklime, and sodium carbonate are added at a second rapid mix, followed by primary and secondary sedimentation. Carbon dioxide is added for pH adjustment. The water is then filtered through sand filters and sent to the clearwell.

5.1.1 Treatment Plant Design Information

Table 1 summarizes the West End Plant design data. The data presented is based on data from report A.2 "Design Plant Parameters" and report A.3 "Design Plant Chemical Parameters," of the *ICR Water Utility Database System*.

5.1.2 Treatment Challenges Facing Plant

The principal challenge faced by the City of Topeka in operating the West End Plant is to provide a water that meets both DBP and microbial regulations. The source water is relatively poor in quality, with high levels of TOC and DBP precursor material, as well as high levels of total and fecal coliforms.

5.2 Tabular Summary of Source and Finished Water Quality

Tables 2 and 3 summarize average source and finished water quality at the West End Plant, based on sampling between July 1997 and April 1998. These data constitute preliminary ICR monitoring results and have not yet undergone EPA review. The source water is characterized by high TOC levels, averaging 5.8 mg/L. Bromide levels are moderate, averaging 89 µg/L. The West End Plant averaged a 52 percent TOC removal, yielding an average treated water TOC concentration of 2.6 mg/L. UV_{254} removal averaged 48 percent. The average source water UV_{254} was 0.131 1/cm, while that for the finished water was 0.067 1/cm. The source water specific UV absorbance (TSUVA, defined as UV_{254}/TOC) averaged 2.3 L/mg-m. After treatment, the measured TSUVA was 2.6 L/mg-m, indicating that although both TOC and UV_{254}

decreased with treatment, TSUVA showed a slight increase. Normally, dissolved organic carbon (DOC) is used to calculate SUVA, defined as UV_{254}/DOC. Since DOC is always less than or equal to TOC, TSUVA will always be greater than or equal to SUVA as defined in the Interim Enhanced Surface Water Treatment Rule.

Chloramination is practiced and distribution system (DS) THM4 levels ranged from 45 to 100 µg/L and averaged 72 µg/L, below the Stage 1 MCL of 80 µg/L or 64 µg/L with a 20 percent safety factor, and exceeding the placeholder for Stage 2 MCL of 40 µg/L or 32 µg/L with a 20 percent safety factor. DS-HAA5 averaged 52 µg/L, lower than the Stage 1 MCL of 60 µg/L or 48 µg/L with a 20 percent safety factor, but exceeding the placeholder for Stage 2 MCL of 30 or 24 µg/L with a 20 percent safety factor. DS-HAA5 concentrations also showed a wide seasonal variability.

Unit Process	Process Description
Rapid Mix	Type of Mixer: Hydraulic Baffling Type: Unbaffled (Mixed tank) Liquid Volume (gal): 14,000 Short Circuiting Factor: NA_V Mean Velocity Gradient (sec^{-1}): 70 Coagulant Aid Addition: Organic polymer (Poly DADMAC) Coagulant Dose (mg/L): 4.00
Primary Presedimentation	Surface Area (ft^2): 17,660 Liquid Volume (gal): 2,700,000 Baffling Type: Poor Short Circuiting Factor: NA_V
Disinfectant Addition	Chemical: Chlorine gas Chemical Code: CL2 Measurement Formula: Cl_2 Dose rate (mg/L): 2.00
Secondary Presedimentation	Surface Area (ft^2): 14,480 Liquid Volume (gal): 1,738,000 Baffling Type: Poor Short Circuiting Factor: NA_V Coagulant Aid Addition: Organic polymer (Poly DADMAC) Coagulant Dose (mg/L): 2.00
Disinfectant Addition	Chemical: Chlorine gas Chemical Code: CL2 Measurement Formula: Cl_2 Dose rate (mg/L): 4.20
Disinfectant Addition	Chemical: Ammonia Chemical Code: NH3A Measurement Formula: NH_3 Dose rate (mg/L): 1.20
Rapid Mix	Type of Mixer: Hydraulic Baffling Type: Unbaffled (Mixed tank) Liquid Volume (gal): 17,640 Short Circuiting Factor: NA_V Mean Velocity Gradient (sec^{-1}): 30 Coagulant Addition: Aluminum sulfate Measurement Formula: $(Al_2SO_4)_3*14H_2O$ Coagulant Dose: 6.00 Coagulant Addition: Calcium oxide Measurement Formula: CaO Coagulant Dose: 150.00 Coagulant Addition: Sodium carbonate Measurement Formula: Na_2CO_3 Coagulant Dose: 15.00
Sedimentation (Primary Clarification)	Surface Area (ft^2): 54,230 Liquid Volume (gal): 6,724,000 Baffling Type: Average Short Circuiting Factor: NA_V
Recarbonation	Chemical: Carbon dioxide Chemical Code: CO2 Measurement Formula: CO_2 Dose rate (mg/L): 20.00

(Table continued on next page.)

Unit Process (continued)	Process Description (continued)
Sedimentation (Secondary Clarification)	Surface Area (ft^2): 39,720 Liquid Volume (gal): 4,982,000 Baffling Type: Average Short Circuiting Factor: NA_V
Recarbonation	Chemical: Carbon dioxide Chemical Code: CO2 Measurement Formula: CO_2 Dose rate (mg/L): 20.00
Filtration	Surface Area (ft^2): 12,970 Liquid Volume (gal): 875,000 Total Media Depth (in): 35 Media Type: Sand Minimum Water Depth to Top of Media (ft): 5.0 Depth from Top of Media to Top of Backwash Trough (ft): 3.5
Clearwell	Surface Area (ft^2): 74,750 Liquid Volume (gal): 9,250,000 Minimum Liquid Volume (gal): 4,000,000 Baffling Type: Average Short Circuiting Factor: NA_V Covered Indicator Code: Yes

NA_V: Not available

Table 1 Summary of treatment plant design data for the North and South Trains

Water quality parameter	Mean	Standard deviation	Minimum	Maximum	Count
Temperature (°C)	17	10	2	29	18
pH	8.2	0.2	7.8	8.6	18
Alkalinity (mg/L as $CaCO_3$)	173	39	90	223	18
Total hardness (mg/L as $CaCO_3$)	232	68	104	328	18
Calcium hardness (mg/L as $CaCO_3$)	173	50	74	252	18
TOC (mg/L)	5.8	1.6	4.4	8.8	18
UV_{254} (1/cm)	0.131	0.028	0.090	0.192	17
TSUVA (L/mg-m)	2.3	0.4	1.6	3.0	17
Bromide (µg/L)	89	38	21	160	17

Table 2 Summary of source water quality at the West End Plant between July 1997 and December 1998

Water quality parameter	Mean	Standard deviation	Minimum	Maximum	Count
Temperature (°C)	18	9	5	30	18
pH	9.2	0.1	9.0	9.5	18
Turbidity (ntu)	0.07	0.02	0.05	0.13	18
TOC (mg/L)	2.6	0.3	2.2	3.2	18
UV_{254} (1/cm)	0.067	0.009	0.054	0.088	17
TSUVA (L/mg-m)	2.6	0.2	2.3	2.9	17
DS-THM4 (µg/L)	72	17	45	100	24
DS-HAA5 (µg/L)	52	16	34	108	24
DS-HAA6 (µg/L)	60	16	42	114	24

DS: distribution system; average of all distribution system sampling points

Table 3 Summary of finished water quality at the West End Plant between July 1997 and December 1998

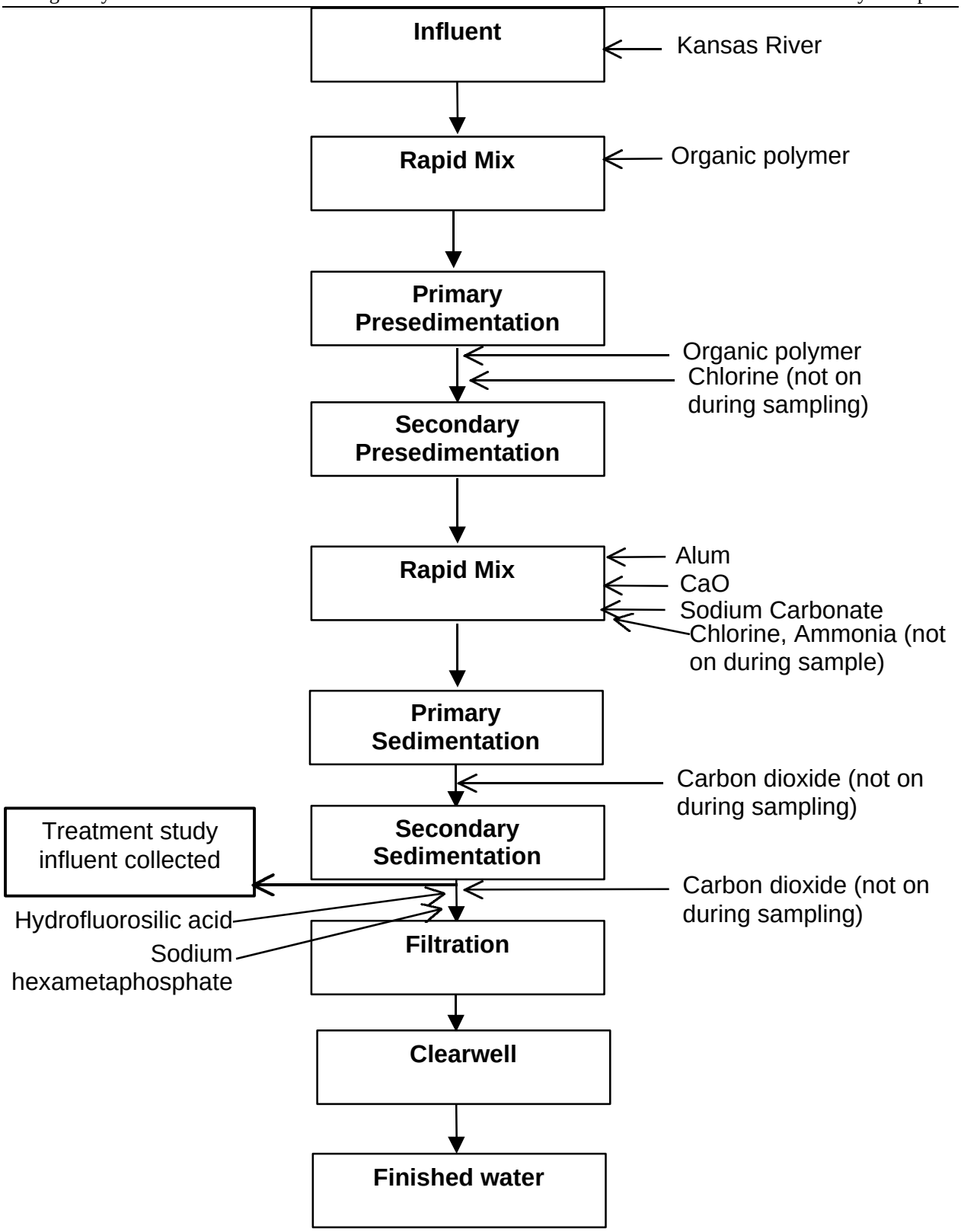


Figure 1 Treatment plant schematic

6 *Materials and Methods*

6 Materials and Methods

6.1 Treatment Study Influent Sampling Procedures

Four samples were taken throughout the year to capture seasonal variability. The sample dates are summarized in Table 4. The four samples represent the winter, spring, summer, and fall seasons. During all sessions, water was sampled after sedimentation. To acquire nonchlorinated water, treated water from the North Train of the West End Plant was sampled for the treatment study influent. The North Train is not normally used for water production. It is operated during times of high demand, and for large scale pilot operations. Water was treated by the North Train only for treatment study sampling, and therefore operations were begun 3 to 4 days prior to sampling, to allow for steady-state conditions. The South and East Trains were not utilized because the plant practices prechlorination. Although prechlorination is normally also performed at the North Train, it was not in use during treatment study sampling. Water for the treatment study was sampled after secondary sedimentation. Both carbon dioxide feeds (after primary and secondary sedimentation) were not in use during sampling because the carbon dioxide is dissolved into chlorinated plant finished water.

The water samples were taken in 55-gallon drums. The 55-gallon drums were of plastic construction and were extensively cleaned at S&H's laboratory facility prior to use. The cleaning process included three 24-hour soaks with hot water, a basic solution, and an acidic solution. Prior to use, the drums were filled with water and TOC samples taken to ensure that no detectable leaching of organic compounds from the inside surface of the drums was occurring (measured as TOC).

During the day prior to each sampling event, the plant settled water (treatment study influent sampling point) was sampled and analyzed at Summers & Hooper, Inc. for TOC. The data was compared to historic data to verify the representativeness of plant operation during treatment study influent sampling. Table 5 summarizes the data obtained during each session. Once the representativeness of the water sample was verified by comparison to historic data (Table 3), sampling into the 55-gallon drums proceeded. Plant operation and treatment parameters (e.g., chemical doses) were confirmed as within acceptable normal variation prior to drum sampling.

For all sessions, the water sampled for the treatment study was shipped the day of sampling and arrived at S&H after two days. The sample was shipped at ambient temperature. Upon arrival, the drums were stored at 4°C. To check for significant biodegradation or other changes during shipment, an aliquot of the treatment study influent water was sampled for TOC approximately half way through each sampling event. The sample was immediately preserved. Upon arrival at S&H's laboratory facilities, a second aliquot was obtained for TOC analysis. Both samples were analyzed, and the results are summarized in Table 6. During three of the four sessions, the two measured values did not differ by more than 0.1 mg/L. However, during the September session, a relatively large decrease in TOC concentration (23 percent) was measured.

6.2 Pretreatment Processes to the Advanced Treatment Processes

The full-scale and bench-scale pretreatment processes in place prior to bench-scale GAC during all sessions are described in Figure 2. Bench-scale filtration through a 1.0-µm glass fiber cartridge filter, which simulates full-scale sand filtration, was performed as a required pretreatment step prior to RSSCT testing. As shown in Table 6, there was little to no change in the TOC concentration measured before and after bench-scale filtration. Recarbonation was simulated by the addition of sulfuric acid to a pH of 9.0. During the operation of the RSSCT, the pH was maintained within 0.1 pH units of the target GAC influent pH by the addition of dilute solutions of sulfuric acid and sodium hydroxide.

Table 7 summarizes the design data for each pretreatment process prior to GAC adsorption. Bench-scale cartridge filtration was employed as bench-scale pretreatment during all sessions.

6.3 Advanced Treatment Process Information

6.3.1 Schematics and Descriptions of the Process Equipment Used

Figures 3 and 4 show a schematic of the RSSCT systems. All components were of stainless steel, glass, or Teflon construction. The batch influent water was held in a stainless steel container. The influent water was pumped through each column using a metering diaphragm pump. The wetted parts of the pump were Teflon and glass. The pumps were rated for 1 percent speed control and 75 psi continuous duty. A stainless steel gas sampling cylinder was used as a pulse dampener. Pressure gauges with stainless steel connections were used to monitor the system pressure. The effluent flow rate was monitored constantly. The calibration of the effluent flow rate control system was checked by a manual measurement at least twice daily and adjusted as necessary to maintain it within 3 percent of the design flow rate.

The system configuration for the 10 minute EBCT contactors is shown in Figure 3. For these RSSCTs, the entire GAC bed was packed in a single column. The 20 minute EBCT contactor was packed into two columns in series, as shown in Figure 4. This allowed for backwashing by mixing the top portion of the GAC bed, if made necessary by high system pressures, without disturbing the remainder of the bed. Minimal backwashing was required during this treatment study. Typically, 90 percent of the GAC bed was packed in the second column. Both columns were of equal inner diameters.

The GAC was packed in chromatography columns with Teflon fittings. The GAC support consisted of appropriately sized stainless steel screens, glass wool, and Teflon beads. The support system differed depending on the column inner diameter. Standard 8.0 mm inner diameter columns required a stainless steel support system as shown in Figure 5 (a). When 10 mm inner diameter columns were used, the support system shown in Figure 5 (b) was used so that the GAC was contained within the effective length of the column.

6.3.2 Design data for the Advanced Treatment Process

The design data for the RSSCTs conducted during each session are summarized in Table 8. During each session, two RSSCTs were operated to simulate full-scale equivalent EBCTs of 10 and 20 minutes. Other than the EBCT, the design for the two RSSCTs operated during each session was identical. The scaling factor used for all sessions, based on the ratio of full-scale to bench-scale GAC particle size, was 12.6. Therefore, 12.6 days of full-scale operation were simulated with each day of RSSCT operation. Columns with inner diameters of 8.0 and 10.0 mm were used. Reynolds numbers used ranged from 0.31 to 0.50.

6.3.3 Procedures Specific to the Treatment Study

6.3.3.1 GAC Preparation Procedures

A representative batch of Filtrasorb 400 (F-400), a bituminous-coal based GAC, was obtained from the manufacturer, Calgon Carbon Corporation. The GAC is a 12x40 mesh size (average particle diameter, d_p = 1.06 mm). Using a riffle splitter, a small (30-50 g) representative sample of the GAC was obtained. Using a jar mill, the GAC was ground to a 140x230 mesh size, which yielded GAC with average particle diameter, d_p, of 0.085 mm. Care was taken to frequently remove and sieve the GAC in the jar mill. The GAC was ground until the entire sample passed through the upper mesh size sieve. Usually, a recovery of 25 to 30 percent was obtained, as defined by the amount of GAC retained between the two mesh size sieves and divided by the total amount of GAC prior to grinding.

The ground GAC was transferred to a beaker, and covered with reagent grade (adsorbed-deionized) water. The GAC was washed by repeated additions and decantations of reagent grade water. The reagent grade water was added at a high rate and turbulence, to stir up the GAC and release fines. The supernatant water containing GAC fines was decanted after the GAC was allowed to settle. Towards the end of the cleaning procedure, the sample was sonicated twice for 5 to 10 seconds. The sonication step helped loosen fines that were subsequently removed by the addition and decantation of reagent grade water.

The GAC was dried in an oven at 80 to 90°C for 6 to 12 hours. The temperature was then raised to between 100 and 110°C and the sample was dried until it reached a constant weight. The sample was removed and cooled inside a dessicator. Once cooled, if not immediately used, it was stored in a glass vial sealed with a lid with TFE-lined septum until ready for use.

The dry bed density was measured using a sample of dried and cooled GAC. Stored GAC was dried in an oven as described above prior to the dry bed density measurement. To measure the dry bed density, a sample of the GAC was placed inside a 10-mL glass graduated cylinder to a level of 5 to 9 mL. The cylinder was tapped to pack the GAC. A volume was measured and recorded. This GAC was then weighed on a balance. The volume reading of the graduated cylinder was checked and calibrated if necessary by adding a known volume of water to it using a 10-mL class A graduated pipette. The GAC dry bed density was calculated by dividing the weight by the calibrated volume.

The calculated mass of GAC of each RSSCT was weighed, placed inside a clean beaker, and covered with reagent grade water. The wetted GAC was usually allowed to sit for 12 to 24 hours, followed by placement in a vacuum for at least 1 hour to displace the air within the pores.

6.3.3.2 RSSCT Column Setup

The GAC support for 10.0 mm inner diameter columns consisted of a stainless steel screen (60 or 100 mesh size), Teflon beads, glass wool, a 325 mesh size stainless steel screen, and a 200 mesh size stainless steel screen. The column support is detailed in Figure 5. The support for 8.0 mm inner diameter columns consisted of a 325 mesh size stainless steel screen and a 200 mesh size stainless steel screen placed on top of the Teflon fitting. For all column inner diameter sizes, a small amount of glass wool was placed inside the Teflon fitting, supported by a 60 mesh size stainless steel screen.

The columns were packed by adding the GAC as a slurry and packing the column by repeatedly tapping the sides. The 20 minute full-scale equivalent EBCT RSSCTs were packed into two columns of the same inner diameter placed in series. Only reagent grade water was used during the packing process.

6.3.3.3 Batch Influent Preparation

Prior to RSSCT testing, all water samples were filtered through a 1.0-µm nominal pore size glass fiber cartridge filter. The cartridge filter was pre-rinsed with deionized water. The pH of the influent water sample was reduced to 9.0 by addition of sulfuric acid prior to use as influent to GAC. Dilute solutions of sulfuric acid and sodium hydroxide were used to maintain the influent pH within 0.1 pH units of the target pH during operation of the RSSCTs.

6.3.3.4 RSSCT Monitoring

The effluent flow rates were monitored constantly to ensure that the flow rates were maintained within 5 percent of the design flow rate. The calibration of the effluent flow rate control system was checked at least twice daily and adjusted when a flow rate differed by more than 3 percent from the design flow rate. The system pressure was monitored daily. The effluent TOC concentration was monitored frequently so that samples could be taken at 5 to 8 percent increments of the average influent TOC concentration.

6.3.3.5 Headloss Buildup

Problematic headloss buildup only occurred during the first RSSCT run. Typically, when the pressure required to maintain a constant flow rate through the RSSCT exceeds 50 psi, a column backwashing procedure is performed to mitigate the headloss problem.

The procedure utilized minimizes the disturbance of the GAC bed. The column is taken off line, and the top opened so that the GAC inside is accessible. A clean small rod (18 gauge galvanized

steel wire) is inserted into the column. The top layer (0.2 to 1.0 cm) of GAC is carefully mixed to break apart the particles that are bound together. Once the top layer is sufficiently loosened, the column is placed on line, and the head pressure necessary to maintain the design flow rate is usually 20 to 40 percent of the pressure before mixing the top layer. The backwashing episodes are summarized in Section 7.2.

6.4 Experimental Design

The treatment study was designed to evaluate the impact of seasonal variability on the performance of bituminous coal-based GAC at two EBCTs, 10 and 20 minutes. Four sessions were conducted to perform this evaluation. The experimental design is summarized in Table 9.

6.5 ICR Treatment Study Protocol

This treatment study was designed and conducted as required by section 141.141(3) of the Information Collection Rule (ICR), published in the May 14, 1996 Federal Register. The procedures contained in the *GAC Precursor Removal Studies* section of the *ICR Manual for Bench- and Pilot-Scale Treatment Studies* were followed. During RSSCT operation, a minimum of 12 effluent samples were taken at target 5 to 8 percent increments of the average influent TOC concentration. Three samples were taken in duplicate and the resulting experimental variability is displayed on all plots as vertical error bars representing the relative difference between the duplicate samples. All required analyses were conducted, including pH, temperature, TOC, UV_{254}, and SDS chlorination for THMs, HAAs, and TOX.

During each session, both the 10 and 20 minute EBCT RSSCTs were operated in parallel, with a single batch influent container. Therefore, only two influent A (alkalinity, calcium hardness, total hardness, ammonia, and bromide) and three influent B (pH, temperature, turbidity, TOC, $UV_{254,}$ SDS chlorination) samples were taken during the course of each study, and the data from these applied to both the 10 and 20 minute EBCT RSSCTs.

The ICR requires that the RSSCTs be operated until the first of three conditions are met:

1. the effluent TOC concentration reaches at least 70 percent of the average influent TOC concentration

2. the effluent TOC concentration reaches a plateau at greater than 50 percent of the influent TOC concentration (a plateau is defined as an increase in TOC concentration of no more than 10 percent over a two-month full-scale equivalent time period)

3. the RSSCT has been operated for the equivalent full-scale of one year

Most column runs were terminated based on meeting the first condition: the effluent TOC concentration reached or exceeded 70 percent of the average influent TOC concentration. Typically, the twelfth and last RSSCT effluent sample was taken at this point. A thirteenth sample (analyzed for TOC, pH, and temperature only) was taken two full-scale equivalent weeks after the twelfth effluent sample to confirm that 70 percent TOC breakthrough was reached.

Table 10 summarizes the run termination criteria used, percent breakthrough reached at the twelfth sample, and the corresponding full-scale equivalent run time.

For the 20 minute EBCT contactor operated during the September session, the effluent TOC concentration reached a plateau as described in the second condition above. Between 140 and 208 full-scale equivalent days, the effluent TOC concentration increased by 8 percent, from 52 to 60 percent. The column run was terminated after two more samples were taken, fulfilling the minimum of 12 effluent samples.

A tabular summary of the all data analyzed during the treatment study is given in the Appendix. As required by EPA, the data was input into the *ICR Treatment Studies Data Collection Spreadsheets*. These files are included in electronic form (CD-ROM) as an attachment to this report.

6.6 Simulated Distribution System (SDS) Chlorination Conditions

The target simulated distribution system (SDS) conditions are summarized in Table 11. During all sessions, a 48-hour holding time was targeted. The samples were buffered at pH 9.2 using a borate/phosphate buffer combination, based on the pH maintained in the distribution system. The target free chlorine residual after 48 hours was 0.8 mg/L as Cl_2. The target incubation temperature varied seasonally, from 4.0 to 26°C, based on average distribution system temperatures. The same target SDS conditions were applied to both GAC influent and effluent samples chlorinated. For GAC influent water, the average and standard deviation obtained for each parameter are summarized in Table 12 for all sessions. The same data are summarized in Tables 13 and 14 for the GAC effluent samples.

6.7 Analytical Methods

A list of all analytical methods used during the study is shown in Table 15. A summary listing the laboratories involved for analytical support and the period over which analyses were conducted by each laboratory is shown in Table 16. Contact information for the laboratories involved is summarized in Table 17.

Session	Sampling Date
1	February 12, 1998
2	May 27, 1998
3	September 1, 1998
4	November 17, 1998

Table 4 Sampling dates for quarterly GAC bench-scale treatment study sessions

Sample date	TOC concentration (mg/L)	
	Raw	Settled
February	5.7	3.2
May	NA	2.7
September	NA	2.5
November	NA	3.3

NA: not analyzed

Table 5 Summary of sample representativeness data

Session	Settled water TOC concentration (mg/L)		Percent change (%)	Cartridge filtered water TOC concentration (mg/L)
	On day of sampling	Upon arrival at S&H		
February	3.3	3.4	+3.0	3.3
May	2.8	2.7	-3.6	2.5
September	3.1	2.4	-23	2.4
November	2.8	2.8	0.0	2.8

Table 6 Summary of TOC sampling before and after water shipment

Unit Process	Process Description
Rapid Mix (Full-Scale)	Type of Mixer: Hydraulic Baffling Type: Unbaffled (Mixed tank) Liquid Volume (gal): 14,000 Short Circuiting Factor: NA_V Mean Velocity Gradient (sec^{-1}): 70 Coagulant Aid Addition: Organic polymer (Poly DADMAC) Coagulant Dose (mg/L): 4.00
Primary Presedimentation (Full-Scale)	Surface Area (ft^2): 17,660 Liquid Volume (gal): 2,700,000 Baffling Type: Poor Short Circuiting Factor: NA_V
Secondary Presedimentation (Full-Scale)	Surface Area (ft^2): 14,480 Liquid Volume (gal): 1,738,000 Baffling Type: Poor Short Circuiting Factor: NA_V Coagulant Aid Addition: Organic polymer (Poly DADMAC) Coagulant Dose (mg/L): 2.00
Rapid Mix (Full-Scale)	Type of Mixer: Hydraulic Baffling Type: Unbaffled (Mixed tank) Liquid Volume (gal): 17,640 Short Circuiting Factor: NA_V Mean Velocity Gradient (sec^{-1}): 30 Coagulant Addition: Aluminum sulfate Measurement Formula: $(Al_2SO_4)_3*14H_2O$ Coagulant Dose: 6.00 Coagulant Addition: Calcium oxide Measurement Formula: CaO Coagulant Dose: 150.00 Coagulant Addition: Sodium carbonate Measurement Formula: Na_2CO_3 Coagulant Dose: 15.00
Sedimentation (Primary Clarification) (Full-Scale)	Surface Area (ft^2): 54,230 Liquid Volume (gal): 6,724,000 Baffling Type: Average Short Circuiting Factor: NA_V
Sedimentation (Secondary Clarification) (Full-Scale)	Surface Area (ft^2): 39,720 Liquid Volume (gal): 4,982,000 Baffling Type: Average Short Circuiting Factor: NA_V
Cartridge Filtration (Bench-Scale)	Surface Area (ft^2): 5.0 Nominal Pore Size (µm): 1.0 Filter Material: Glass fiber Filter Life (gallons of processed water): 150 - 250
pH Adjustment (Bench-Scale)	Chemical: Sulfuric acid Adjusted pH: 9.2 Dose Rate (mg/L): 4

NA_V: not available

Table 7 Summary of design data for each pretreatment process prior to GAC

Design parameter	Design value during session			
	1 February	2 May	3 September	4 November
GAC manufacturer	Calgon Carbon Co.	Calgon Carbon Co.	Calgon Carbon Co.	Calgon Carbon Co.
GAC brand name	F-400	F-400	F-400	F-400
GAC type	Bituminous	Bituminous	Bituminous	Bituminous
GAC mesh size	12x40	12x40	12x40	12x40
Particle diameter, d_{LC} (mm)	1.063	1.063	1.063	1.063
General design parameters				
Minimum Reynold's number, $Re_{SC, min}$ ()	0.31	0.50	0.50	0.39
Full-scale operating temperature (°C)	4	22	28	11
Kinematic viscosity, ν_{LC} (m^2/s)	1.57E-06	9.57E-07	8.36E-07	1.27E-06
Bed porosity, ε_{LC} ()	0.45	0.45	0.45	0.45
Measured dry bed density, ρ_{SC} (g/cm^3)	0.524	0.516	0.449	0.455
RSSCT design parameters				
RSSCT mesh size	140x230	140x230	140x230	140x230
Particle diameter, d_{SC} (mm)	0.085	0.085	0.085	0.085
Scaling factor, SF	12.57	12.57	12.57	12.57
Hydraulic loading rate, v_{SC} (m/hr)	9.18	9.17	8.01	9.62
Column diameter, D_{SC} (mm)	8.0	8.0	10.0	8.0
Flow rate, Q_{SC} (mL/min)	7.7	7.7	10.5	8.1
Estimated run length				
RSSCT Influent TOC concentration (mg/L)	3.2	2.5	2.5	3.2
Bed volumes to 50% TOC breakthrough, BV_{50}	4,784	6,628	6,594	4,784
Estimated total run time, BV_T	14,351	23,199	23,078	14,351
RSSCT 1				
Full-scale empty-bed contact time, $EBCT_{LC}$ (min)	10	10	10	10
Estimated full-scale run time, t_{LC}^T (days)	100	161	160	100
Estimated RSSCT run time, t_{SC}^T (days)	7.9	12.8	12.7	7.9
Volume water required, V_{SC} (L)	88	142	192	92
Mass GAC required, m_{SC} (g)	3.21	3.15	3.75	2.92
RSSCT empty-bed contact time, $EBCT_{SC}$ (min)	0.80	0.80	0.80	0.80
Bed length, l_{SC} (cm)	12.2	12.2	10.6	12.8
RSSCT 2				
Full-scale empty-bed contact time, $EBCT_{LC}$ (min)	20	20	20	20
Estimated full-scale run time, t_{LC}^T (days)	199	322	321	199
Estimated RSSCT run time, t_{SC}^T (days)	15.9	25.6	25.5	15.9
Volume water required, V_{SC} (L)	176	284	385	184
Mass GAC required, m_{SC} (g)	6.41	6.30	7.50	5.83
RSSCT empty-bed contact time, $EBCT_{SC}$ (min)	1.59	1.59	1.59	1.59
Bed length, l_{SC} (cm)	24.3	24.3	21.2	25.5

Table 8 Summary of RSSCT design parameters

Season	Pretreatment	GAC type	EBCT (min)
Winter	Softening and pH adjustment	Bituminous	10, 20
Spring	Softening and pH adjustment	Bituminous	10, 20
Summer	Softening and pH adjustment	Bituminous	10, 20
Late fall	Softening and pH adjustment	Bituminous	10, 20

Table 9 Experimental design summary

Session	10 minute EBCT			20 minute EBCT		
	Run termination criteria*	Run time (days)	Percent TOC breakthrough	Run termination criteria*	Run time (days)	Percent TOC breakthrough
February	1	84	74	1	216	74
May	1	89	71	1	238	72
September	1	142	77	2	247	65
November	1	118	72	1	258	72

* 1: the effluent TOC concentration reaches at least 70 percent of the average influent TOC concentration
2: the effluent TOC concentration reaches a plateau at greater than 50 percent of the influent TOC concentration (a plateau is defined as an increase in TOC concentration of no more than 10 percent over a two-month full-scale equivalent time period)
3: the RSSCT has been operated for the full-scale equivalent of one year

Table 10 Summary of RSSCT run termination criteria, run time, and percent TOC breakthrough reached

Parameter	February		May		September		November	
	Value	Tolerance	Value	Tolerance	Value	Tolerance	Value	Tolerance
Incubation time (hours)	48.0	1.0	48.0	1.0	48.0	1.0	48.0	1.0
Incubation temperature (°C)	4.0	2.0	20.0	2.0	26.0	2.0	11.0	2.0
pH	9.20	0.20	9.20	0.20	9.20	0.20	9.20	0.20
Free chlorine residual (mg/L)	0.80	0.30	0.80	0.30	0.80	0.30	0.80	0.30

Table 11 Simulated distribution system (SDS) chlorination target conditions

Parameter	February		May		September		November	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Incubation time (hours)	48.1	0.1	48.1	0.3	47.9	0.0	48.2	0.3
Incubation temperature (°C)	3.3	0.3	20.1	0.3	25.5	1.0	11.1	0.1
pH	9.24	0.06	9.25	0.04	9.15	0.04	9.24	0.02
Free chlorine residual (mg/L)	0.83	0.06	0.66	0.23	0.95	0.14	0.82	0.12

*pH is average of analysis at beginning and end of incubation period for each sample.

Table 12 Summary of experimental SDS chlorination conditions for GAC influent water

Parameter	February		May		September		November	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Incubation time (hours)	47.9	0.1	48.2	0.2	48.1	0.2	48.0	0.1
Incubation temperature (°C)	3.5	0.2	19.9	0.3	26.1	0.1	11.0	0.1
pH	9.22	0.04	9.19	0.04	9.14	0.02	9.21	0.02
Free chlorine residual (mg/L)	0.83	0.04	0.90	0.19	0.80	0.06	0.82	0.06

*pH is average of analysis at beginning and end of incubation period for each sample.

Table 13 Summary of experimental SDS chlorination conditions for 10 minute EBCT contactor

Parameter	February		May		September		November	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Incubation time (hours)	48.0	0.1	48.2	0.3	48.1	0.2	48.1	0.2
Incubation temperature (°C)	3.3	0.2	19.9	0.3	26.0	0.5	11.1	0.1
pH	9.20	0.02	9.19	0.04	9.17	0.03	9.19	0.03
Free chlorine residual (mg/L)	0.86	0.05	0.73	0.14	0.79	0.06	0.90	0.17

*pH is average of analysis at beginning and end of incubation period for each sample.

Table 14 Summary of experimental SDS chlorination conditions for 20 minute EBCT contactor.

Analyte	Session	Method	Minimum reporting level (MRL)
Alkalinity	All	SM 2320 B	5 mg/L as $CaCO_3$
Ammonia-Nitrogen	All	EPA 350.1	0.05 mg/L as NH_3-N
Bromide	All	EPA 300.0 A	0.02 mg/L
Calcium hardness	1	SM 3500-Ca D	10 mg/L as $CaCO_3$
Calcium hardness	2-4	EPA 200.7	5 mg/L as $CaCO_3$
Chlorine dose (solution standardization)	All	SM 4500-Cl B	NA
Chlorine residual	All	SM 4500-Cl F	0.2 mg/L as Cl_2
HAA (DCAA, TCAA, MBAA, DBAA, BCAA, BDCAA)	All	EPA 552.2	1.0 µg/L (each analyte)
HAA (MCAA, CDBAA)	All	EPA 552.2	2.0 µg/L (each analyte)
HAA (TBAA)	All	EPA 552.2	4.0 µg/L
pH	All	4500-H^+ B	NA
Temperature	All	SM 2550 B	NA
Total hardness	1	SM 2340 C	5 mg/L as $CaCO_3$
Total hardness	2-4	SM 2340 B	5 mg/L as $CaCO_3$
Total organic carbon (TOC)	All	SM 5310 C	0.50 mg/L
Total organic halide (TOX)	All	SM 5320 B	25 µg/L as Cl^-
THM ($CHCl_3$, BDCM, DBCM, $CHBr_3$)	All	EPA 551.1	1.0 µg/L (each analyte)
Turbidity	All	SM 2130 B	0.05 ntu
UV absorbance at 254 nm (UV_{254})	All	SM 5910 B	0.009 cm^{-1}

SM: *Standard Methods*
NA: Not applicable

Table 15 Summary of analytical methods and MRLs

Analyses performed	Sessions of service	Laboratory
Alkalinity, chlorine dose, chlorine residual, HAA9, pH, temperature, THM4, TOC, TOX, turbidity, UV_{254}	All	Summers & Hooper, Inc.
Calcium hardness, total hardness	1	Summers & Hooper, Inc.
Ammonia, bromide	All	Montgomery Watson Laboratories
Calcium hardness, total hardness	2-4	Montgomery Watson Laboratories

Table 16 Summary of laboratories conducting analyses

	Summers & Hooper, Inc.	Montgomery Watson Laboratories
ICR lab ID number	ICROH033	ICRCA013
Contact name:	Stuart Hooper	Andrew Eaton
Contact phone number	(513) 679-2200	(626) 568-6400
Contact fax number	(513) 679-2201	(626) 568-6324

Table 17 Laboratory contact information

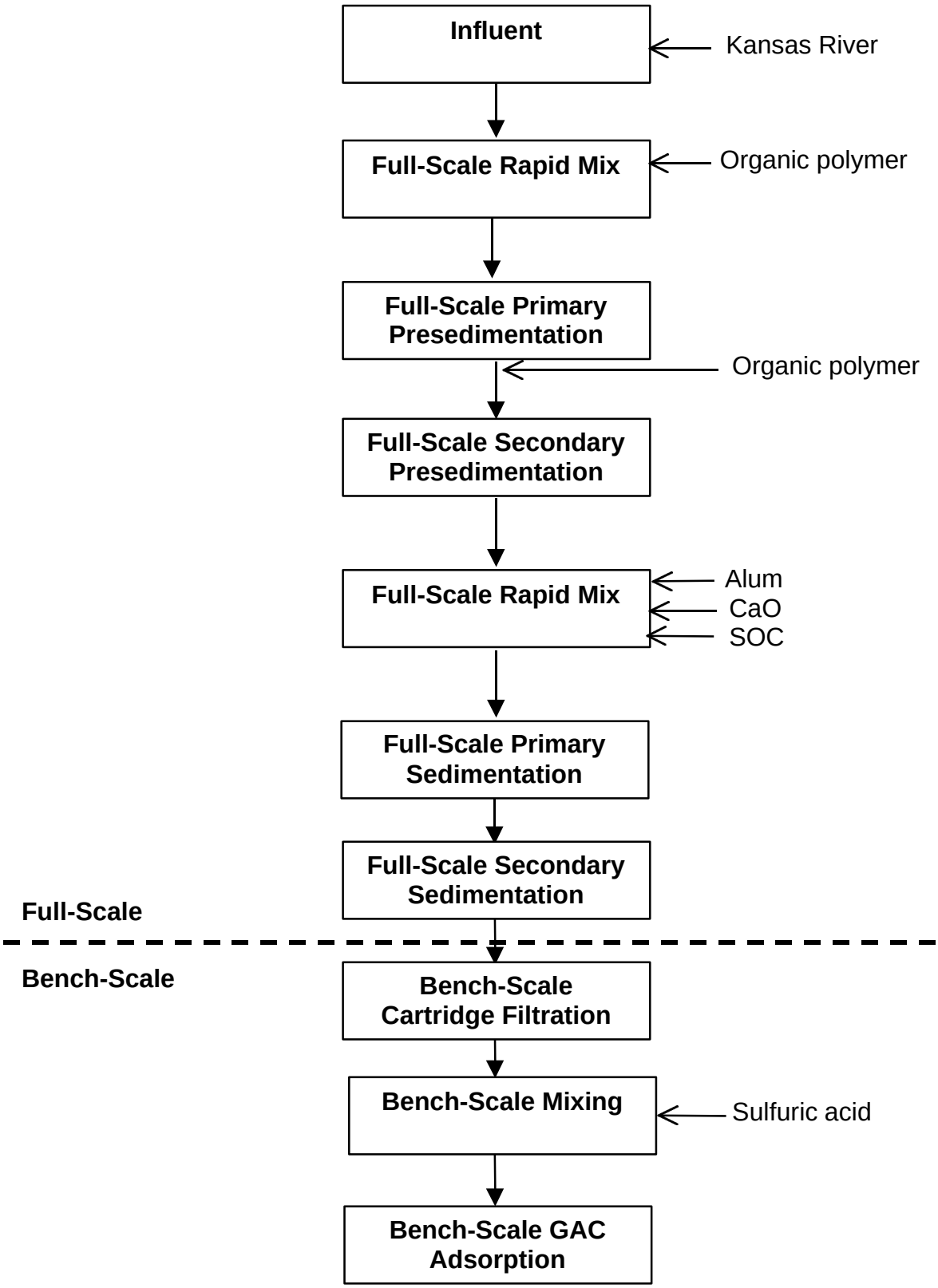


Figure 2 Schematic of pretreatment processes prior to bench-scale GAC

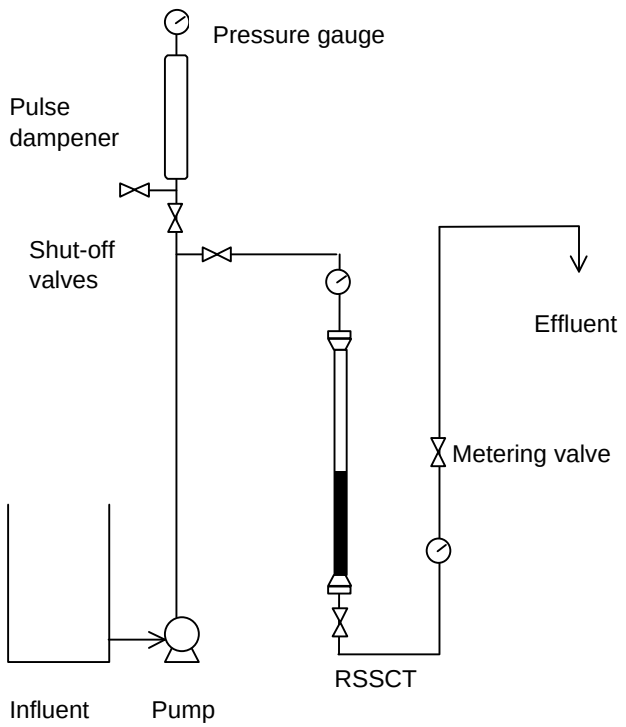


Figure 3 RSSCT system schematic for 10 minute EBCT full-scale equivalent contactors

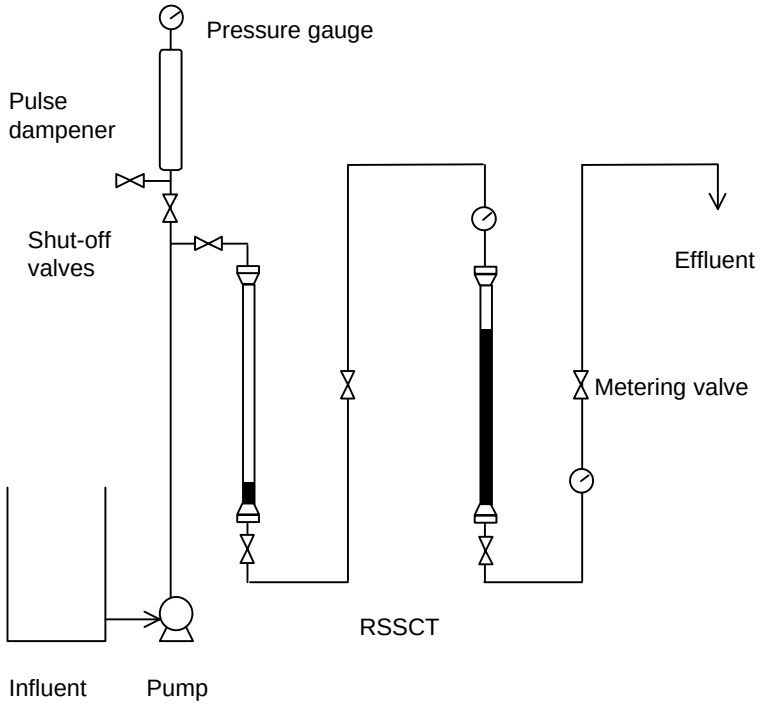
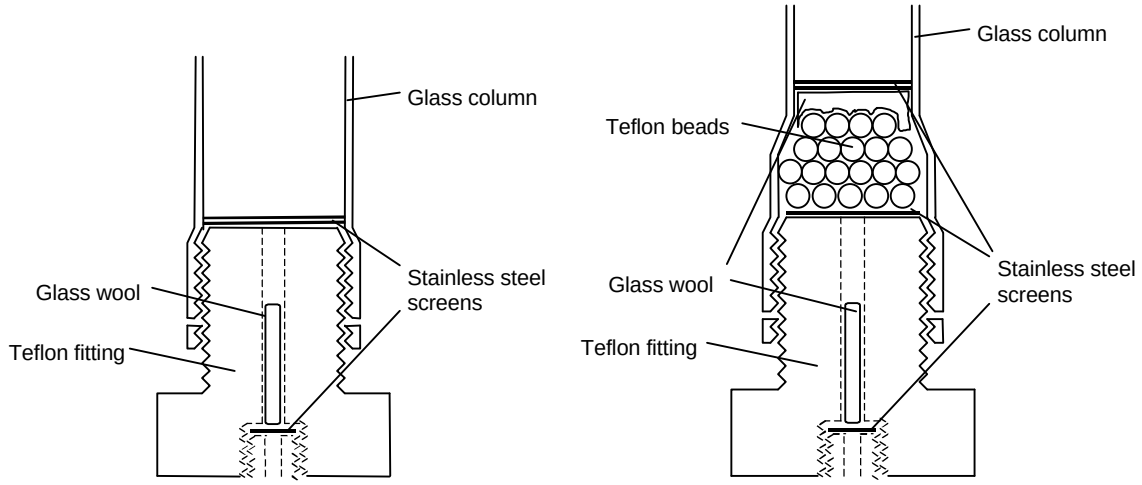


Figure 4 RSSCT system schematic for 20 minute EBCT full-scale equivalent contactor



(a) Standard 8.0 mm inner diameter column (b) 10.0 mm inner diameter column

Figure 5 RSSCT column GAC support system

7 *Results and Discussion Overview*

7 Results and Discussion Overview

7.1 Data Analysis

A significant amount of data was collected during the treatment study. The following chapters summarize various methods of analyzing the data. These include a discussion of the impact of seasonal variability in water quality and contactor EBCT on DBP precursor control. Although data for single contactor operation was generated by this treatment study, in practice, multiple GAC contactors in parallel are used, and GAC run times are lengthened significantly by operating the contactors in a staggered mode. GAC run times are estimated based on a model that simulates the operation of multiple GAC contactors in parallel. Breakthrough curve extrapolations were performed: the algorithm used and the results obtained are presented. The extent to which TOC and UV_{254} breakthrough served as indicators for DBP precursor breakthrough is analyzed. An evaluation of GAC performance based on TOC breakthrough and compared to other waters is presented. Finally, an EPA cost model is used to estimate the costs for GAC treatment based meeting the placeholders for Stage 2 DBP MCLs.

7.2 Problems Encountered

Moderate levels of excessive headloss buildup caused operational difficulties during the February and November RSSCT sessions. Only the 20 minute EBCT RSSCT was affected. Table 18 summarizes the backwash episodes performed to mitigate headloss buildup. The procedure used to backwash the RSSCTs minimized the disruption of the GAC bed and is summarized in Section 6.3.3.5.

7.3 Pretreated Influent Water Quality Data

The average pretreated influent to GAC water quality for each quarterly sample is summarized in Table 19. The water was pretreated by full-scale two-stage softening, bench-scale pH adjustment, and bench-scale cartridge filtration. TOC and UV_{254} showed some variability over the four sampling events. The TOC concentration ranged from 2.4 to 3.2 mg/L, and the mean TOC concentration for all four sampling events was 2.7 ± 0.4 mg/L (relative standard deviation [RSD] = 13%). The mean UV_{254} for the four treated waters was 0.055 ± 0.009 cm^{-1} (RSD = 17%). The specific UV absorbance (TSUVA), defined as UV_{254}/TOC, averaged 2.0 L/mg-m (RSD = 9.7%). The influent pH ranged from 9.0 to 9.1. Alkalinity averaged 41 mg/L as $CaCO_3$ (RSD = 23%); calcium hardness averaged 89 mg/L as $CaCO_3$ (RSD = 31%); total hardness averaged 121 mg/L as $CaCO_3$ (RSD = 30%). Ammonia levels ranged from BMRL to 0.155 mg/L. Bromide concentrations were about average, ranging from 80 to 150 µg/L.

Seasonal variability in treated water SDS-DBP formation, likely driven by the 4 to 26°C SDS chlorination temperature utilized (Table 12), was highest for THM4 formation. SDS-THM4 concentrations averaged 120 µg/L (RSD = 24%); SDS-HAA5, SDS-HAA6, and SDS-HAA9 levels averaged 30, 40, and 45 µg/L, respectively. Lower variability between sessions was evidenced by the RSDs of 9, 10, and 8 percent for SDS-HAA5, SDS-HAA6, and SDS-HAA9,

respectively. The higher variability in SDS-THM4 formation as compared to SDS-HAA formation may have been due to the sensitivity of THM formation to temperature and the wide range of SDS incubation temperatures used, and to the high SDS chlorination pH, which favors the base-catalyzed formation of THMs. SDS-TOX levels averaged 234 µg/L as Cl^-, with a RSD of 23 percent. SDS chlorine demand (CLD) averaged 3.1 mg/L (RSD = 16%).

Session	Full-scale equivalent run time (d)	
	10 minute EBCT	20 minute EBCT
February	NB	150
May	NB	NB
September	NB	NB
November	NB	149

NB: not backwashed during entire run

Table 18 Summary of RSSCT backwashing episodes

Water Quality Parameter	February		May		September		November	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Temperature (°C)	17.1	2.3	17.9	1.6	17.2	0.6	18.4	0.8
pH	9.23	0.01	8.98	0.01	9.00	0.08	9.02	0.03
Turbidity (ntu)	0.15	0.00	0.10	0.00	0.15	0.00	0.12	0.03
Alkalinity (mg/L as $CaCO_3$)	43	3	38	1	30	0	52	1
Calcium hardness (mg/L as $CaCO_3$)	72	4	125	0	95	0	63	1
Total hardness (mg/L as $CaCO_3$)	83	3	166	0	133	0	101	1
Ammonia (mg/L)	0.110	0.014	0.155	0.007	BMRL	NA	BMRL	NA
Bromide (mg/L)	0.084	0.004	0.110	0.000	0.150	0.014	0.080	0.002
TOC (mg/L)	3.2	0.07	2.6	0.02	2.4	0.07	2.9	0.06
UV_{254} (1/cm)	0.061	0.001	0.046	0.001	0.048	0.001	0.064	0.000
TSUVA (L/mg-m)	1.9	--	1.8	--	2.0	--	2.2	--
SDS-THM4 (µg/L)	95	6	136	17	154	16	97	10
SDS-HAA5 (µg/L)	27	3	29	2	31	10	33	2
SDS-HAA6 (µg/L)	34	3	40	3	43	14	42	3
SDS-HAA9 (µg/L)	40	2	47	3	49	16	46	3
SDS-TOX (µg Cl^-/L)	208	9	221	1	255	9	253	9
SDS-chlorine demand (mg/L)	2.8	0.0	3.5	0.2	3.4	0.1	2.5	0.1

BMRL: below minimum reporting level
NA: not applicable

Table 19 Summary of GAC influent water quality

8 *Impact of Seasonal Variability*

8 Impact of Seasonal Variability

During each quarterly session, both 10 minute and 20 minute full-scale equivalent EBCTs were evaluated using RSSCTs. Table 4 lists the sampling date for each session.

Figure 6 shows the RSSCT effluent TOC breakthrough profiles for the 10 minute EBCT contactors during each session. A wide range in TOC breakthrough behavior was observed. The water sample with the highest influent TOC concentration (February) yielded the earliest breakthrough. The May and November session breakthrough curves showed very similar behavior, although the influent TOC concentrations for the two sessions differed by 11 percent. The September session, with the lowest influent TOC concentration, yielded the longest run time. In general, GAC performance improves with decreasing influent TOC concentration. Run times to an effluent TOC concentration of 1.0 mg/L ranged from 17 to 49 days for the 10 minute EBCT contactors. Run times to 70 percent TOC breakthrough ranged from 76 to 124 days. Similar breakthrough patterns were observed for effluent UV_{254} breakthrough profiles, shown in Figure 7.

The GAC effluent breakthrough profiles for SDS-DBPs are plotted in Figures 8 through 12. Influent SDS-THM4 levels were highest during the September session, followed by the May session, likely due to the higher SDS incubation temperatures used. The May and September sessions also yielded the earliest breakthrough and highest GAC effluent levels of SDS-THM4. The November session showed the best overall control of SDS-THM4 precursors. The influent SDS-THM4 levels formed during the February session were similar, and breakthrough of SDS-THM4 occurred earlier. Effluent SDS-THM4 levels during February were slightly higher than those measured during November. Figures 9 through 11 show the breakthrough curves for 10 minute EBCT contactors for SDS-HAA5, SDS-HAA6, and SDS-HAA9. Similar results were obtained, although little variance in influent SDS-HAA was observed, likely due to the high SDS chlorination pH, which does not favor HAA formation. The February session results more closely paralleled the breakthrough of SDS-HAA during the May and September sessions. Less spread was observed for SDS-TOX breakthrough, shown in Figure 12. SDS-TOX breakthrough occurred earliest during the February session, which had the lowest influent SDS-TOX concentration. Breakthrough patterns during the May, September, and November sessions were similar.

The GAC effluent SDS-CLD, Figure 13, displayed a relatively high immediate breakthrough, which ranged from 0.7 to 1.3 mg/L as Cl_2. The immediate breakthrough was likely caused by inorganic chlorine demand. Effluent SDS-CLD increased over time, as organic chlorine demand increased due to TOC breakthrough.

The RSSCT effluent TOC breakthrough profiles for the 20 minute EBCT contactors are shown in Figure 14. Run times to an effluent TOC concentration of 1.0 mg/L ranged from 43 to 118 days. Run times to 70 percent TOC breakthrough ranged from 169 to 249 days. These run times are longer than those observed for the 10 minute EBCT contactor results due to the longer EBCT. The relative order of breakthrough was the same as that observed for the 10 minute EBCT contactors. Results for UV_{254} breakthrough are shown in Figure 15. The GAC effluent breakthrough profiles for SDS-DBP formation are plotted in Figures 16 through 20. In general,

the breakthrough trends for THMs and HAAs described for the 10 minute EBCT contactor were also evident in the 20 minute EBCT contactor breakthrough profiles. The unusually large error bar shown in Figures 17 through 19, reflects the variability in HAA analysis based on duplicate chlorination. The source of the variability could not be determined, and a review of SDS chlorination data (chlorine demand, chlorine residual, temperature, and pH) did not yield any potential experimental sources for the variability. The variability in duplicate THM and TOX analyses for the same chlorinated sample were normal. Figure 21 shows the measured GAC effluent SDS chlorine demand.

The effluent pH and temperature for each EBCT during each session were also monitored, and the results, summarized in Tables 20 and 21, were fairly consistent with a RSD ranging from 1 to 8 percent.

Table 22 summarizes run times to various GAC effluent criteria for the 10 minute EBCT contactors. The mean, standard deviation, and RSD of the run times for the four sessions are also tabulated, along with the length of each study. For the 20 minute EBCT contactors, a summary of the same information is given in Table 23. The THM and HAA run time criteria chosen are based on Stage 1 and the placeholder for Stage 2 MCLs, with a 20 percent safety factor. The TOC, UV_{254}, and TOX breakthrough criteria were chosen to represent a range of concentrations. A relative performance criteria, 50 percent breakthrough, c/c_0, was also chosen for TOC and UV_{254}. The calculated RSD provides a measure of the degree of seasonal variability evident in GAC performance. For example, the run time for a 10 minute EBCT contactor to a GAC effluent TOC concentration of 1.0 mg/L ranged from 17 to 49 days, with a RSD of 38 percent, and to meet the Stage 1 THM4 MCL it ranged from 31 to 94 days, with a RSD of 53 percent.

For a visual comparison of the impact of seasonal variability on GAC run times, bar graph plots of the data were generated. For a 10 minute EBCT, Figures 22 and 23 summarize run times to effluent TOC and UV_{254} criteria, and Figures 24 and 25 summarize run times to effluent SDS-THM4 and SDS-HAA5 criteria. For cases where the effluent concentration did not reach the run time criterion, no bar is shown. Bar graph GAC run time summaries are shown in Figures 26 through 29 for the 20 minute EBCT contactors.

Based on the calculated run times for all four quarters and both EBCTs, the corresponding concentration of other measured parameters (DBP precursor surrogates and SDS-DBPs) at that run time were also calculated. For each session and EBCT, these data are summarized in Tables 24 through 31. For example, Table 24 shows that when the Stage 1 MCL for THM4 (with a 20 percent safety factor) was exceeded, the TOC concentration was 2.1 mg/L, the SDS-HAA5 concentration was 17 µg/L, and the SDS-TOX concentration was 128 µg Cl^-/L.

It is important to track the breakthrough behavior of specific DBP species, because some may be of potential health concern and a MCL could be set for a specific DBP species. GAC does not remove bromide and this can result in relatively high bromide to TOC ratios in the GAC effluent. Because of the high bromide to TOC ratios, GAC effluent SDS-DBPs may undergo shifts in speciation to more brominated DBP species. In some cases, effluent concentration are measured higher than influent levels.

For both the 10 and 20 minute EBCT contactors and all sessions, Figures 30, 31, 32 and 33 show the breakthrough behavior of the formed THMs: chloroform ($CHCl_3$), bromodichloromethane (BDCM), dibromochloromethane (DBCM), and bromoform ($CHBr_3$), respectively. Overall, the greatest contributing species to GAC influent SDS-THM4 was SDS-$CHCl_3$, followed closely by SDS-DBCM and SDS-BDCM. SDS-$CHBr_3$ yielded the lowest GAC influent formed concentrations. GAC effluent levels of SDS-$CHCl_3$ for all runs did not exceed 50 percent of the GAC influent formed concentration. Effluent SDS-BDCM and SDS-$CHBr_3$ levels exceeded the formed influent concentrations due to the higher bromide to TOC ratio in the GAC effluent. Effluent SDS-$CHBr_3$ levels were at times 2 to 5 times higher than that formed in the influent. The effluent SDS-$CHBr_3$ breakthrough curves also exhibited a peak behavior, after which formed concentrations decreased, due to a decrease in the bromide to TOC ratio as TOC concentration increased. For the brominated THM species, higher GAC influent concentrations were observed during the May and September sessions, which were also associated with higher bromide concentrations and SDS incubation temperature. The MRL for each analyte is indicated on each plot as a dashed line.

All nine HAA species were analyzed during the study. Plots of the effluent formed breakthrough profiles for the nine HAA species during all seasons and for both EBCTs are shown in Figures 34 through 42. The HAA species are monochloroacetic acid (MCAA), dichloroacetic acid (DCAA), trichloroacetic acid (TCAA), monobromoacetic acid (MBAA), dibromoacetic acid (DBAA), bromochloroacetic acid (BCAA), dichlorobromoacetic acid (DCBAA), chlorodibromoacetic acid (CDBAA), and tribromoacetic acid (TBAA). All species except for MCAA, MBAA, TBAA were formed at significant concentrations in the GAC effluent. Effluent formed levels of DCAA and TCAA usually reached about 50 to 60 percent of formed influent levels. GAC effluent formed concentrations of the brominated species typically reached higher GAC effluent levels: 80 to 150 percent of GAC influent concentrations. For SDS-DBAA, effluent concentrations reached 100 to 125 percent of influent levels. Again, the relatively poor control of the brominated HAA species in the GAC effluent can be attributed to the increase in bromide to TOC ratio in the GAC effluent. The three species not included in the summation of SDS-HAA6 (DCBAA, CDBAA, and TBAA) accounted for 10 to 20 percent of SDS-HAA9.

Effluent sample number	Effluent pH				Effluent temperature (°C)			
	February	May	September	November	February	May	September	November
1	9.2	8.6	8.9	8.9	20	23	21	22
2	8.8	8.6	8.6	8.9	21	23	21	21
3	8.9	8.7	8.8	8.8	22	22	21	21
4	9.0	8.7	8.5	8.8	21	23	21	21
5	7.3	8.6	8.6	8.9	21	22	21	21
6	8.7	8.6	8.4	8.8	21	22	21	22
7	7.3	8.5	8.6	8.9	21	22	21	22
8	8.0	8.4	8.7	8.8	21	22	22	21
9	8.5	8.4	8.4	8.7	21	23	22	24
10	8.9	8.7	8.4	8.9	23	22	22	21
11	9.0	8.8	8.4	8.7	22	22	21	22
12	8.9	8.6	8.5	8.8	21	24	22	22
13	9.1	8.6	8.5	8.9	21	23	21	21
Mean	8.6	8.6	8.6	8.8	21	22	21	22
Standard deviation	±0.6	±0.1	±0.2	±0.1	±0.7	±0.9	±0.4	±0.7
Relative percent error	8%	1%	2%	1%	3%	4%	2%	3%

Table 20 GAC effluent pH and temperature data for 10 minute EBCT contactors

Effluent sample number	Effluent pH				Effluent temperature (°C)			
	February	May	September	November	February	May	September	November
1	9.3	8.8	9.1	9.1	20	23	21	22
2	8.7	8.5	8.5	8.8	23	22	22	22
3	8.6	8.6	8.7	8.8	21	22	22	22
4	8.7	8.7	8.7	8.8	23	20	22	22
5	8.8	8.7	8.5	8.7	21	21	23	22
6	8.8	8.8	8.4	8.9	22	22	23	22
7	8.9	8.6	8.4	8.7	23	24	21	23
8	8.9	8.6	8.3	8.6	22	23	22	23
9	8.9	8.6	8.5	8.7	21	23	23	23
10	7.8	8.6	8.6	8.8	21	23	22	23
11	8.5	8.7	8.6	8.6	21	23	23	21
12	9.0	8.8	8.7	8.7	22	24	22	22
13	9.2	8.8		8.6	22	22		22
	8.9				22			
Mean	8.8	8.7	8.6	8.7	22	23	22	22
Standard deviation	±0.4	±0.1	±0.2	±0.1	±0.8	±1.0	±0.7	±0.5
Relative percent error	4%	1%	2%	1%	4%	5%	3%	2%

Table 21 GAC effluent pH and temperature data for 20 minute EBCT contactors

Parameter	Units	Value	Run time (days) Session 1 February	2 May	3 September	4 November	Mean	Standard deviation	Relative standard deviation (%)
TOC	(mg/L)	2.0	50	*	*	112	81	±43	54%
		1.0	17	35	49	36	34	±13	38%
		c/c_0 = 50%†	32	46	63	59	50	±14	28%
UV-254	(1/cm)	0.040	83	*	*	119	101	±25	25%
		0.020	27	56	80	43	51	±22	44%
		c/c_0 = 50%†	46	68	104	83	75	±24	32%
SDS-THM4	(µg/L)	80	*	44	53	*	48	±7	14%
		64	60	31	35	94	55	±29	53%
		32	18	17	20	26	20	±4	22%
SDS-HAA5	(µg/L)	48	*	*	*	*			
		24	*	*	129	*	129		
SDS-HAA6	(µg/L)	48	*	*	*	*			
		24	77	49	105	51	70	±26	37%
SDS-HAA9	(µg/L)	48	*	*	*	*			
		24	44	45	100	47	59	±27	46%
SDS-TOX	(µg Cl^-/L)	120	53	69	88	73	71	±14	20%
		70	22	33	41	38	33	±9	26%
Study length	(days)	--	84	89	142	118	108	±27	25%

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, calculated values are left blank.

Table 22 Run times to selected GAC effluent criteria (10 minute EBCT)

Parameter	Units	Value	Run time (days) Session 1 February	2 May	3 September	4 November	Mean	Standard deviation	Percent standard deviation (%)
TOC	(mg/L)	2.0	128	*	*	249	189	±86	45%
		1.0	43	76	118	87	81	±31	38%
		c/c_0 = 50%†	82	113	138	153	121	±31	26%
UV-254	(1/cm)	0.040	*	*	*	*			
		0.020	60	135	185	104	121	±52	43%
		c/c_0 = 50%†	113	167	*	209	163	±48	30%
SDS-THM4	(µg/L)	80	*	128	135	*	131	±5	4%
		64	142	79	80	*	100	±36	36%
		32	44	41	46	62	48	±9	19%
SDS-HAA5	(µg/L)	48	*	*	*	*			
		24	*	*	*	*			
SDS-HAA6	(µg/L)	48	*	*	*	*			
		24	*	236	130	204	190	±54	29%
SDS-HAA9	(µg/L)	48	*	*	*	*			
		24	95	125	127	130	119	±16	14%
SDS-TOX	(µg Cl^-/L)	120	173	197	203	194	192	±13	7%
		70	63	76	97	92	82	±15	19%
Study length	(days)	--	182	238	247	258	231	±34	15%

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, calculated values are left blank.

Table 23 Run times to selected GAC effluent criteria (20 minute EBCT)

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	3.2	2.0	50	7,230	2.0	0.033	57	17	23	25	116
			1.0	17	2,500	1.0	0.012	31	10	13	14	42
			1.6†	32	4,650	1.6	0.023	56	14	18	20	91
UV_{254}	(1/cm)	0.061	0.040	83	12,000	2.4	0.040	70	22	29	35	145
			0.020	27	3,850	1.4	0.020	48	13	17	19	79
			0.030†	46	6,630	1.9	0.030	55	17	22	24	110
SDS-THM4	(µg/L)	95	80	*	*							
			64	60	8,690	2.1	0.035	64	17	22	25	128
			32	18	2,540	1.0	0.012	32	10	13	14	43
SDS-HAA5	(µg/L)	27	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	34	48	*	*							
			24	77	11,120	2.2	0.039	72	18	24	28	144
SDS-HAA9	(µg/L)	40	48	*	*							
			24	44	6,300	1.8	0.029	54	16	22	24	106
SDS-TOX	(µg Cl^-/L)	208	120	53	7,620	2.0	0.034	58	17	23	25	120
			70	22	3,150	1.3	0.017	41	11	15	16	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 24 Run times to selected GAC effluent criteria (10 minute EBCT) during session 1, February

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	3.2	2.0	128	9,240	2.0	0.032	63	15	21	26	104
			1.0	43	3,100	1.0	0.013	32	9	12	13	46
			1.6†	82	5,880	1.6	0.024	52	15	19	22	79
UV_{254}	(1/cm)	0.061	0.040	*	*							
			0.020	60	4,340	1.3	0.020	44	12	16	17	66
			0.030†	113	8,100	1.9	0.030	62	17	22	28	96
SDS-THM4	(µg/L)	95	80	*	*							
			64	142	10,220	2.1	0.034	64	13	19	24	110
			32	44	3,140	1.0	0.013	32	9	12	14	46
SDS-HAA5	(µg/L)	27	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	34	48	*	*							
			24	*	*							
SDS-HAA9	(µg/L)	40	48	*	*							
			24	95	6,830	1.7	0.027	57	15	20	24	84
SDS-TOX	(µg Cl^-/L)	208	120	173	12,440	2.2	0.036	69	15	20	26	120
			70	63	4,530	1.3	0.021	46	13	17	18	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 25 Run times to selected GAC effluent criteria (20 minute EBCT) during session 1, February

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.6	2.0	*	*							
			1.0	35	5,060	1.0	0.014	70	14	19	20	76
			1.3†	46	6,680	1.3	0.018	83	17	23	25	95
UV_{254}	(1/cm)	0.046	0.040	*	*							
			0.020	56	8,010	1.4	0.020	90	18	25	29	109
			0.023†	68	9,840	1.6	0.023	102	18	25	28	119
SDS-THM4	(µg/L)	136	80	44	6,280	1.2	0.017	80	16	22	23	91
			64	31	4,480	0.9	0.012	64	13	18	19	67
			32	17	2,380	0.4	0.005	32	9	10	10	27
SDS-HAA5	(µg/L)	29	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	40	48	*	*							
			24	49	7,070	1.3	0.018	85	18	24	27	99
SDS-HAA9	(µg/L)	47	48	*	*							
			24	45	6,500	1.3	0.017	82	17	23	24	93
SDS-TOX	(µg Cl^-/L)	221	120	69	9,950	1.6	0.023	103	18	25	29	120
			70	33	4,690	0.9	0.012	66	13	18	19	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 26 Run times to selected GAC effluent criteria (10 minute EBCT) during session 2, May

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.6	2.0	*	*							
			1.0	76	5,470	1.0	0.014	62	11	15	16	70
			1.3†	113	8,150	1.3	0.018	76	14	19	22	92
UV_{254}	(1/cm)	0.046	0.040	*	*							
			0.020	135	9,700	1.4	0.020	82	15	22	26	98
			0.023†	167	12,010	1.6	0.023	87	15	21	25	114
SDS-THM4	(µg/L)	136	80	128	9,210	1.4	0.019	80	15	21	25	97
			64	79	5,670	1.0	0.014	64	11	15	16	73
			32	41	2,990	0.5	0.005	32	12	13	13	38
SDS-HAA5	(µg/L)	29	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	40	48	*	*							
			24	236	17,010	1.8	0.028	100	17	24	29	131
SDS-HAA9	(µg/L)	47	48	*	*							
			24	125	8,970	1.3	0.019	79	15	20	24	96
SDS-TOX	(µg Cl^-/L)	221	120	197	14,190	1.7	0.025	86	16	23	27	120
			70	76	5,470	1.0	0.014	62	11	15	16	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 27 Run times to selected GAC effluent criteria (20 minute EBCT) during session 2, May

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.4	2.0	*	*							
			1.0	49	7,110	1.0	0.015	78	10	14	15	83
			1.2†	63	9,140	1.2	0.018	84	12	17	19	95
UV_{254}	(1/cm)	0.048	0.040	*	*							
			0.020	80	11,500	1.3	0.020	91	14	19	21	108
			0.024†	104	14,910	1.5	0.024	106	17	24	25	134
SDS-THM4	(µg/L)	154	80	53	7,630	1.1	0.016	80	11	15	16	88
			64	35	4,980	0.7	0.010	64	9	12	13	58
			32	20	2,850	0.3	0.004	32	3	4	4	25
SDS-HAA5	(µg/L)	31	48	*	*							
			24	129	18,520	1.7	0.028	113	24	34	36	151
SDS-HAA6	(µg/L)	43	48	*	*							
			24	105	15,090	1.5	0.024	106	17	24	26	134
SDS-HAA9	(µg/L)	49	48	*	*							
			24	100	14,340	1.5	0.023	104	16	22	24	131
SDS-TOX	(µg Cl^-/L)	255	120	88	12,690	1.4	0.021	97	14	19	21	120
			70	41	5,970	0.9	0.012	72	9	12	13	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 28 Run times to selected GAC effluent criteria (10 minute EBCT) during session 3, September

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.4	2.0	*	*							
			1.0	118	8,500	1.0	0.015	74	15	20	21	80
			1.2†	138	9,910	1.2	0.017	81	20	27	31	97
UV_{254}	(1/cm)	0.048	0.040	*	*							
			0.020	185	13,300	1.3	0.020	89	20	27	31	114
			0.024†	*	*							
SDS-THM4	(µg/L)	154	80	135	9,690	1.1	0.017	80	19	26	29	93
			64	80	5,740	0.8	0.010	64	7	10	11	57
			32	46	3,290	0.4	0.004	32	4	5	6	27
SDS-HAA5	(µg/L)	31	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	43	48	*	*							
			24	130	9,370	1.1	0.016	78	18	24	26	88
SDS-HAA9	(µg/L)	49	48	*	*							
			24	127	9,120	1.0	0.016	76	17	23	24	84
SDS-TOX	(µg Cl^-/L)	255	120	203	14,580	1.4	0.021	92	19	27	30	120
			70	97	6,960	0.9	0.013	69	9	13	13	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 29 Run times to selected GAC effluent criteria (20 minute EBCT) during session 3, September

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.9	2.0	112	16,080	2.0	0.039	69	22	30	33	152
			1.0	36	5,160	1.0	0.017	42	12	16	17	66
			1.4†	59	8,520	1.4	0.025	57	20	26	28	105
UV_{254}	(1/cm)	0.064	0.040	119	17,120	2.1	0.040	#	#	#	#	#
			0.020	43	6,210	1.2	0.020	47	16	21	22	82
			0.032†	83	11,970	1.7	0.032	60	21	28	30	129
SDS-THM4	(µg/L)	97	80	*	*							
			64	94	13,590	1.8	0.035	64	21	29	31	140
			32	26	3,800	0.7	0.011	32	11	13	14	44
SDS-HAA5	(µg/L)	33	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	42	48	*	*							
			24	51	7,270	1.3	0.022	50	18	24	25	91
SDS-HAA9	(µg/L)	46	48	*	*							
			24	47	6,790	1.2	0.021	49	17	23	24	87
SDS-TOX	(µg Cl^-/L)	253	120	73	10,490	1.6	0.030	60	20	27	29	120
			70	38	5,450	1.1	0.018	43	12	17	18	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 30 Run times to selected GAC effluent criteria (10 minute EBCT) during session 4, November

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (single contactor)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.9	2.0	249	17,960	2.0	0.038	59	20	27	30	145
			1.0	87	6,240	1.0	0.017	43	12	16	17	66
			1.4†	153	10,990	1.4	0.025	50	17	23	26	100
UV_{254}	(1/cm)	0.064	0.040	*	*							
			0.020	104	7,490	1.1	0.020	48	14	19	20	79
			0.032†	209	15,060	1.7	0.032	57	18	24	27	128
SDS-THM4	(µg/L)	97	80	*	*							
			64	*	*							
			32	62	4,460	0.8	0.012	32	11	14	14	47
SDS-HAA5	(µg/L)	33	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	42	48	*	*							
			24	204	14,650	1.7	0.032	58	18	24	27	126
SDS-HAA9	(µg/L)	46	48	*	*							
			24	130	9,380	1.3	0.023	49	16	22	24	93
SDS-TOX	(µg Cl^-/L)	253	120	194	13,990	1.6	0.030	57	17	24	26	120
			70	92	6,630	1.0	0.018	45	12	17	18	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, value of listed parameter is left blank.
#Data not available for listed parameter at given breakthrough criterion.

Table 31 Run times to selected GAC effluent criteria (20 minute EBCT) during session 4, November

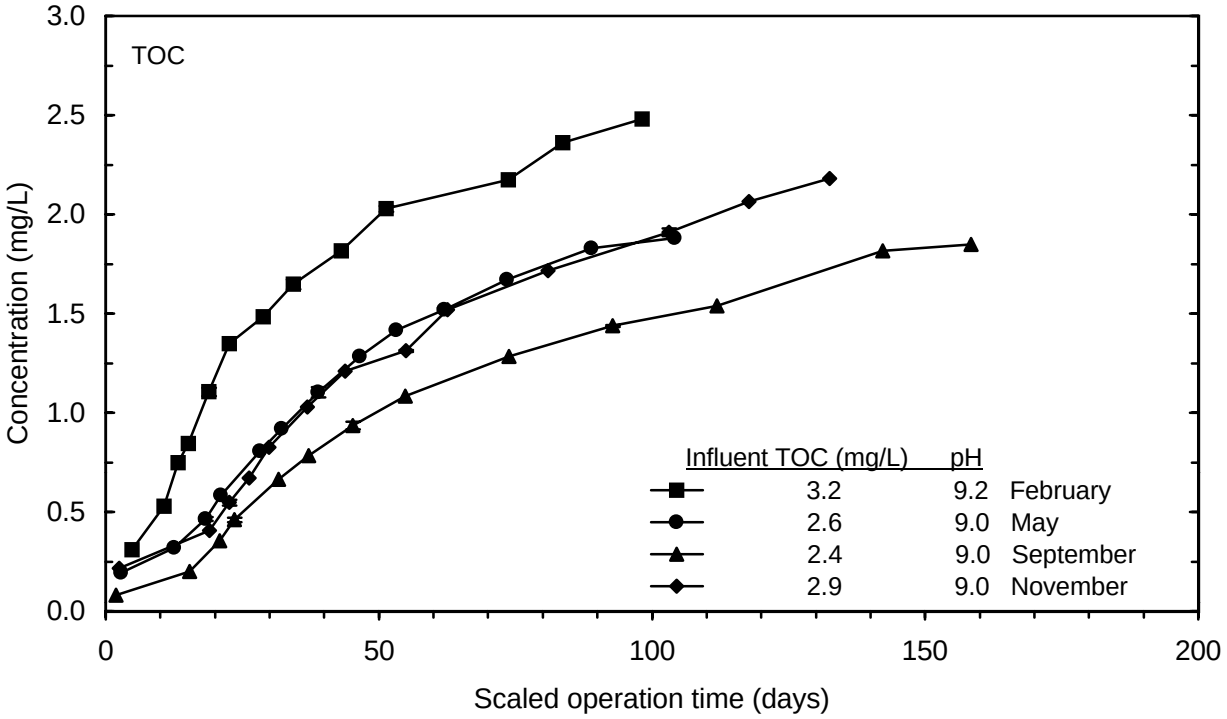


Figure 6 TOC breakthrough for 10 minute EBCT contactors for each session

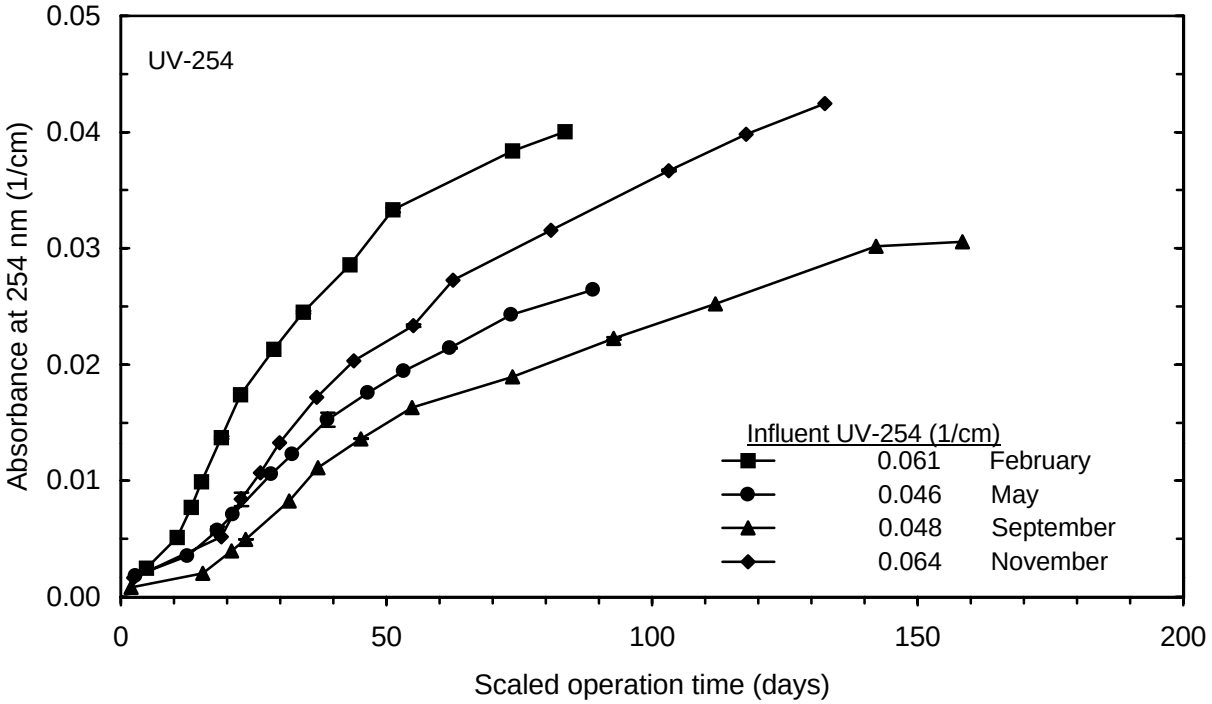


Figure 7 UV-254 breakthrough for 10 minute EBCT contactors for each session

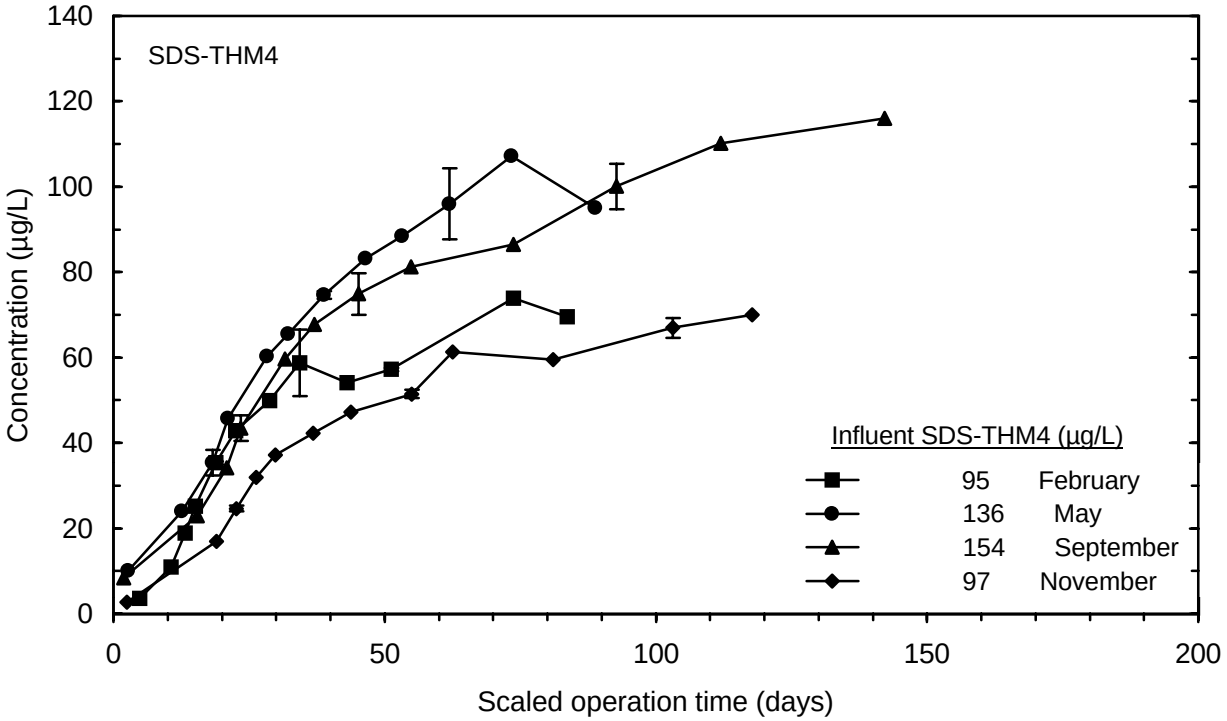


Figure 8 SDS-THM4 breakthrough for 10 minute EBCT contactors for each session

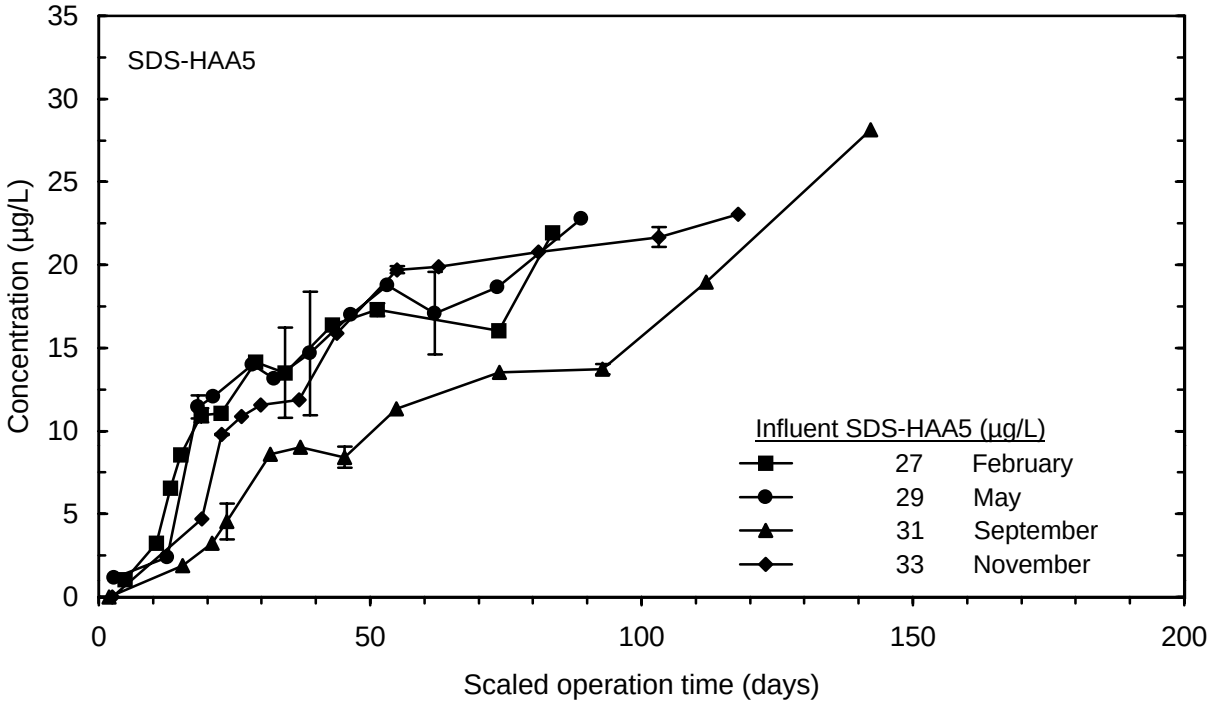


Figure 9 SDS-HAA5 breakthrough for 10 minute EBCT contactors for each session

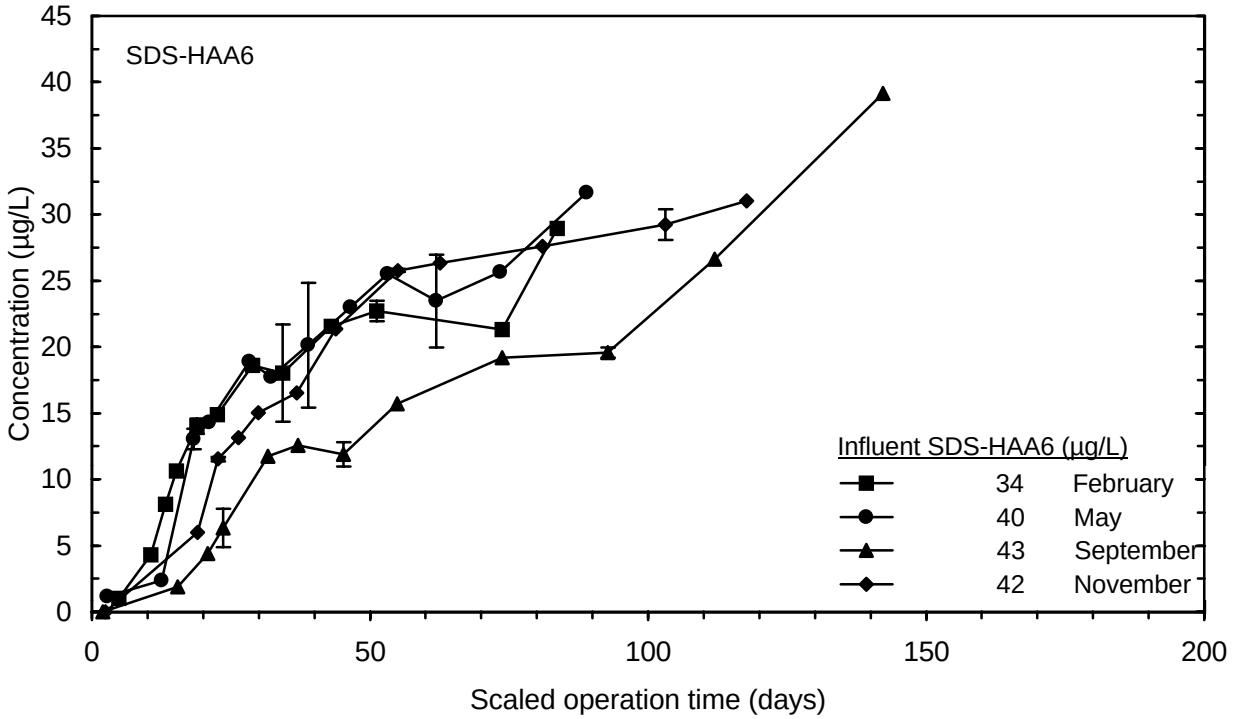


Figure 10 SDS-HAA6 breakthrough for 10 minute EBCT contactors for each session

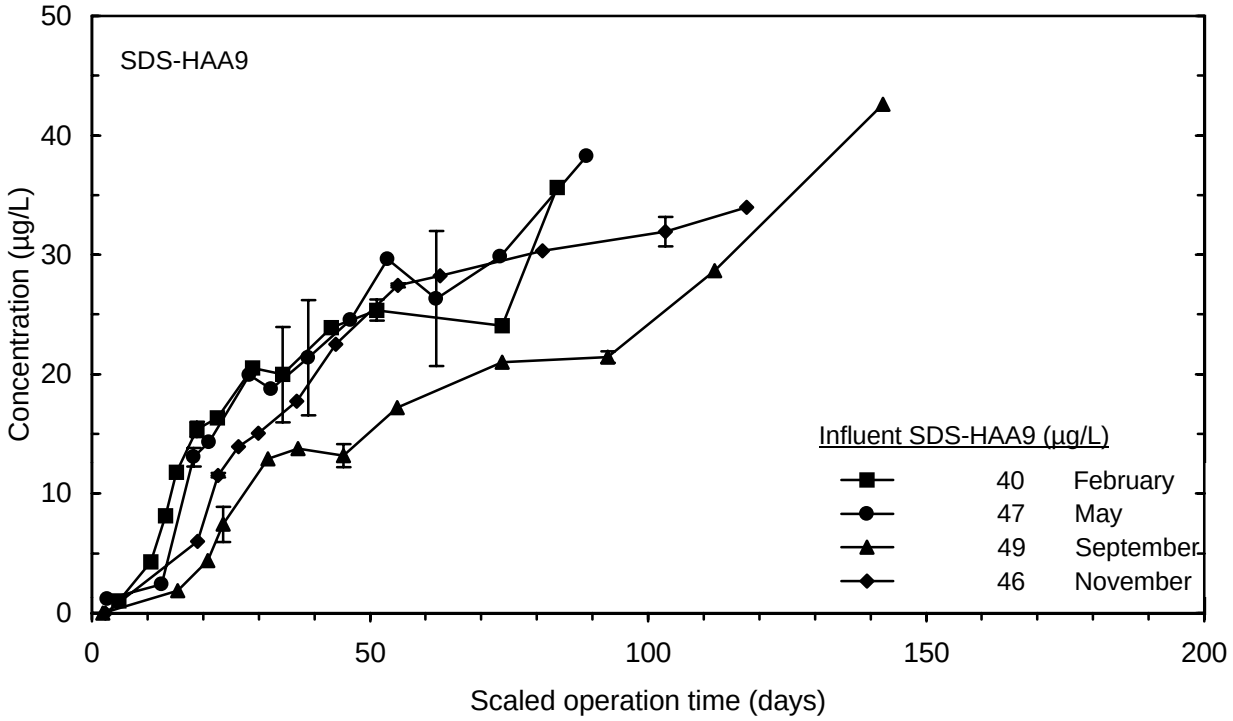


Figure 11 SDS-HAA9 breakthrough for 10 minute EBCT contactors for each session

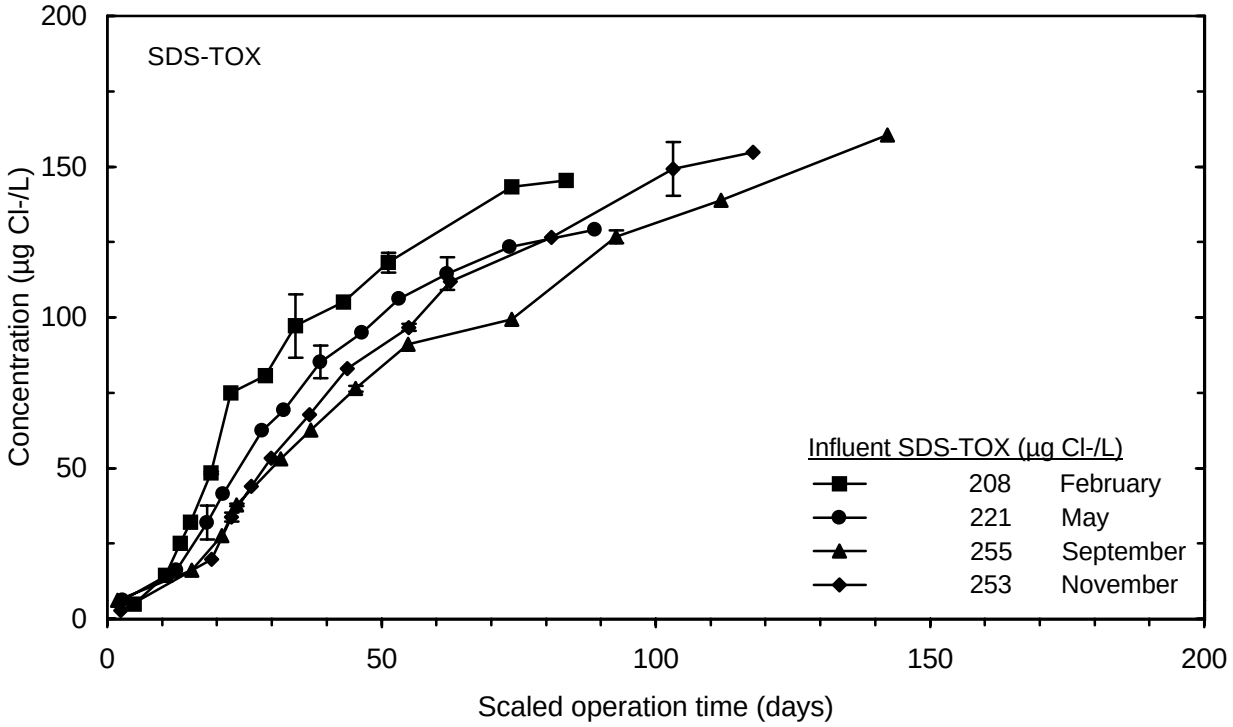


Figure 12 SDS-TOX breakthrough for 10 minute EBCT contactors for each session

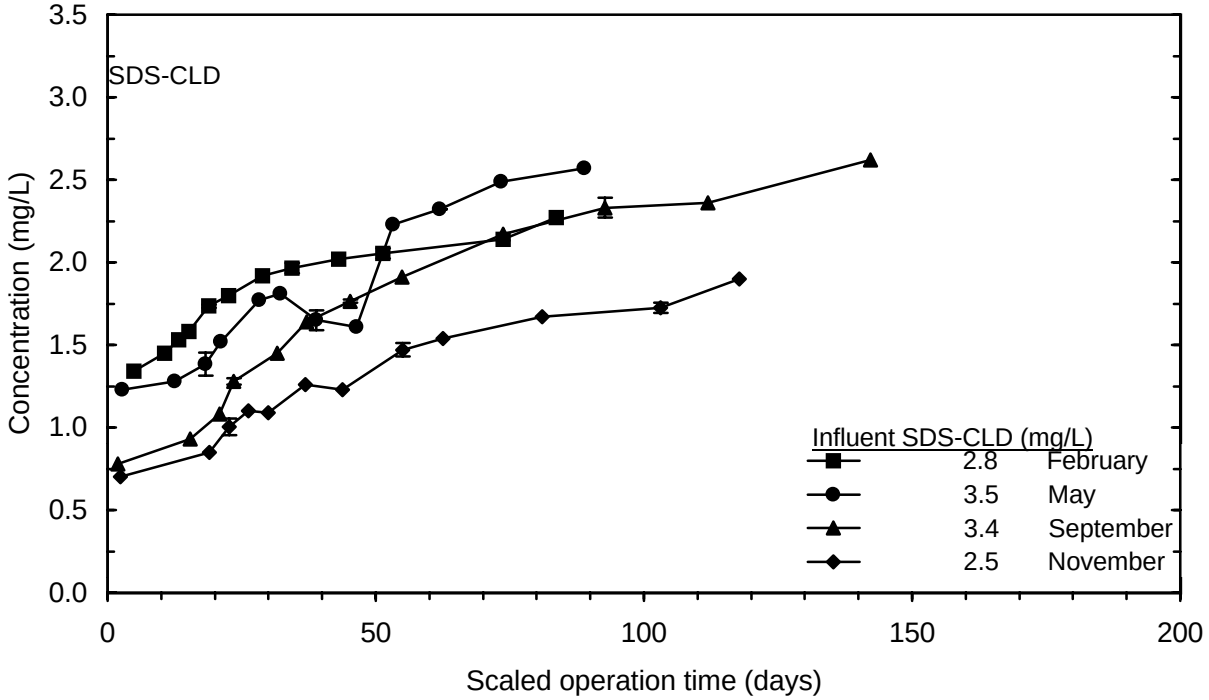


Figure 13 SDS-CLD breakthrough for 10 minute EBCT contactors for each session

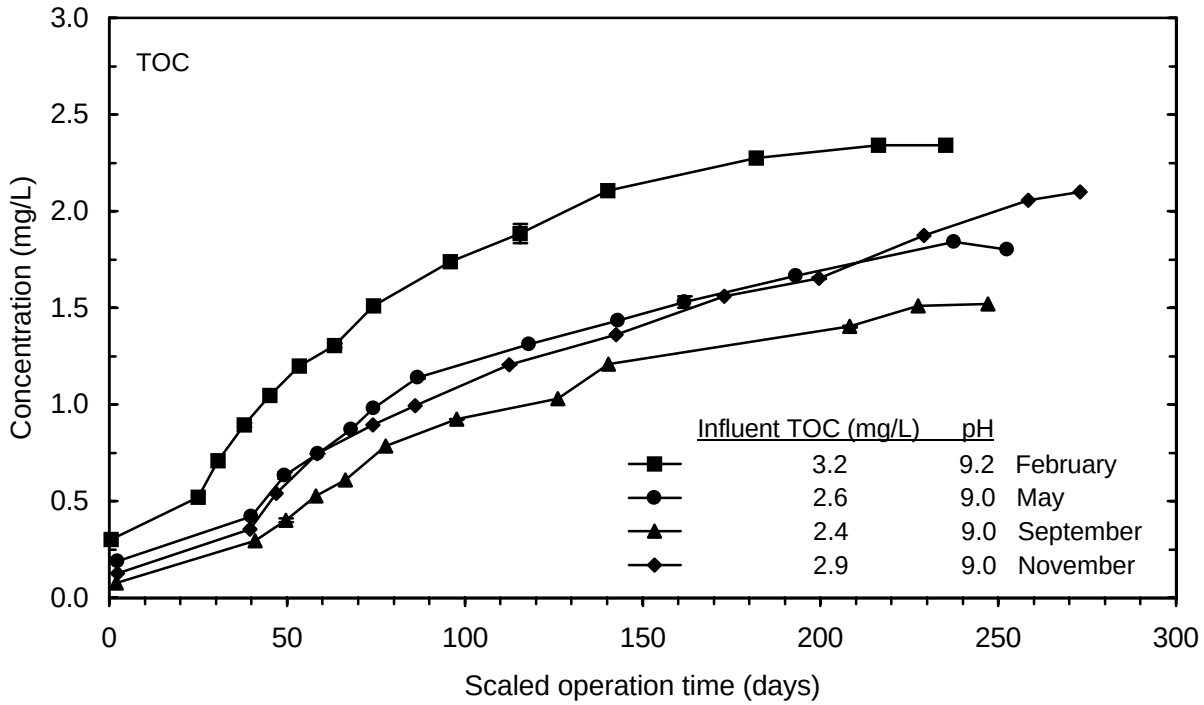


Figure 14 TOC breakthrough for 20 minute EBCT contactors for each session

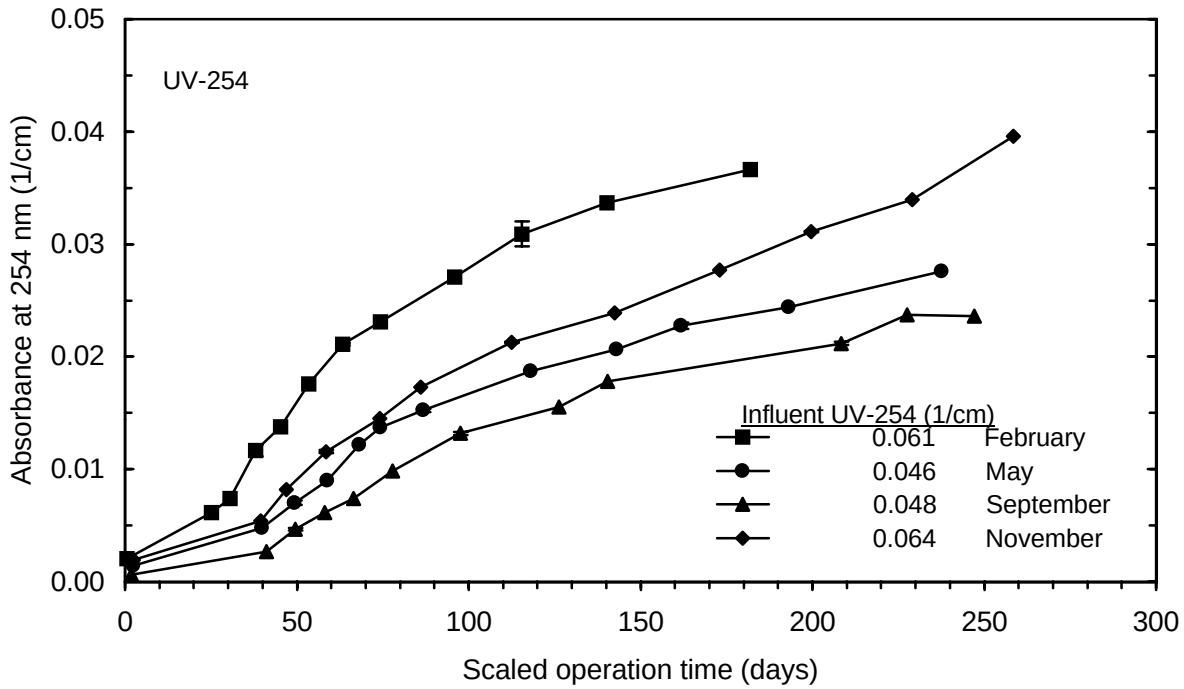


Figure 15 UV-254 breakthrough for 20 minute EBCT contactors for each session

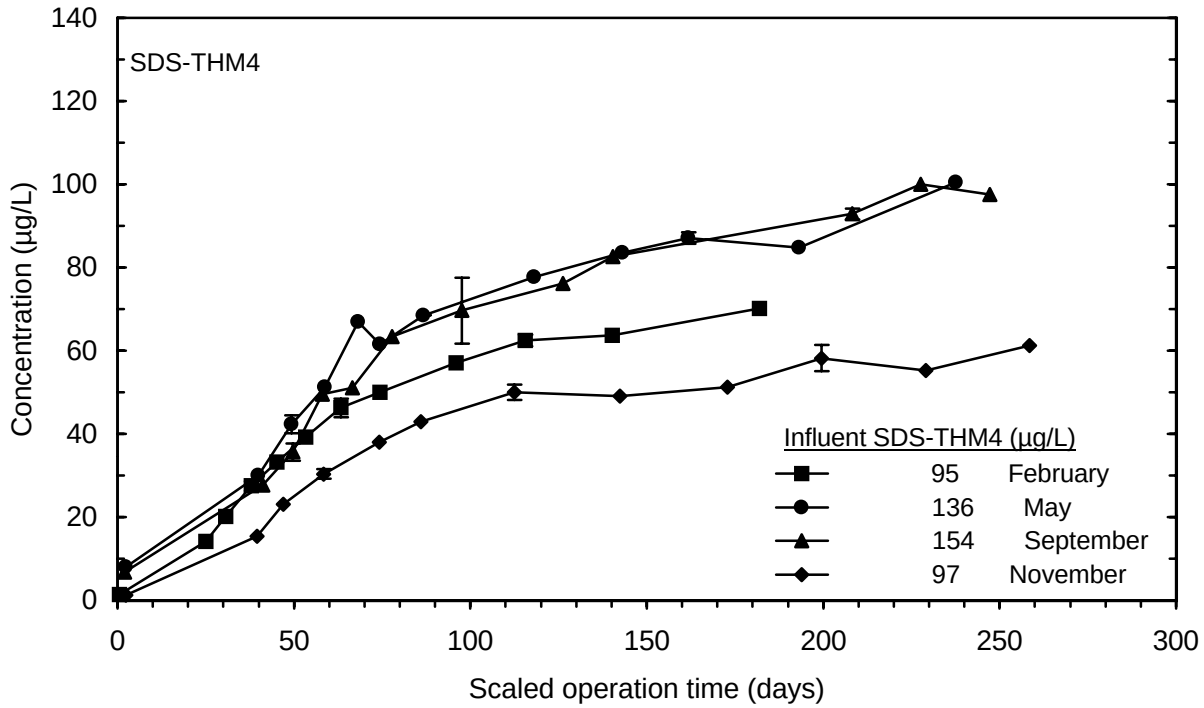


Figure 16 SDS-THM4 breakthrough for 20 minute EBCT contactors for each session

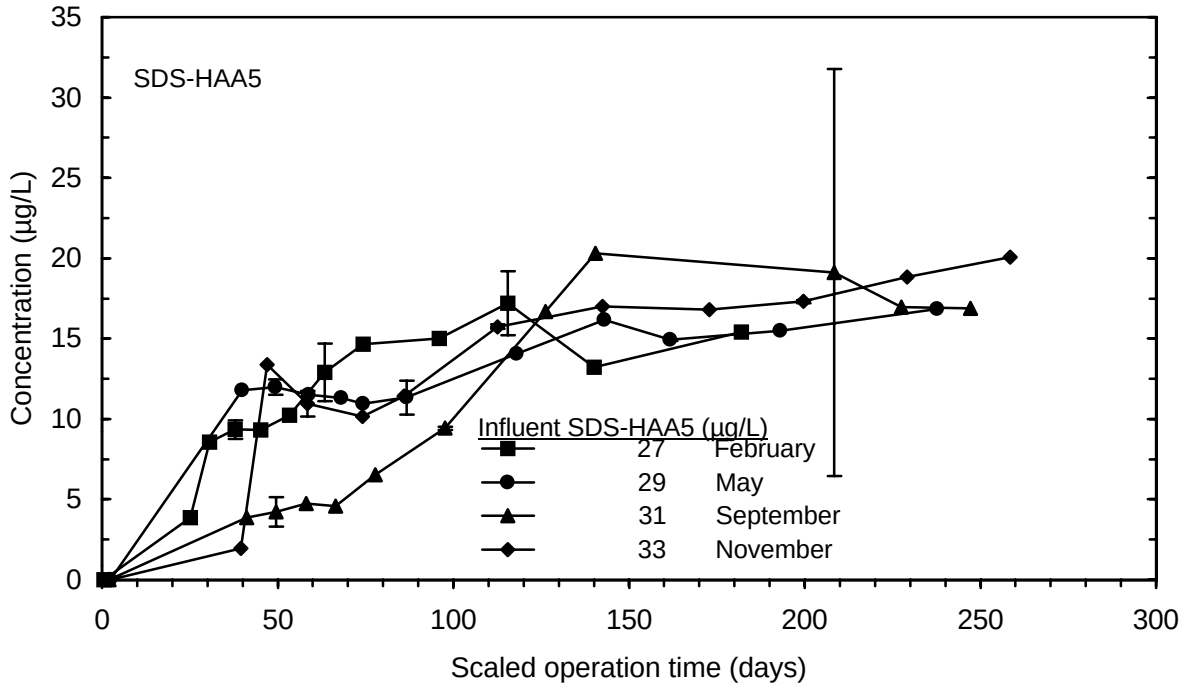


Figure 17 SDS-HAA5 breakthrough for 20 minute EBCT contactors for each session

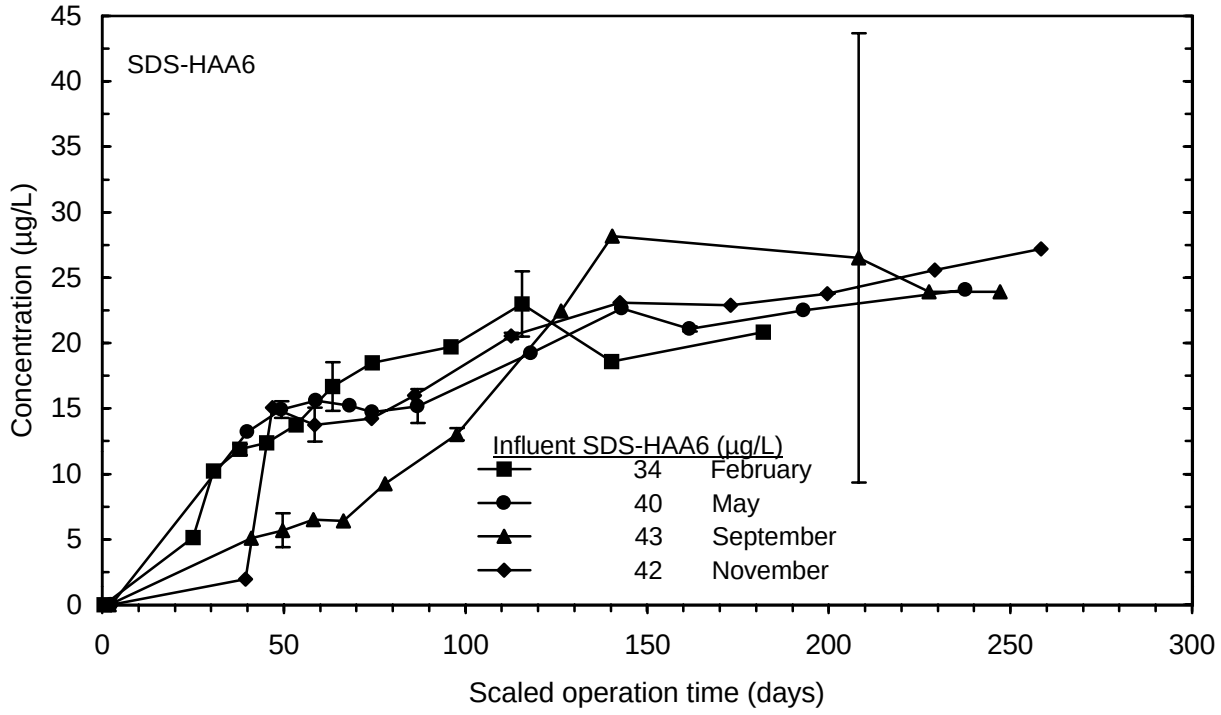


Figure 18 SDS-HAA6 breakthrough for 20 minute EBCT contactors for each session

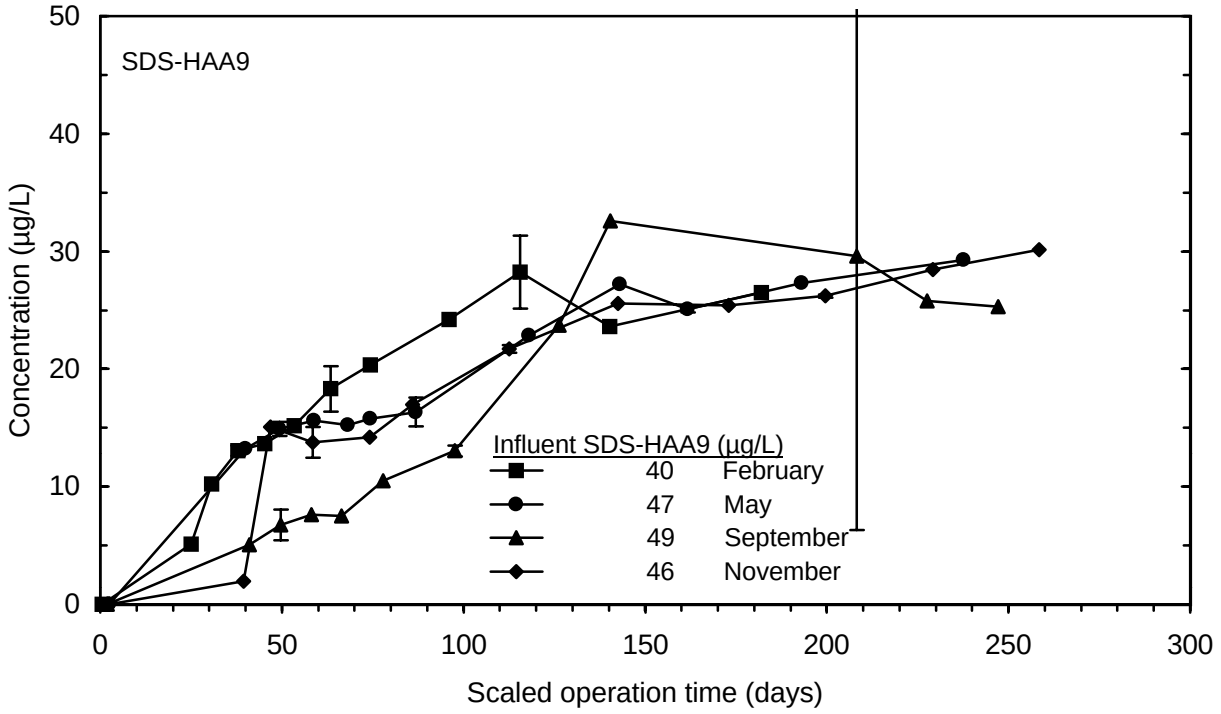


Figure 19 SDS-HAA9 breakthrough for 20 minute EBCT contactors for each session

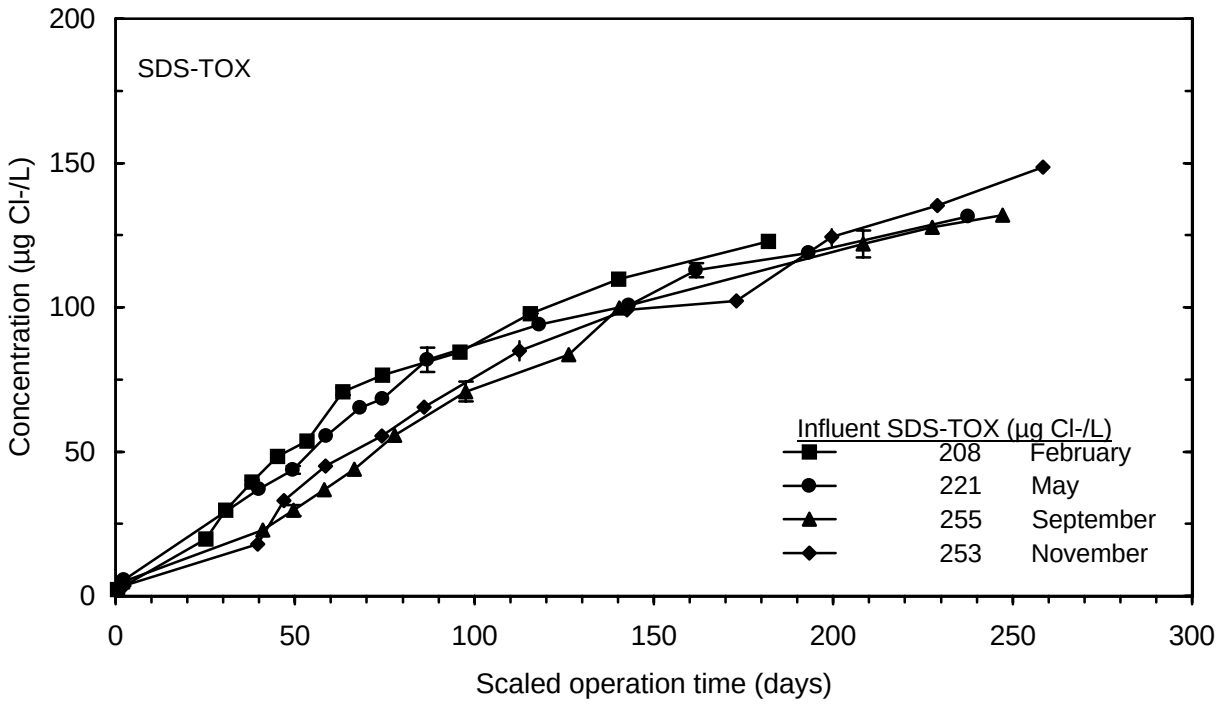


Figure 20 SDS-TOX breakthrough for 20 minute EBCT contactors for each session

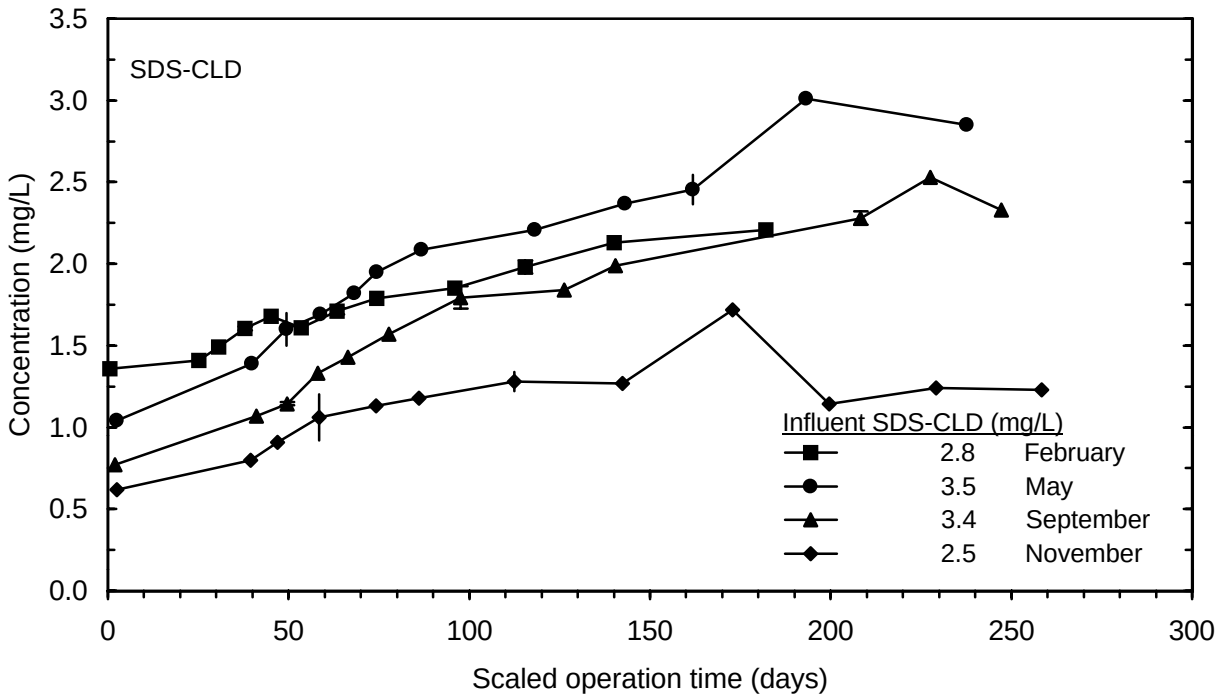


Figure 21 SDS-CLD breakthrough for 20 minute EBCT contactors for each session

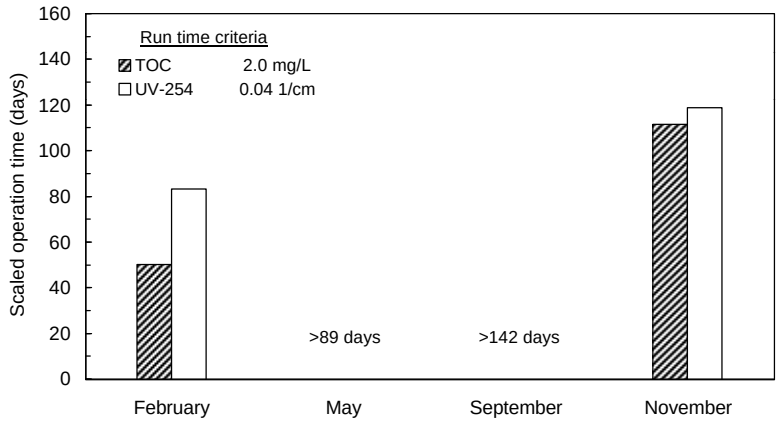


Figure 22 GAC run times based on single contactor breakthrough curves for TOC and UV-254 effluent criteria (high) for each session (10 minute EBCT)

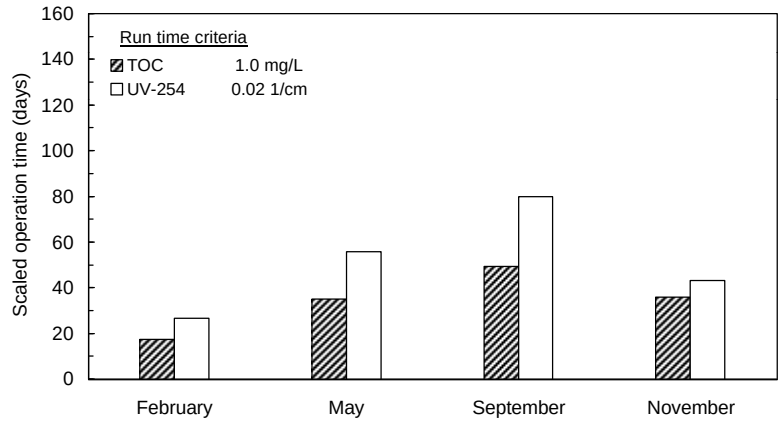


Figure 23 GAC run times based on single contactor breakthrough curves for TOC and UV-254 effluent criteria (low) for each session (10 minute EBCT)

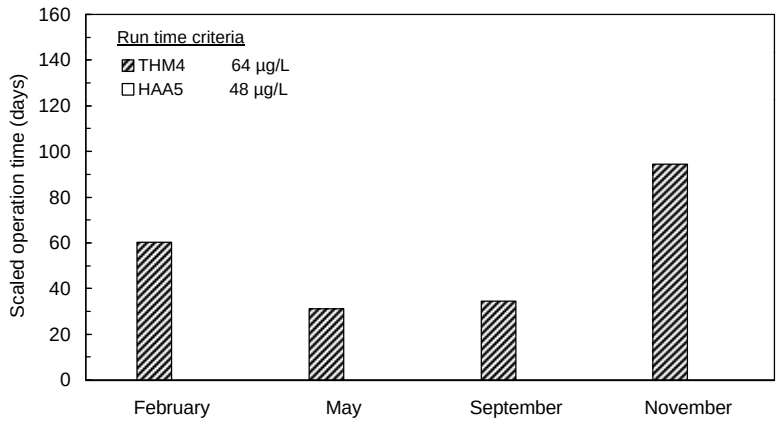


Figure 24 GAC run times based on single contactor breakthrough curves for Stage 1 THM4 and HAA5 effluent criteria for each session (10 minute EBCT)

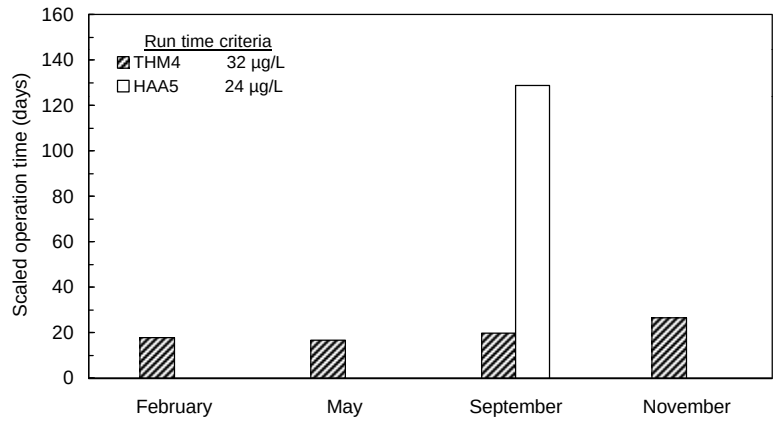


Figure 25 GAC run times based on single contactor breakthrough curves for Stage 2 THM4 and HAA5 effluent criteria for each session (10 minute EBCT)

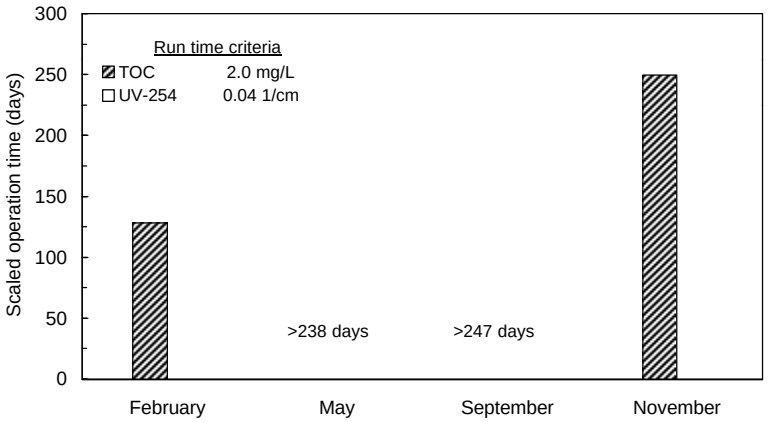


Figure 26 GAC run times based on single breakthrough curves for TOC and UV-254 effluent criteria for each session (20 minute EBCT)

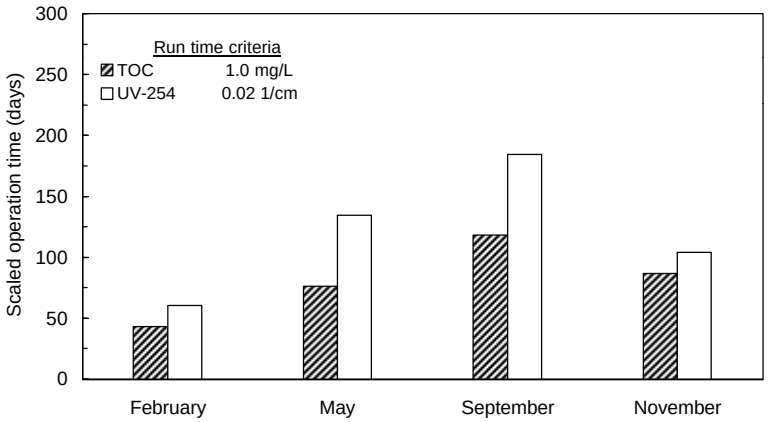


Figure 27 GAC run times based on single breakthrough curves for TOC and UV-254 effluent criteria for each session (20 minute EBCT)

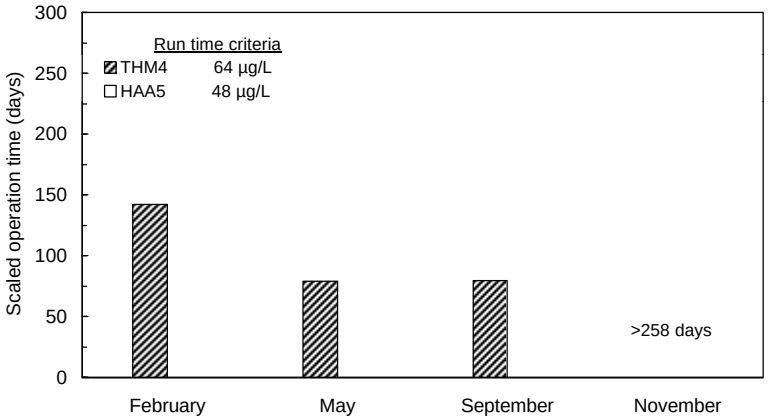


Figure 28 GAC run times based on single breakthrough curves for Stage 1 THM4 and HAA5 effluent criteria for each session (20 minute EBCT)

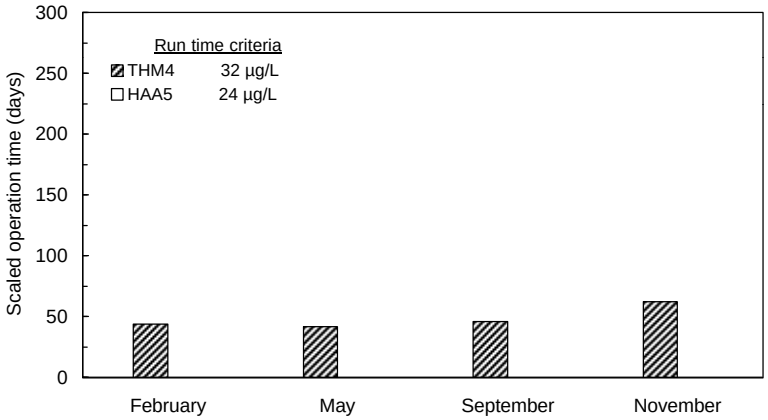


Figure 29 GAC run times based on single breakthrough curves for Stage 2 THM4 and HAA5 effluent criteria for each session (20 minute EBCT)

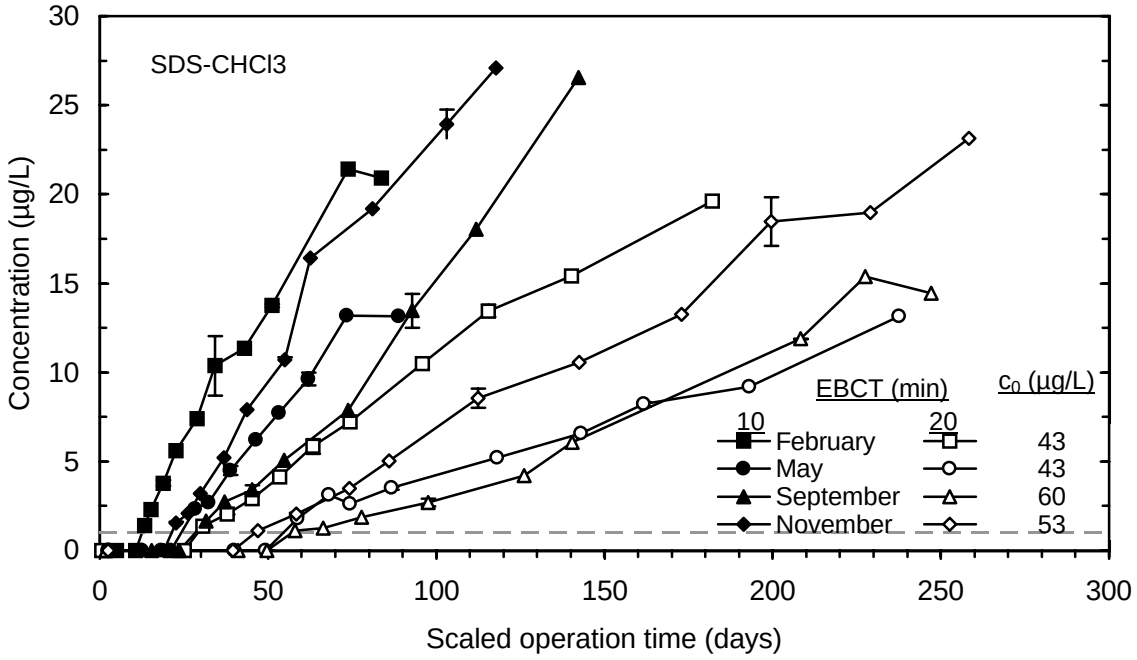


Figure 30 SDS-CHCl3 for 10 and 20 minute EBCT contactors for each session

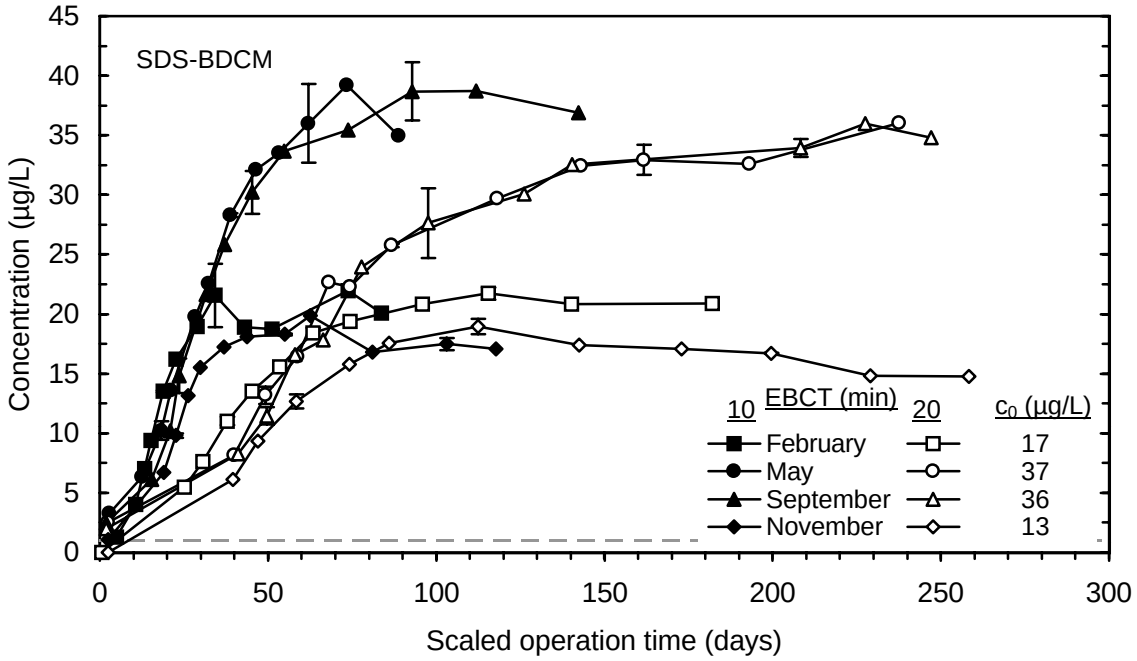


Figure 31 SDS-BDCM for 10 and 20 minute EBCT contactors for each session

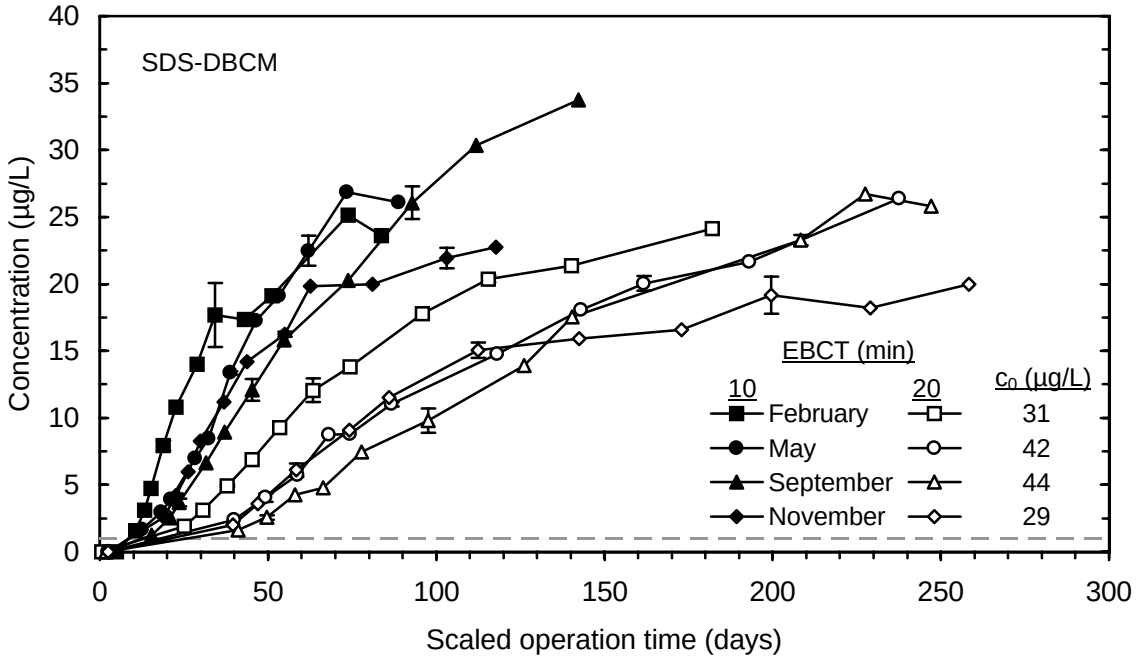


Figure 32 SDS-DBCM for 10 and 20 minute EBCT contactors for each session

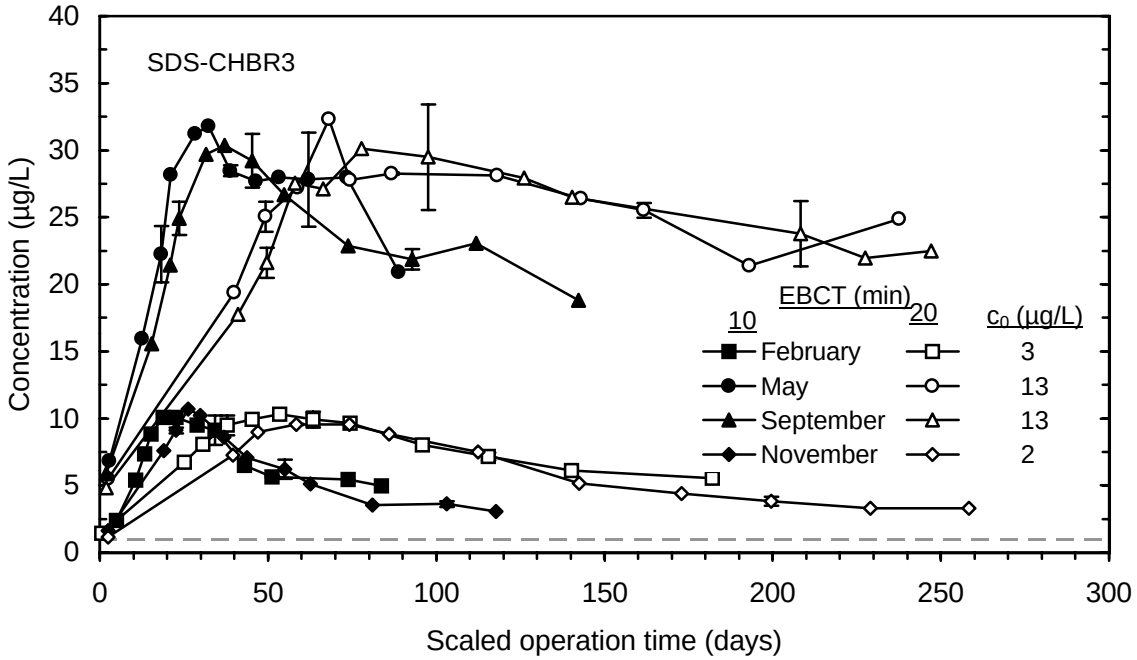


Figure 33 SDS-CHBR3 for 10 and 20 minute EBCT contactors for each session

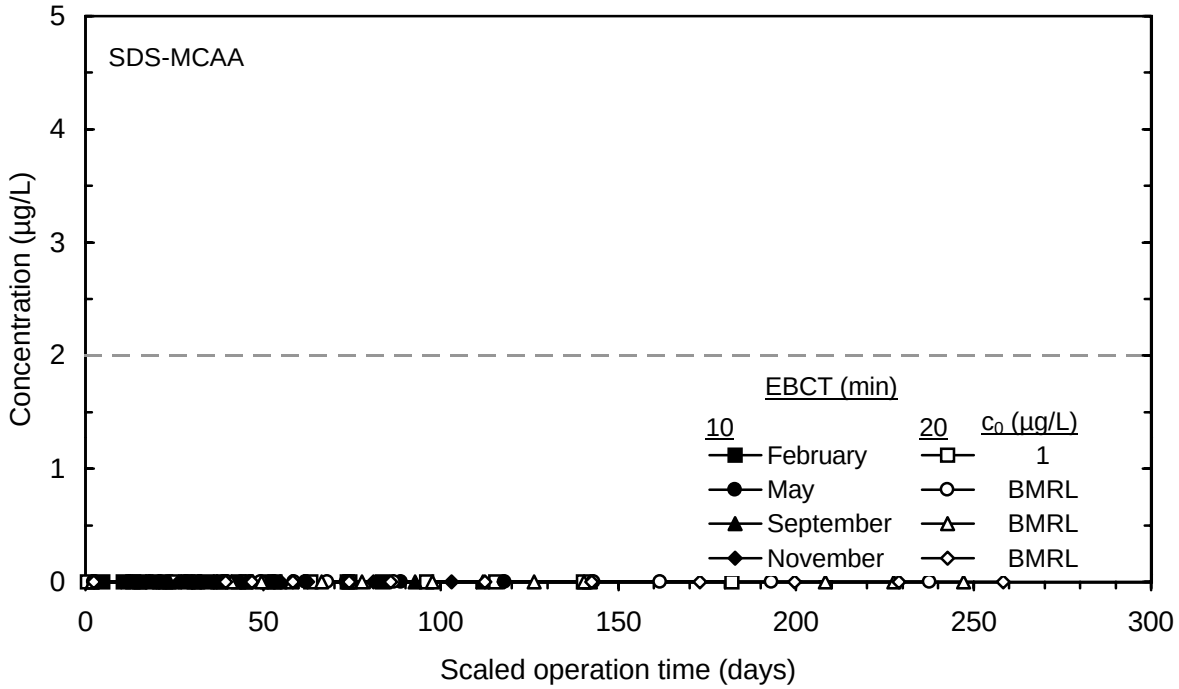


Figure 34 SDS-MCAA for 10 and 20 minute EBCT contactors for each session

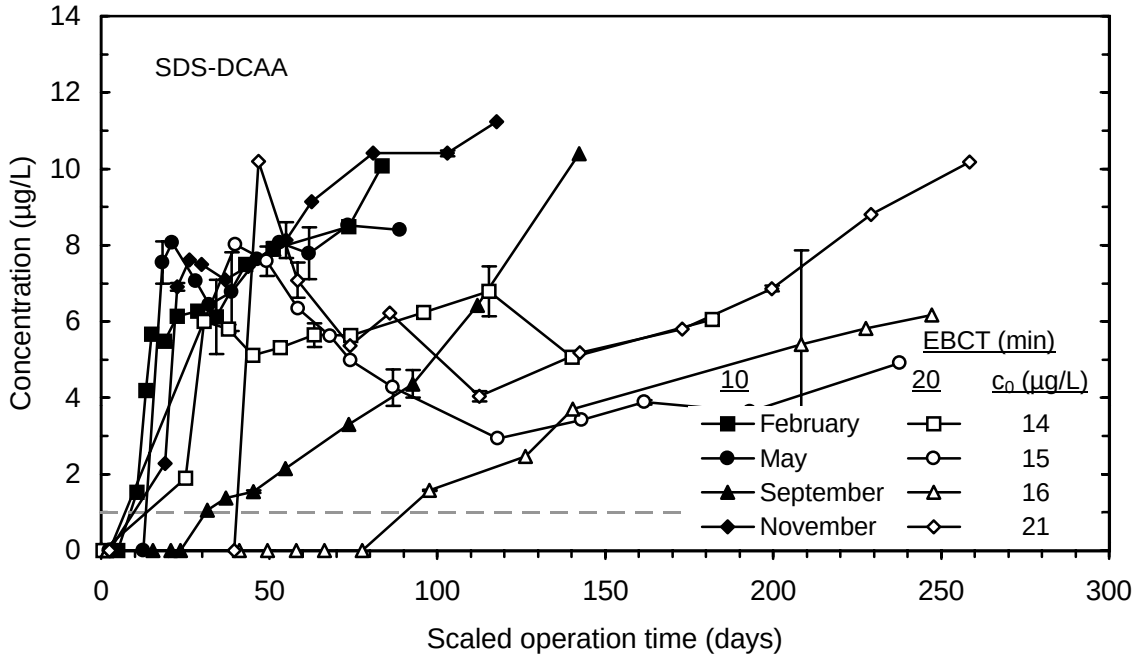


Figure 35 SDS-DCAA for 10 and 20 minute EBCT contactors for each session

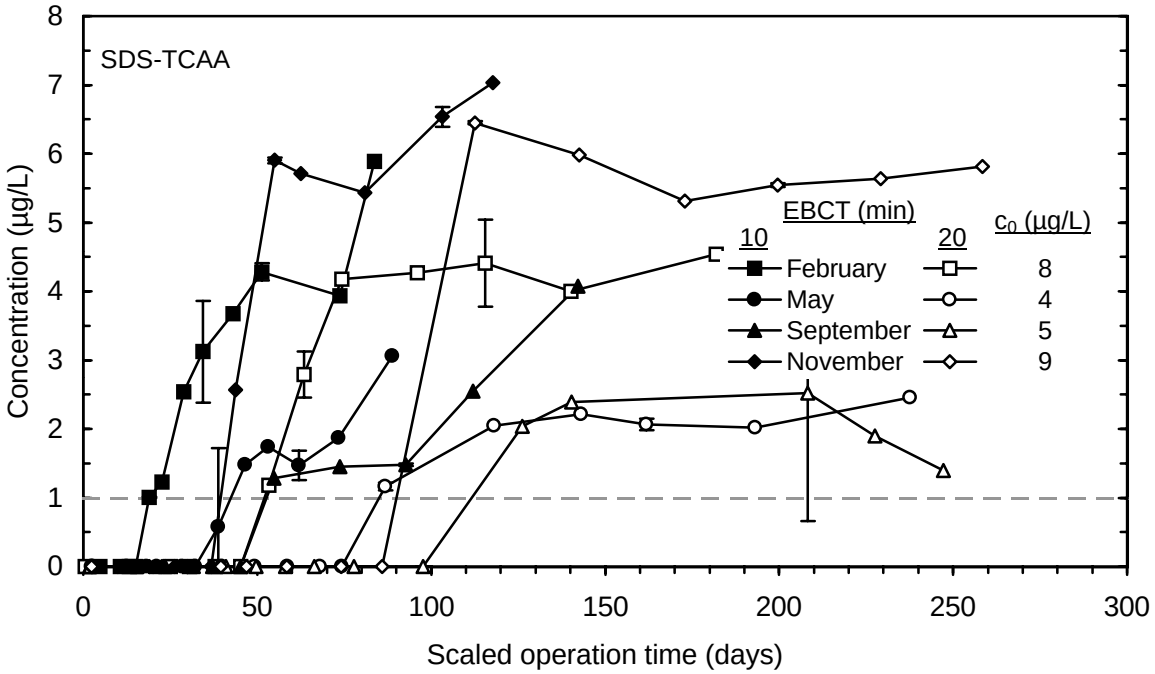


Figure 36 SDS-TCAA for 10 and 20 minute EBCT contactors for each session

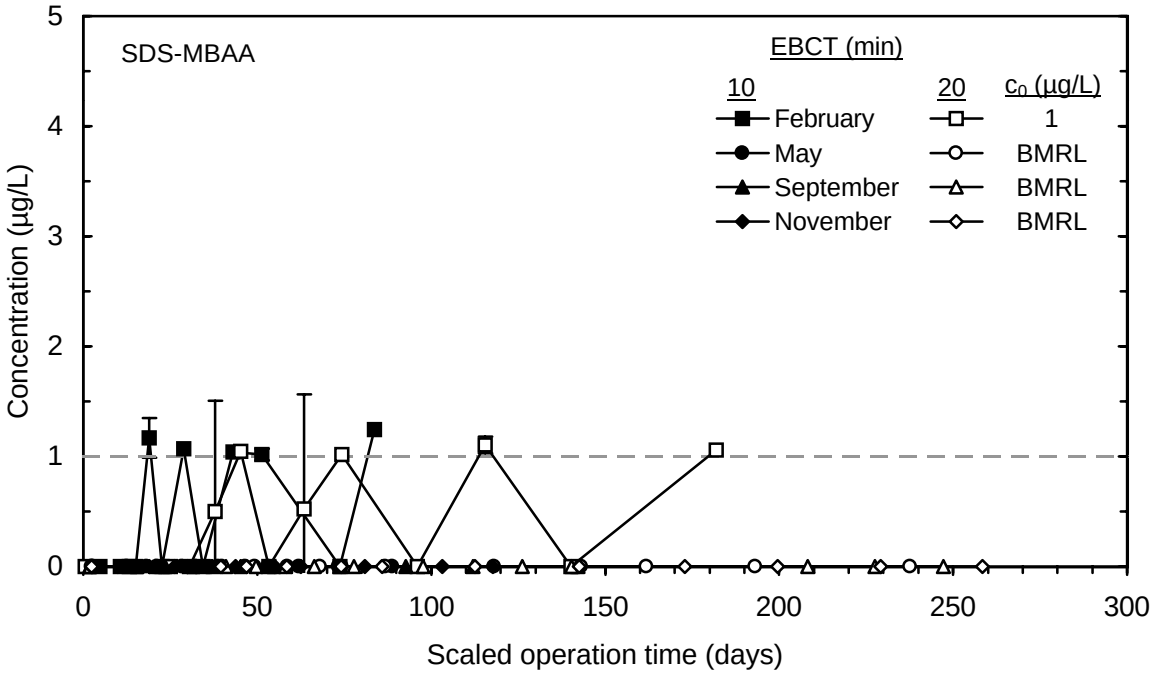


Figure 37 SDS-MBAA for 10 and 20 minute EBCT contactors for each session

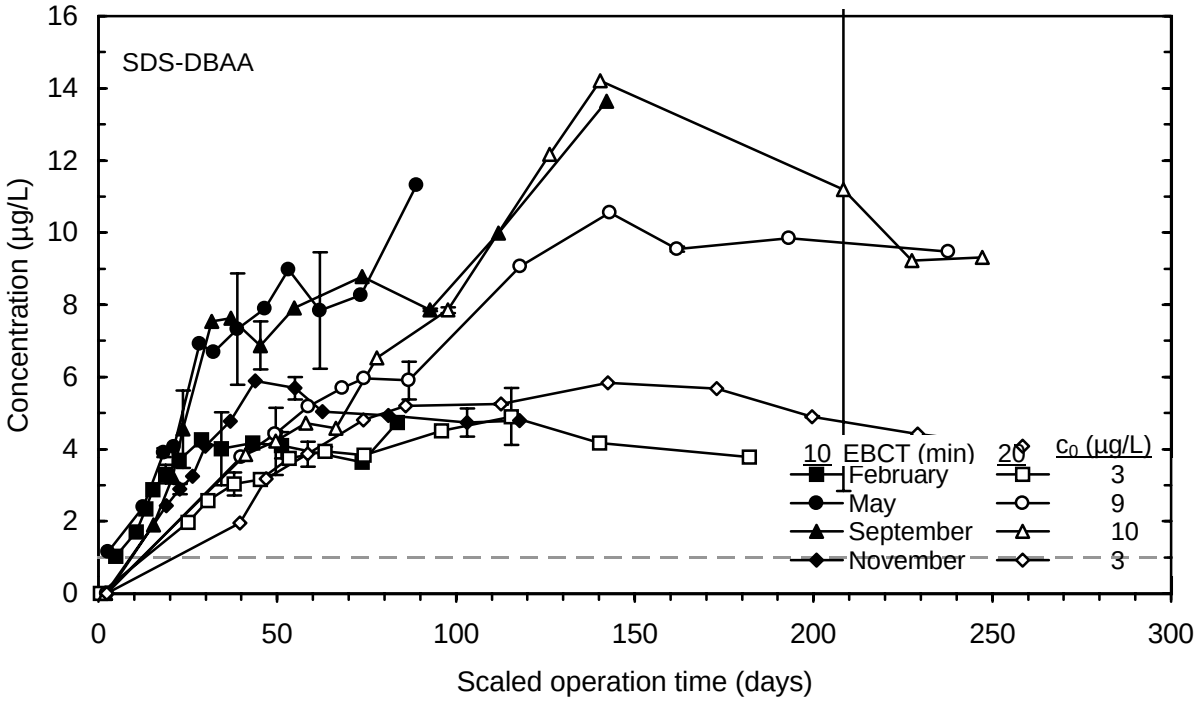


Figure 38 SDS-DBAA for 10 and 20 minute EBCT contactors for each session

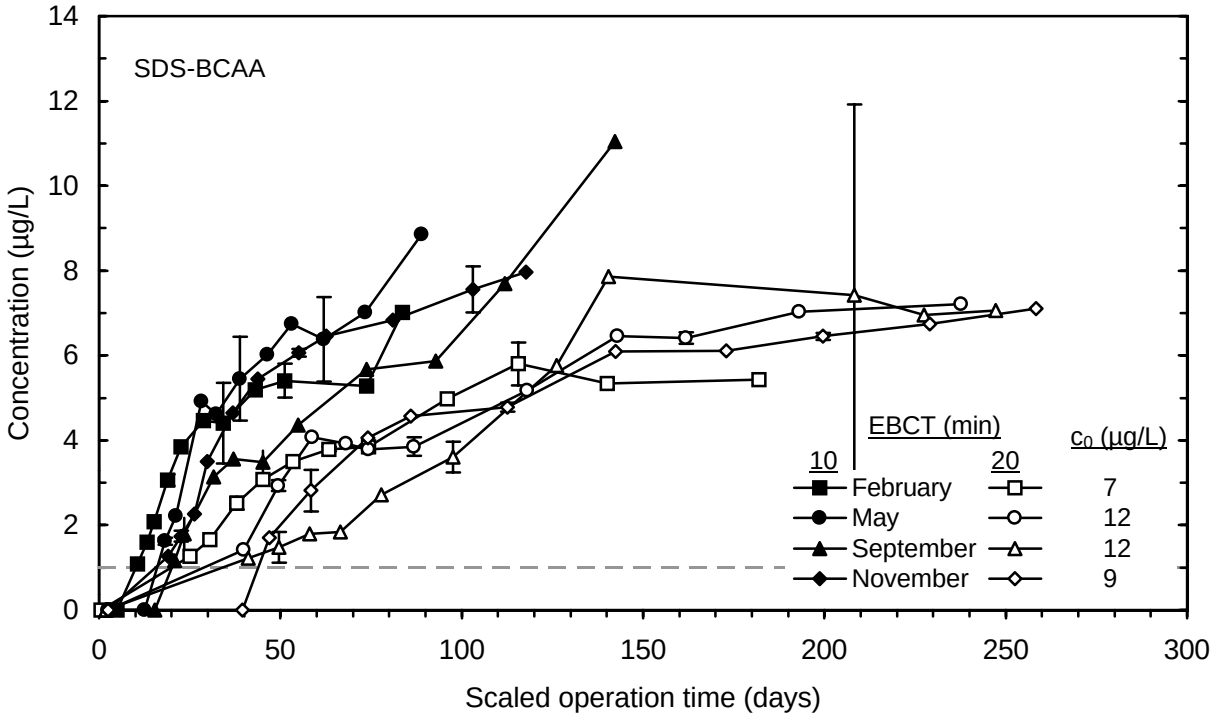


Figure 39 SDS-BCAA for 10 and 20 minute EBCT contactors for each session

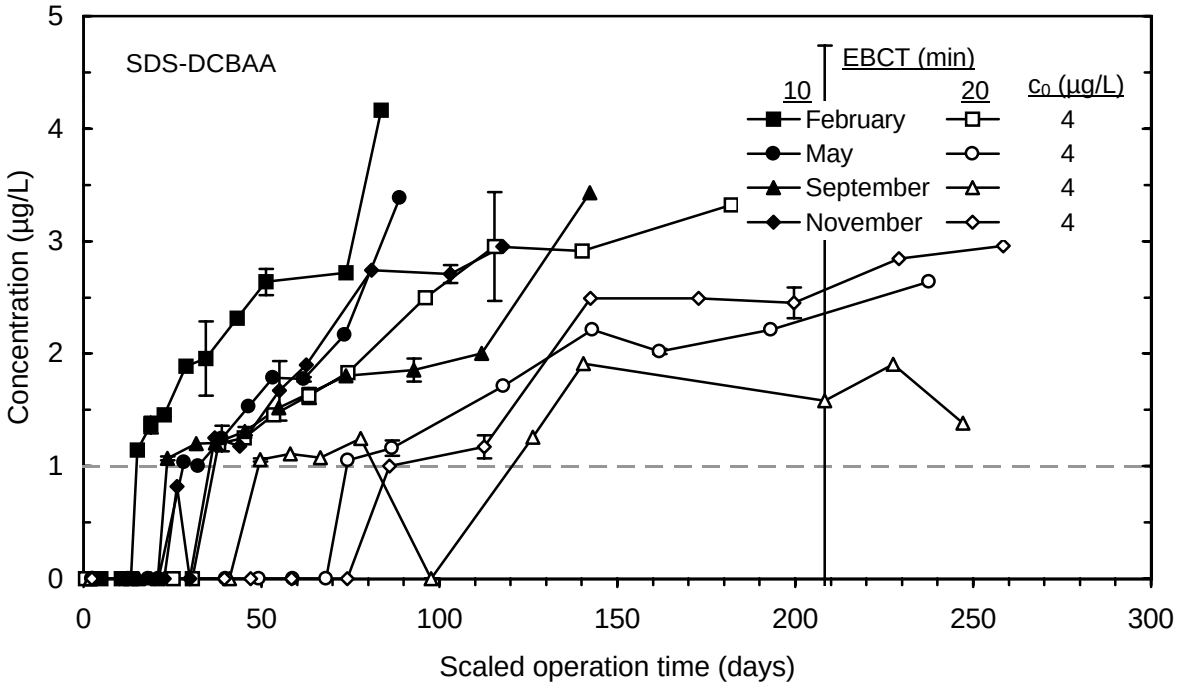


Figure 40 SDS-DCBAA for 10 and 20 minute EBCT contactors for each session

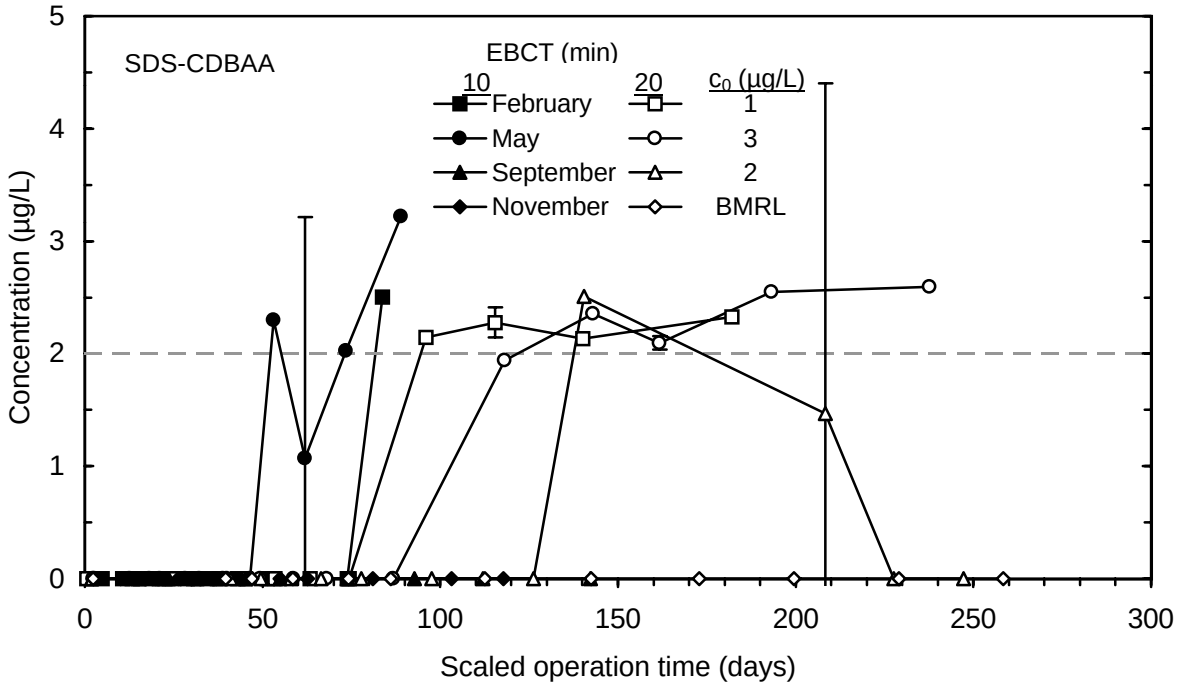


Figure 41 SDS-CDBAA for 10 and 20 minute EBCT contactors for each session

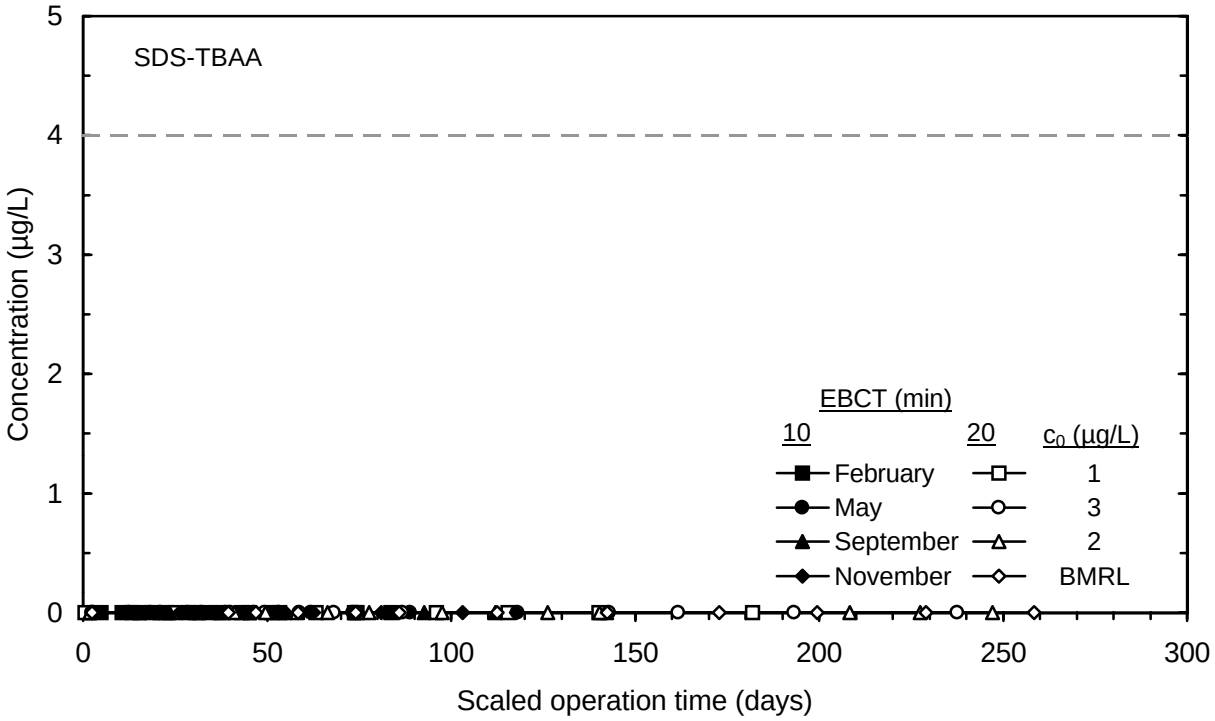


Figure 42 SDS-TBAA for 10 and 20 minute EBCT contactors for each session

9 *Impact of Empty-Bed Contact Time (EBCT)*

9 Impact of Empty-Bed Contact Time (EBCT)

During all RSSCT sessions, as required by the ICR, two EBCTs were evaluated: 10 and 20 minutes. The breakthrough data generated were then used to evaluate the impact of EBCT on DBP precursor removal by GAC. To do so, the GAC breakthrough curves for each EBCT are plotted on a throughput basis, with units of bed volumes. This transformation normalizes for the difference in amount of EBCT between the two columns to be compared. The following equation is used to convert from run time to throughput in bed volumes:

$$\text{Throughput (bed volumes)} = \frac{\text{Run time}}{\text{EBCT}} \qquad (1)$$

For the February session, Figures 43 through 50 compare the 10 minute and 20 minute EBCT contactor performance for the breakthrough of TOC, UV_{254}, SDS-THM4, SDS-HAA5, SDS-HAA6, SDS-HAA9, SDS-TOX, and SDS-CLD. The same data are presented for the May, September, and November sessions in Figures 51 through 74. In general, all sessions showed that the 20 minute EBCT contactor outperformed the 10 minute EBCT contactor on a throughput basis, as seen by a shift to the right in the breakthrough curve, although during the September session the difference was slight. Throughput to placeholder for Stage 2 THM4 MCL was 24, 26, 15, and 17 percent longer during the February, May, September, and November sessions, respectively, for the 20 minute EBCT contactor over the 10 minute EBCT contactor.

For all parameters analyzed, the throughput in bed volumes for both EBCTs to various run time criteria are summarized in Tables 32 through 35. These tables also include throughput based on blended effluent of multiple contactors, as explained in Section 10 below.

The throughput comparison data are summarized in graphical format in Figures 75 through 78 for the February session. On a throughput basis and for all run time criteria, the 20 minute EBCT contactor outperformed the 10 minute EBCT contactor. The same data are presented for the May, September, and November sessions in Figures 79 through 90. Also shown in the figures is the throughput based on blended effluent of multiple contactors, which is explained below in Section 10.

Parameter	Units	Influent concen-tration	Value	Throughput (BV) at given EBCT (min)				Throughput change from 10 to 20 min EBCT (%)	
				10		20			
				Contactor configuration					
				Single	Multiple	Single	Multiple	Single contactor	Multiple contactors
TOC	(mg/L)	3.2	2.0	7,230	18,460	9,240	23,480	28	27
			1.0	2,500	5,270	3,100	6,550	24	24
			1.6†	4,650	11,020	5,880	14,010	26	27
UV-254	(1/cm)	0.061	0.040	12,000	29,840	*	*		
			0.020	3,850	8,320	4,340	9,850	13	18
			0.030†	6,630	15,240	8,100	18,460	22	21
SDS-THM4	(µg/L)	95	80	*	*	*	*		
			64	8,690	22,570	10,220	25,490	18	13
			32	2,540	5,430	3,140	6,570	24	21
SDS-HAA5	(µg/L)	27	48	*	*	*	*		
			24	*	*	*	*		
SDS-HAA6	(µg/L)	34	48	*	*	*	*		
			24	11,120	25,840	*	*		
SDS-HAA9	(µg/L)	40	48	*	*	*	*		
			24	6,300	15,340	6,830	18,520	8	21
SDS-TOX	(µg Cl^-/L)	208	120	7,620	17,680	12,440	26,510	63	50
			70	3,150	7,630	4,530	10,960	44	44

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, calculated values are left blank.

Table 32 Summary of throughput to selected GAC effluent criteria during session 1, February

Parameter	Units	Influent concen-tration	Value	Throughput (BV) at given EBCT (min)				Throughput change from 10 to 20 min EBCT (%)	
				10		20			
				Contactor configuration				Single contactor	Multiple contactors
				Single	Multiple	Single	Multiple		
TOC	(mg/L)	2.6	2.0	*	*	*	*		
			1.0	5,060	10,790	5,470	12,470	8	16
			1.3†	6,680	15,530	8,150	19,340	22	25
UV-254	(1/cm)	0.046	0.040	*	*	*	*		
			0.020	8,010	17,210	9,700	21,250	21	23
			0.023†	9,840	21,170	12,010	26,520	22	25
SDS-THM4	(µg/L)	136	80	6,280	15,330	9,210	22,220	47	45
			64	4,480	10,430	5,670	14,210	27	36
			32	2,380	4,300	2,990	5,170	26	20
SDS-HAA5	(µg/L)	29	48	*	*	*	*		
			24	*	*	*	*		
SDS-HAA6	(µg/L)	40	48	*	*	*	*		
			24	7,070	18,210	17,010	31,680	141	74
SDS-HAA9	(µg/L)	47	48	*	*	*	*		
			24	6,500	14,260	8,970	21,960	38	54
SDS-TOX	(µg Cl^-/L)	221	120	9,950	22,290	14,190	29,600	43	33
			70	4,690	10,100	5,470	11,900	17	18

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, calculated values are left blank.

Table 33 Summary of throughput to selected GAC effluent criteria during session 2, May

Parameter	Units	Influent concen-tration	Value	Throughput (BV) at given EBCT (min)				Throughput change from 10 to 20 min EBCT (%)	
				10		20			
				Contactor configuration					
				Single	Multiple	Single	Multiple	Single contactor	Multiple contactors
TOC	(mg/L)	2.4	2.0	*	*	*	*		
			1.0	7,110	16,110	8,500	18,850	20	17
			1.2†	9,140	21,470	9,910	24,090	8	12
UV-254	(1/cm)	0.048	0.040	*	*	*	*		
			0.020	11,500	25,130	13,300	27,590	16	10
			0.024†	14,910	32,450	*	35,670		10
SDS-THM4	(µg/L)	154	80	7,630	19,600	9,690	23,200	27	18
			64	4,980	12,040	5,740	14,840	15	23
			32	2,850	4,790	3,290	5,640	15	18
SDS-HAA5	(µg/L)	31	48	*	*	*	*		
			24	18,520	*	*	*		
SDS-HAA6	(µg/L)	43	48	*	*	*	*		
			24	15,090	28,610	9,370	31,370	-38	10
SDS-HAA9	(µg/L)	49	48	*	*	*	*		
			24	14,340	25,330	9,120	25,650	-36	1
SDS-TOX	(µg Cl^-/L)	255	120	12,690	27,510	14,580	30,900	15	12
			70	5,970	13,020	6,960	14,920	17	15

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, calculated values are left blank.

Table 34 Summary of throughput to selected GAC effluent criteria during session 3, September

Parameter	Units	Influent concen-tration	Value	Throughput (BV) at given EBCT (min)				Throughput change from 10 to 20 min EBCT (%)	
				10		20			
				Contactor configuration				Single contactor	Multiple contactors
				Single	Multiple	Single	Multiple		
TOC	(mg/L)	2.9	2.0	16,080	44,460	17,960	*	12	
			1.0	5,160	11,340	6,240	13,900	21	23
			1.4†	8,520	19,480	10,990	23,680	29	22
UV-254	(1/cm)	0.064	0.040	17,120	42,140	*	*		
			0.020	6,210	13,520	7,490	16,660	21	23
			0.032†	11,970	26,500	15,060	31,170	26	18
SDS-THM4	(µg/L)	97	80	*	*	*	*		
			64	13,590	32,360	*	*		
			32	3,800	8,310	4,460	9,960	17	20
SDS-HAA5	(µg/L)	33	48	*	*	*	*		
			24	*	*	*	*		
SDS-HAA6	(µg/L)	42	48	*	*	*	*		
			24	7,270	19,480	14,650	30,460	102	56
SDS-HAA9	(µg/L)	46	48	*	*	*	*		
			24	6,790	16,710	9,380	25,130	38	50
SDS-TOX	(µg Cl^-/L)	253	120	10,490	23,360	13,990	29,360	33	26
			70	5,450	11,410	6,630	14,430	22	26

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time, calculated values are left blank.

Table 35 Summary of throughput to selected GAC effluent criteria during session 4, November

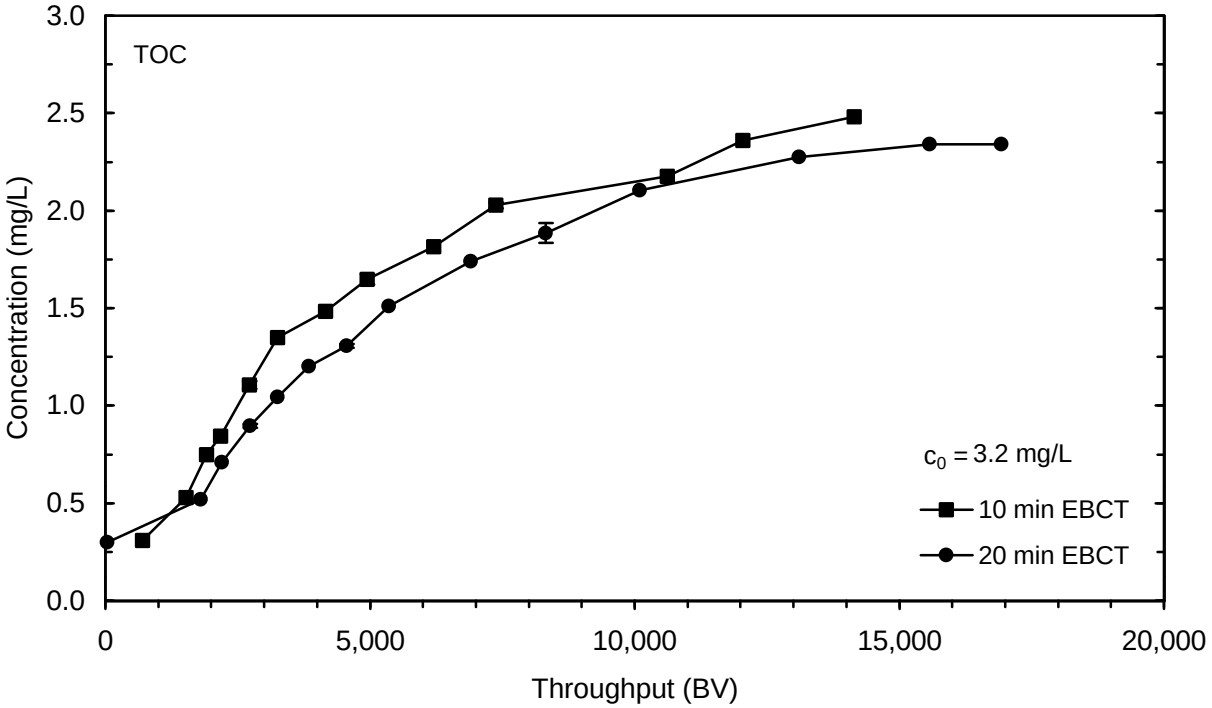


Figure 43 TOC breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

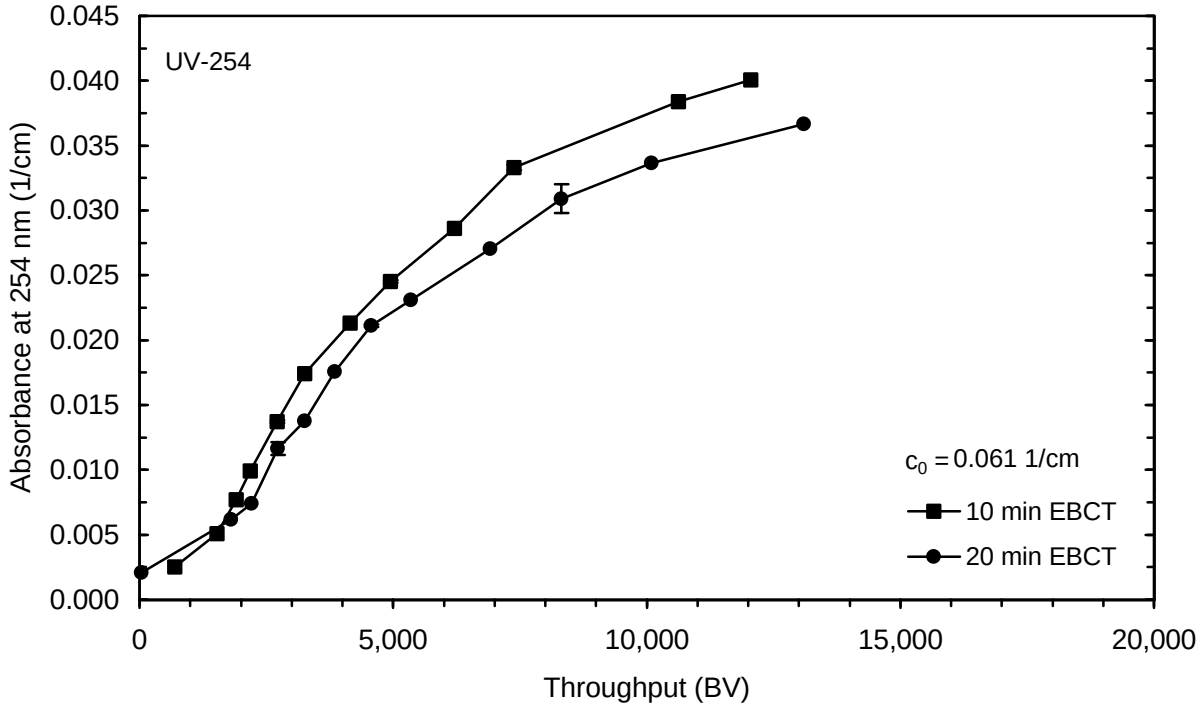


Figure 44 UV-254 breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

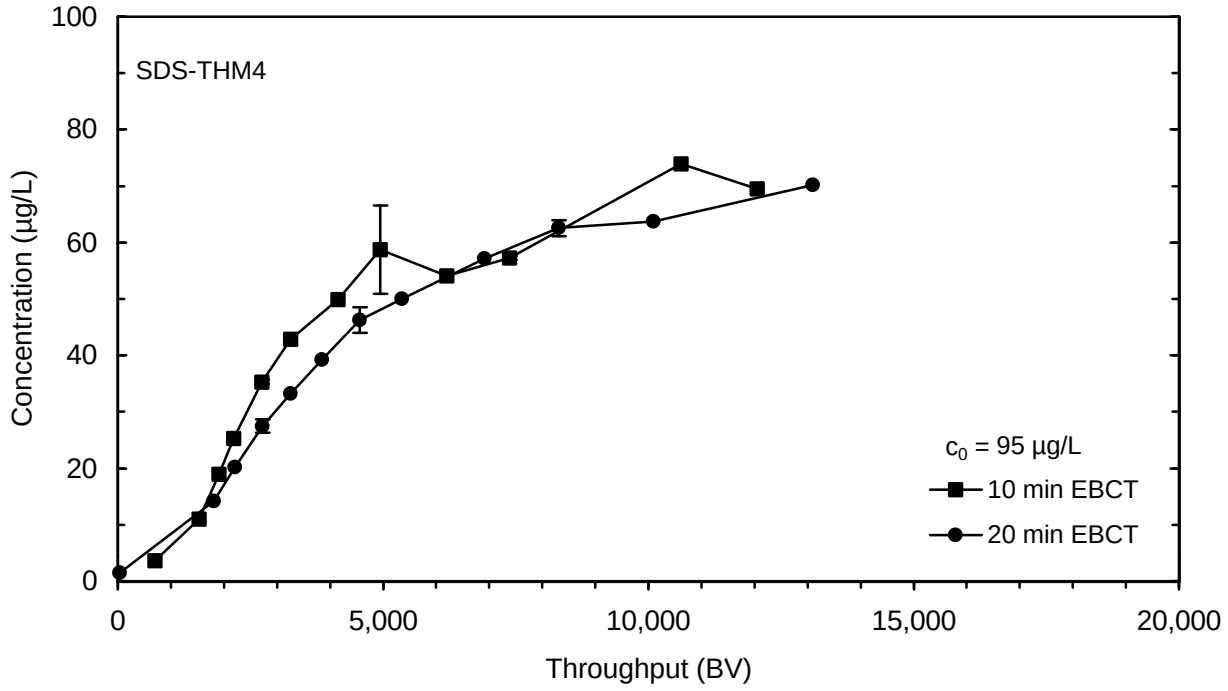


Figure 45 SDS-THM4 breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

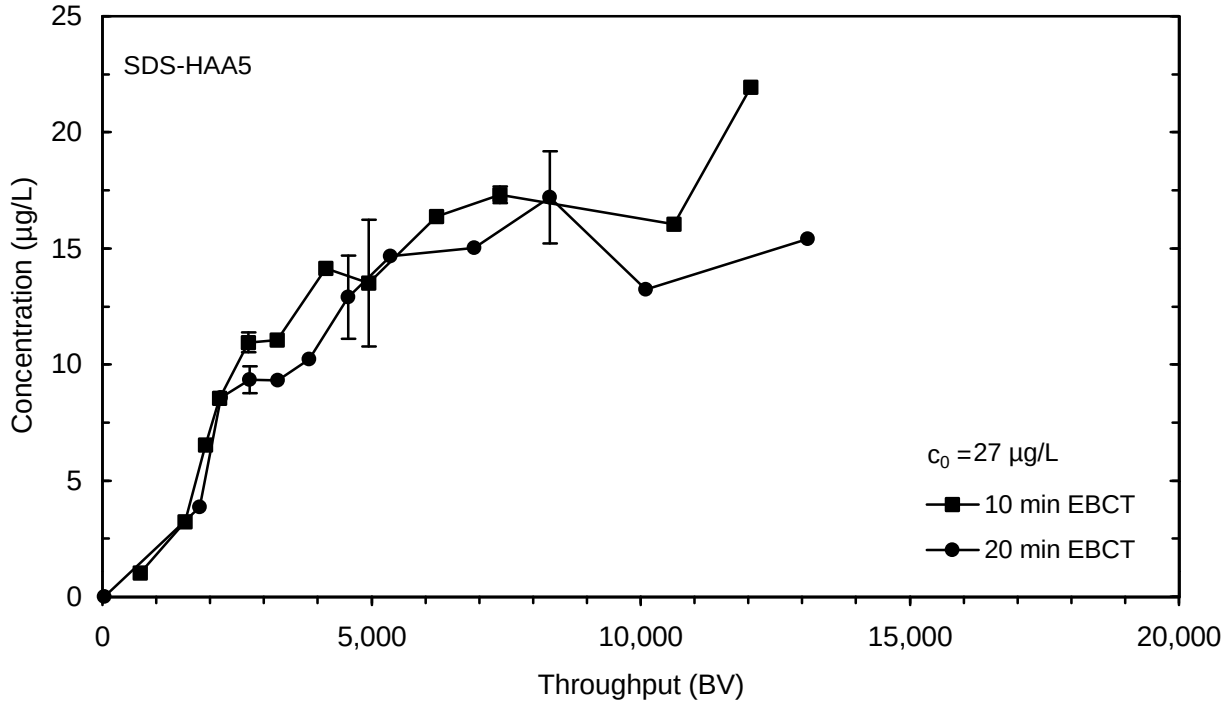


Figure 46 SDS-HAA5 breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

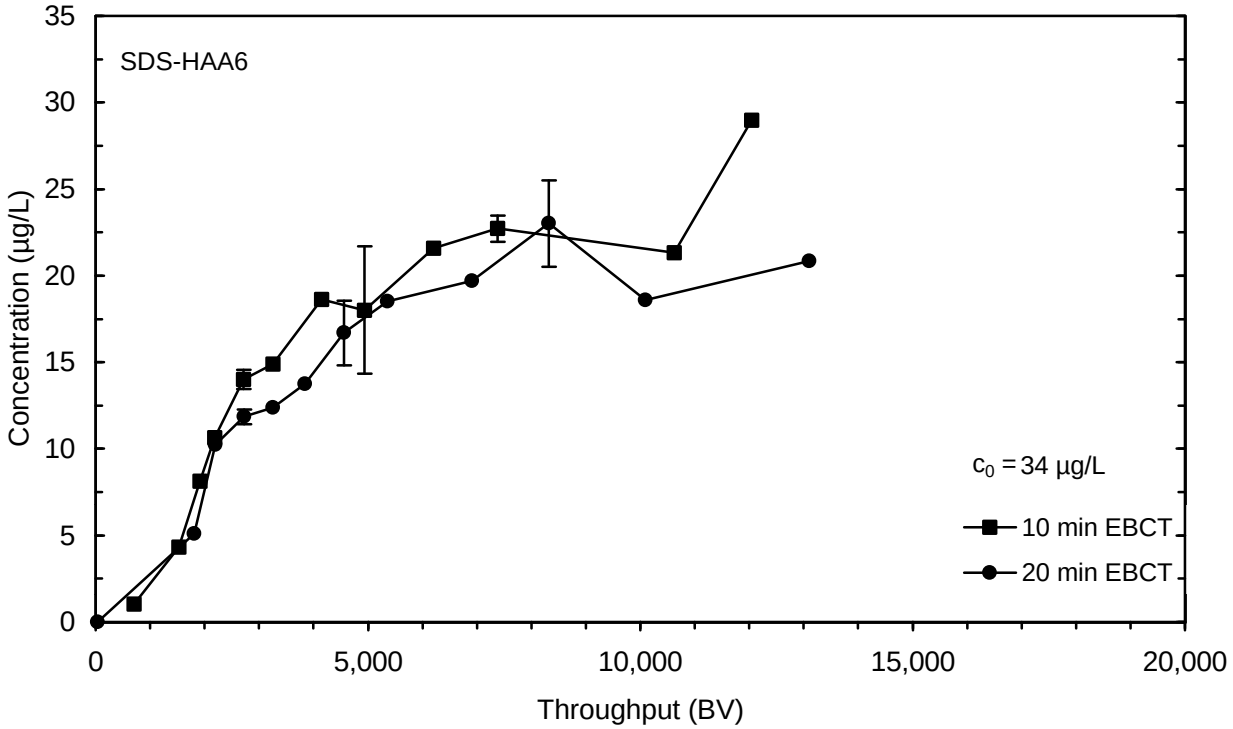


Figure 47 SDS-HAA6 breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

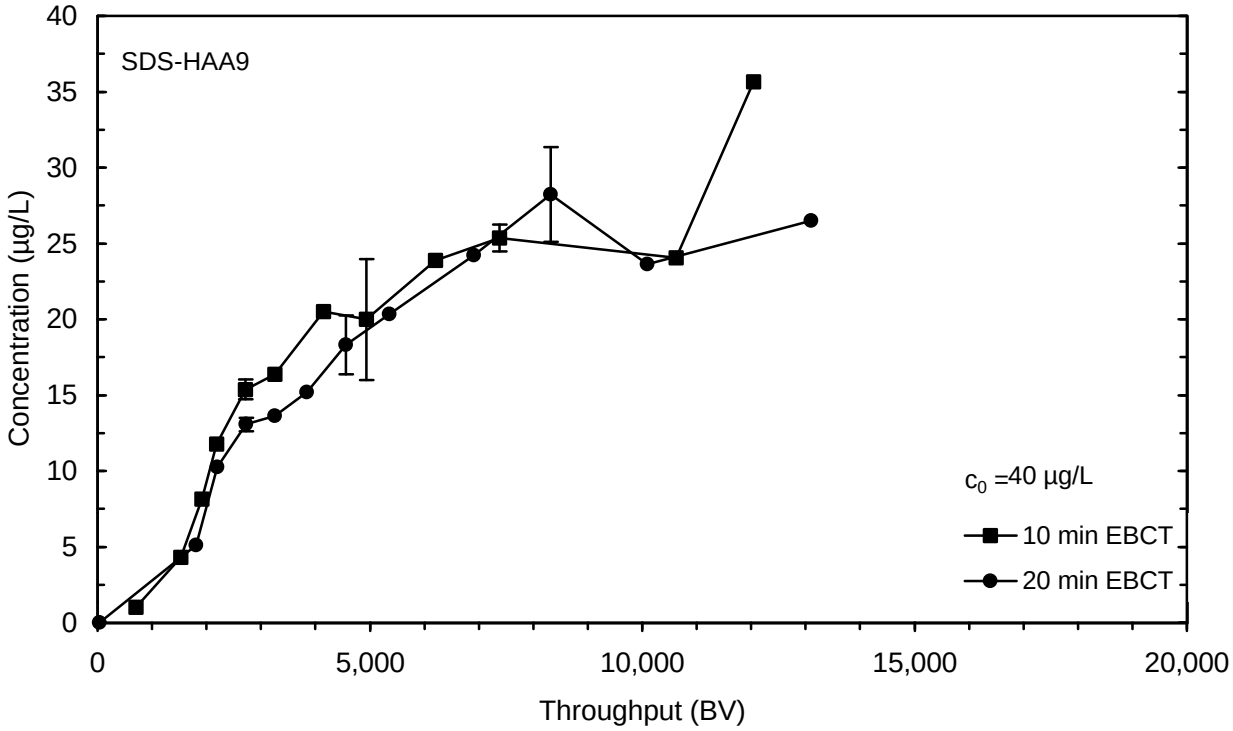


Figure 48 SDS-HAA9 breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

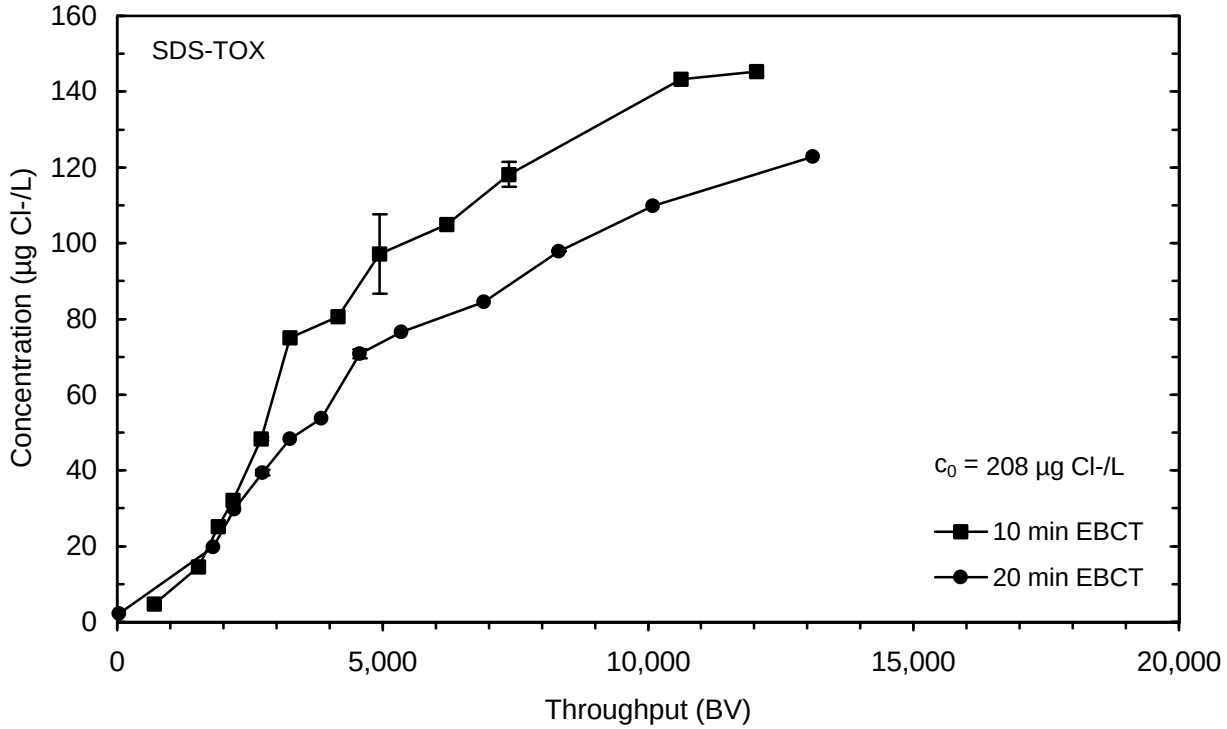


Figure 49 SDS-TOX breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

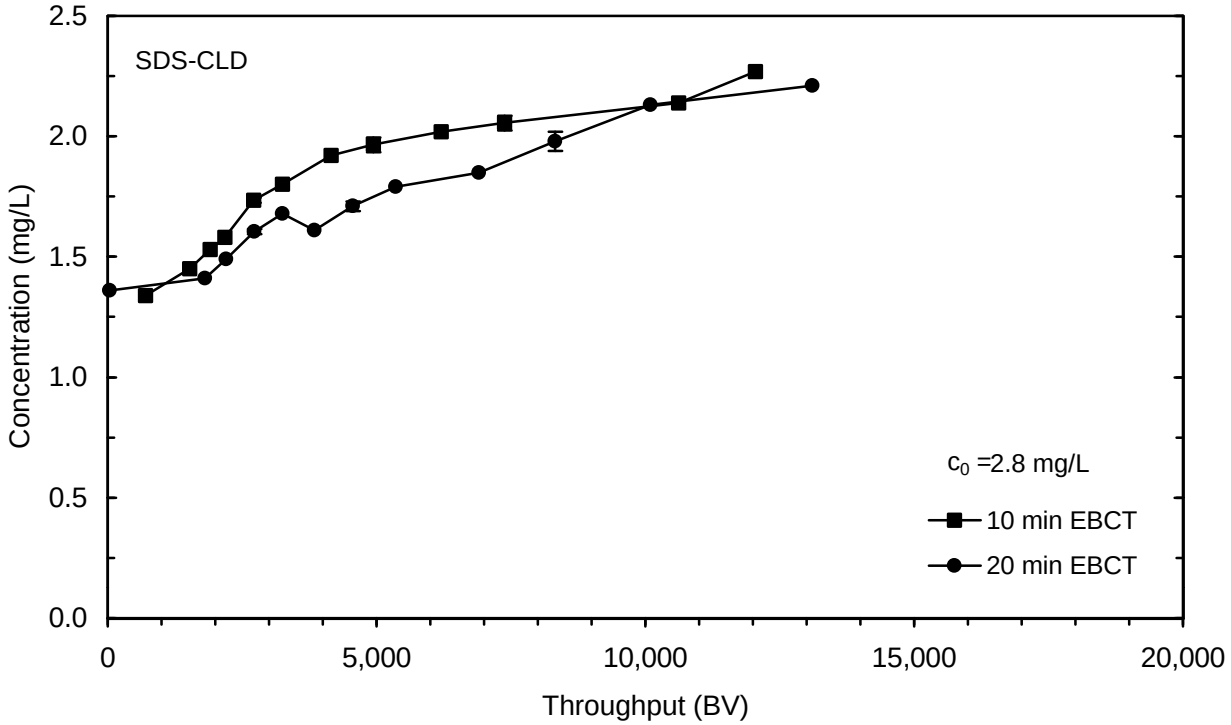


Figure 50 SDS-CLD breakthrough for 10 and 20 minute EBCT contactors during session 1 (February), plotted as throughput in bed volumes treated

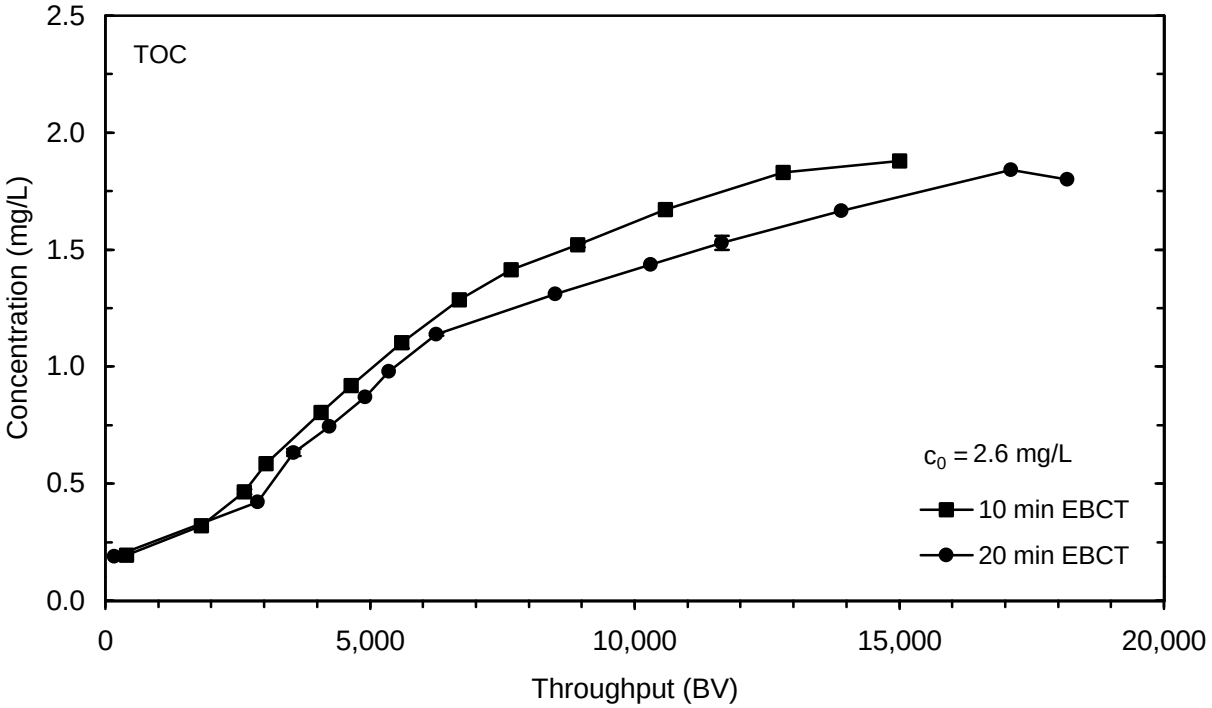


Figure 51 TOC breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

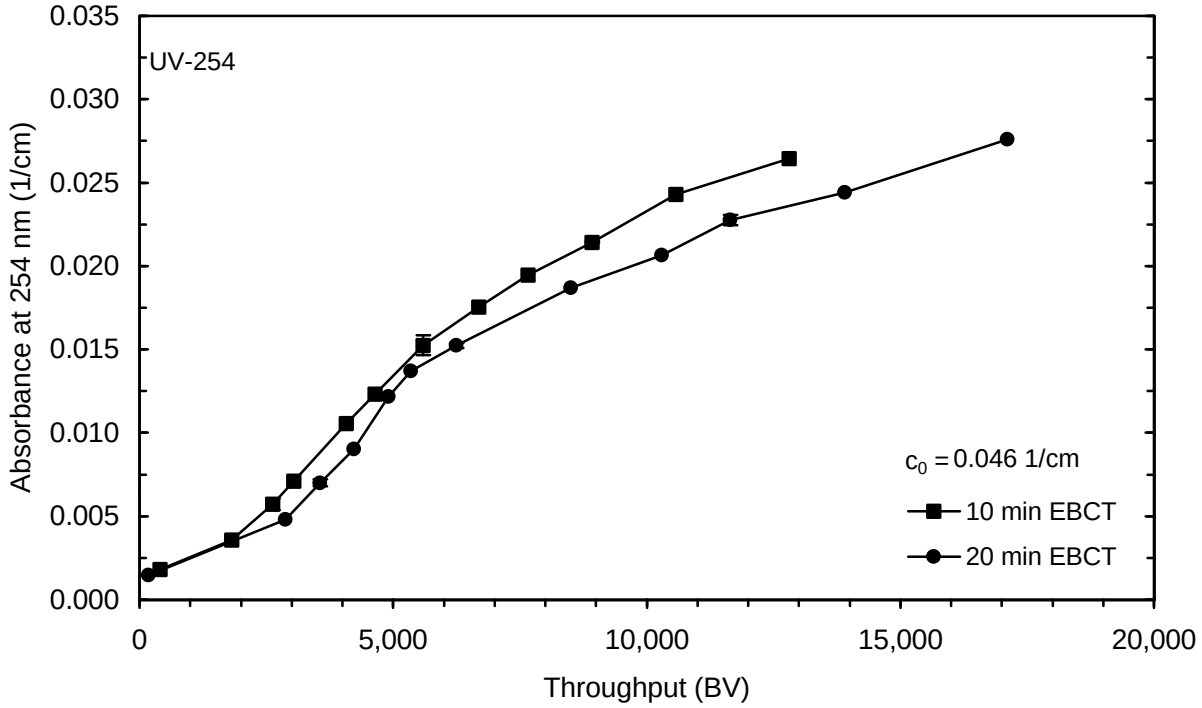


Figure 52 UV-254 breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

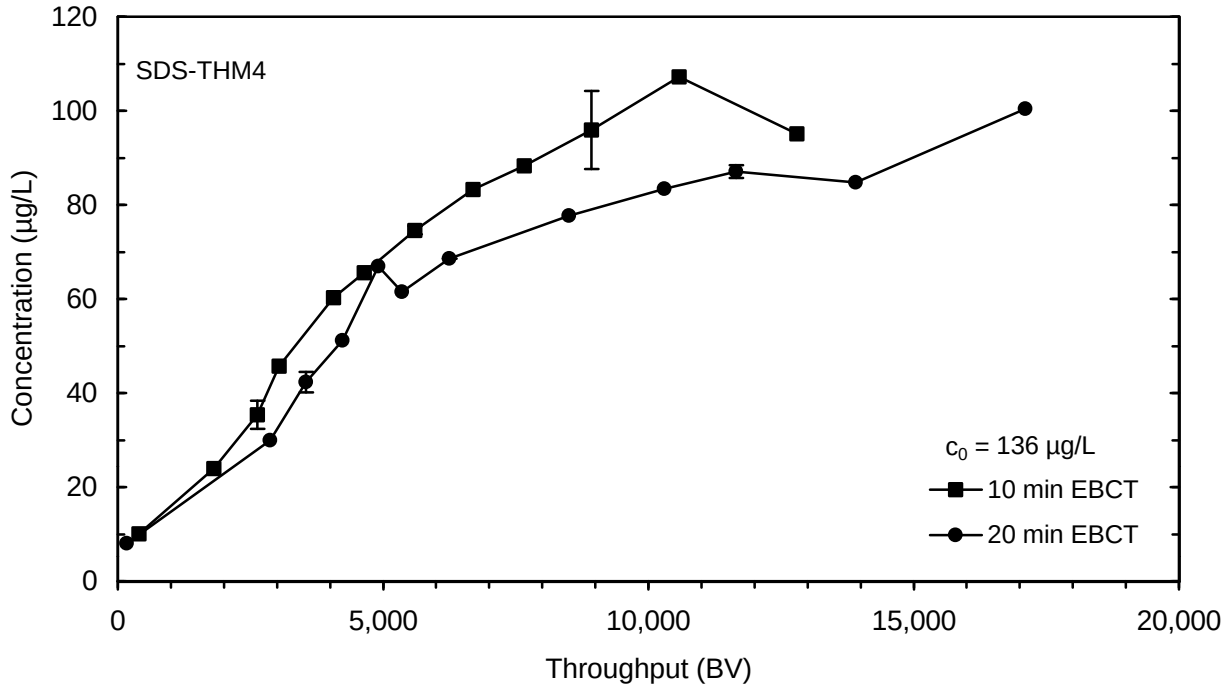


Figure 53 SDS-THM4 breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

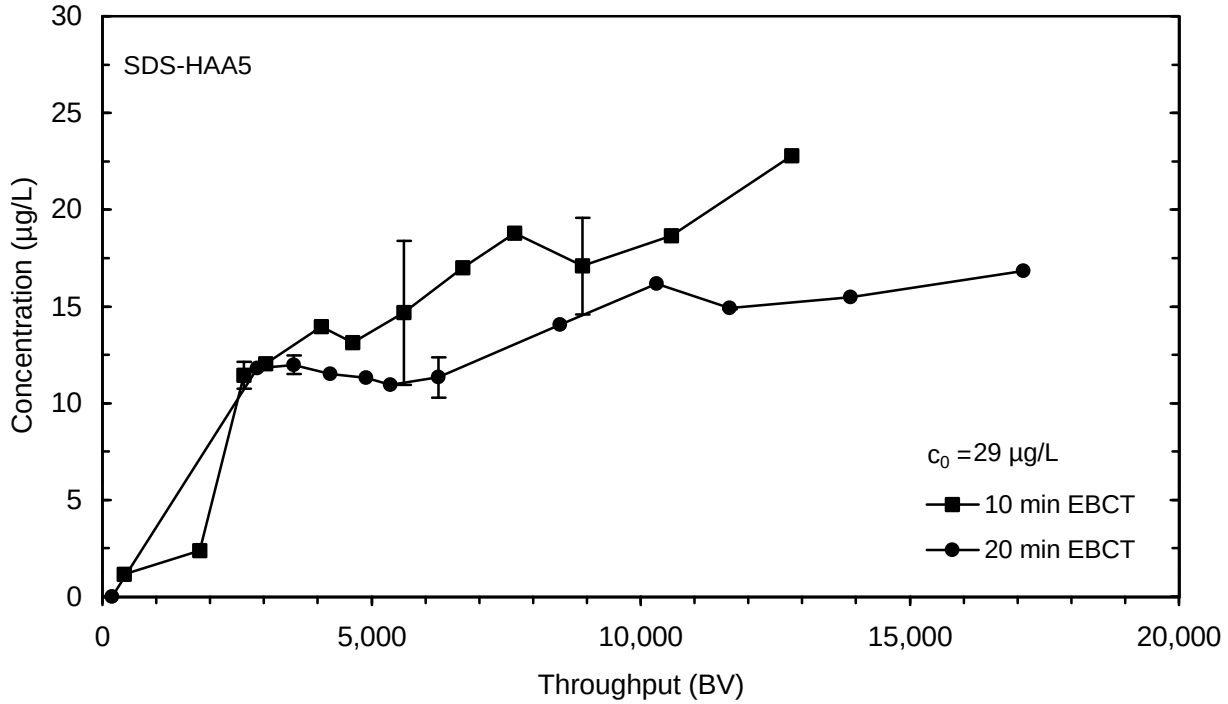


Figure 54 SDS-HAA5 breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

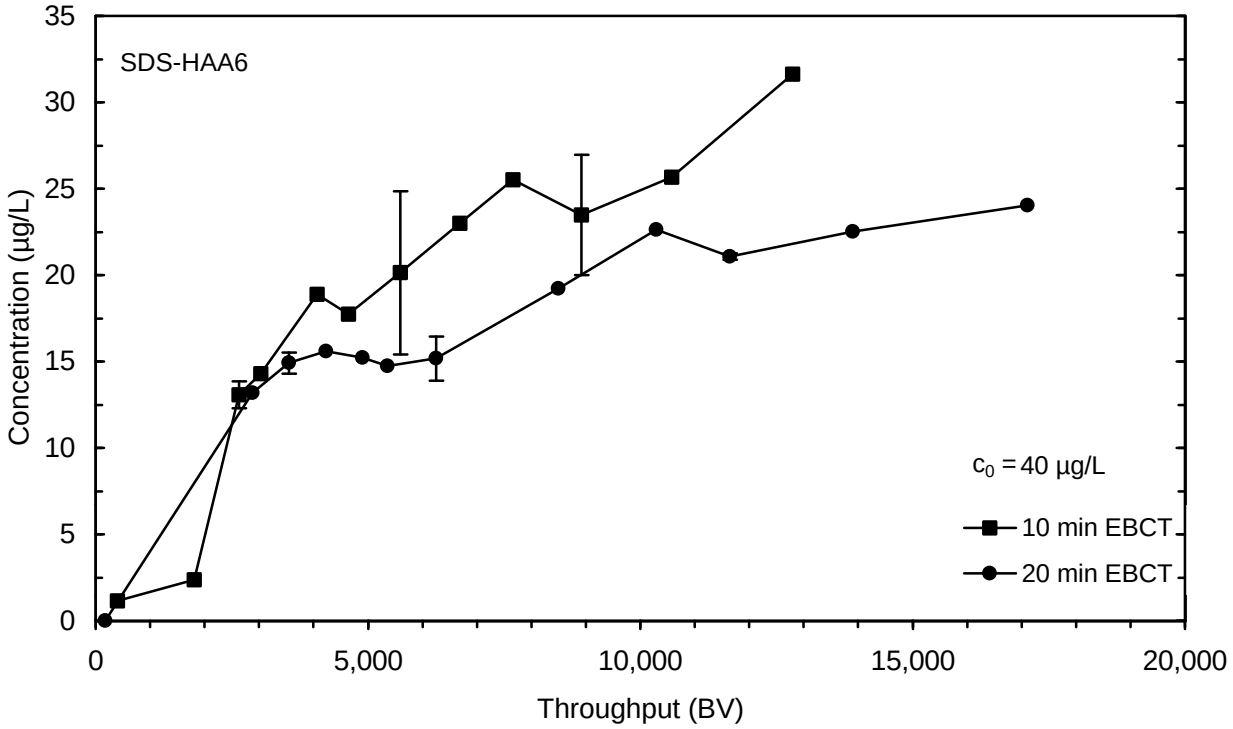


Figure 55 SDS-HAA6 breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

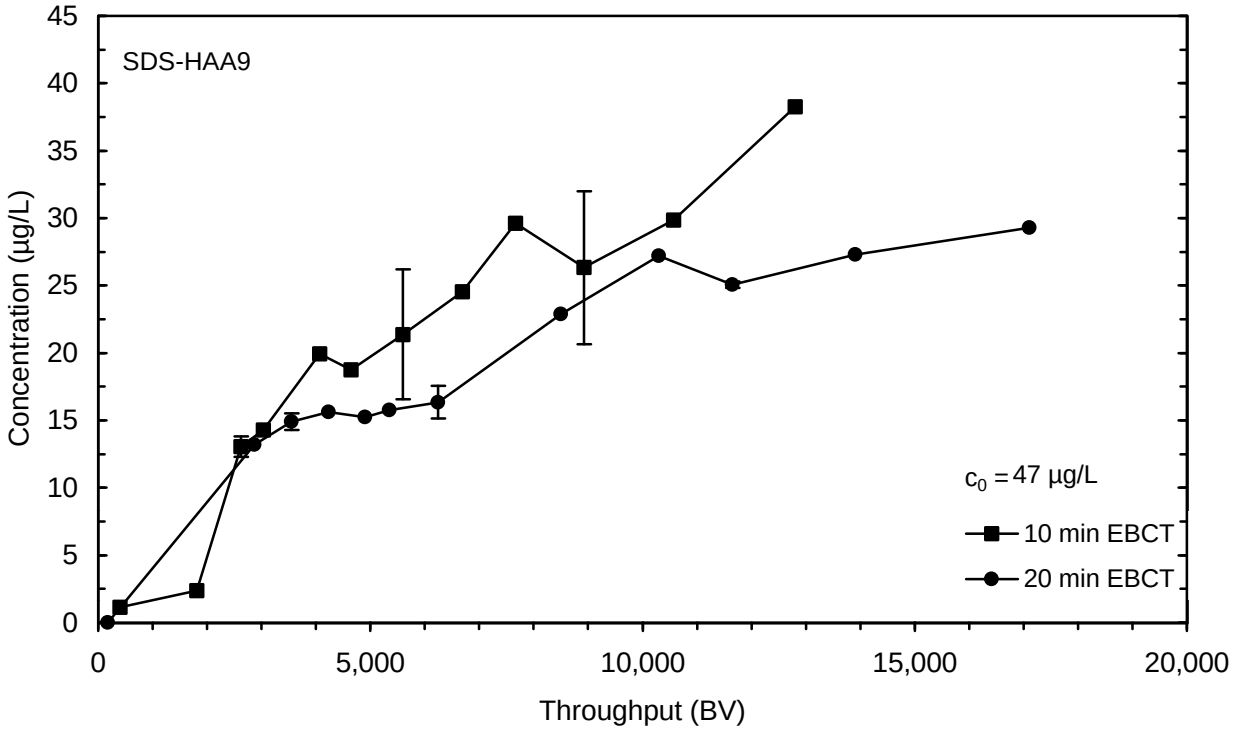


Figure 56 SDS-HAA9 breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

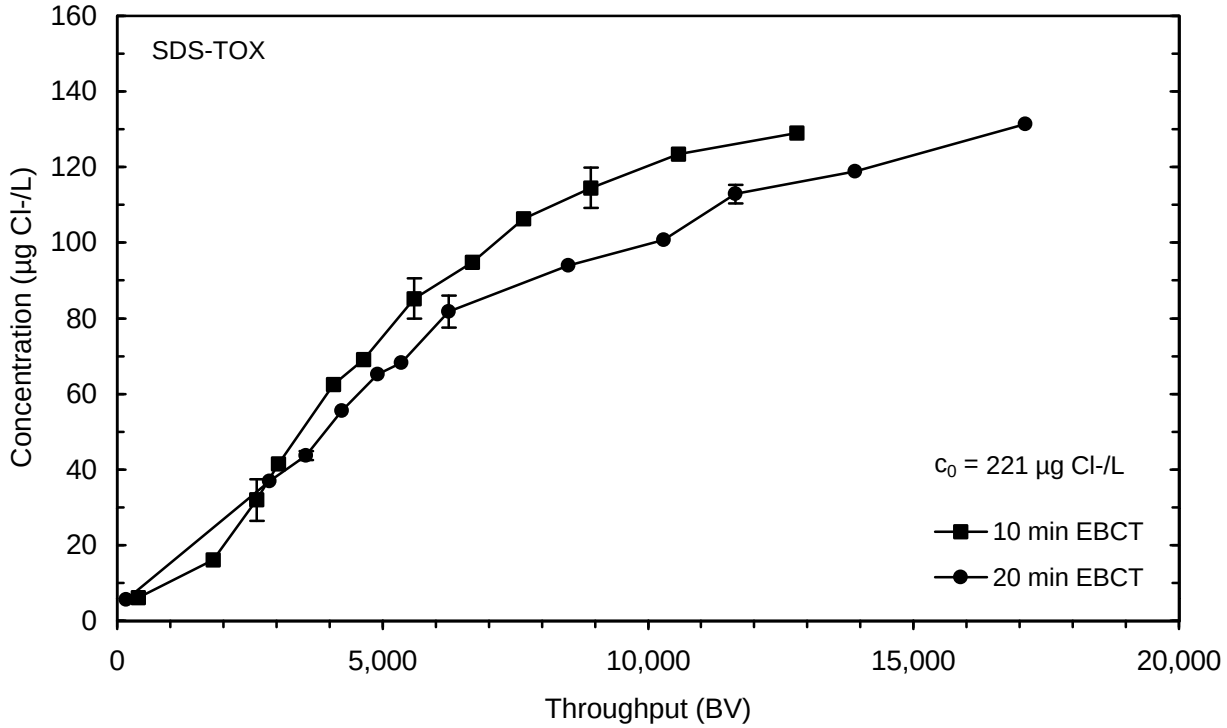


Figure 57 SDS-TOX breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

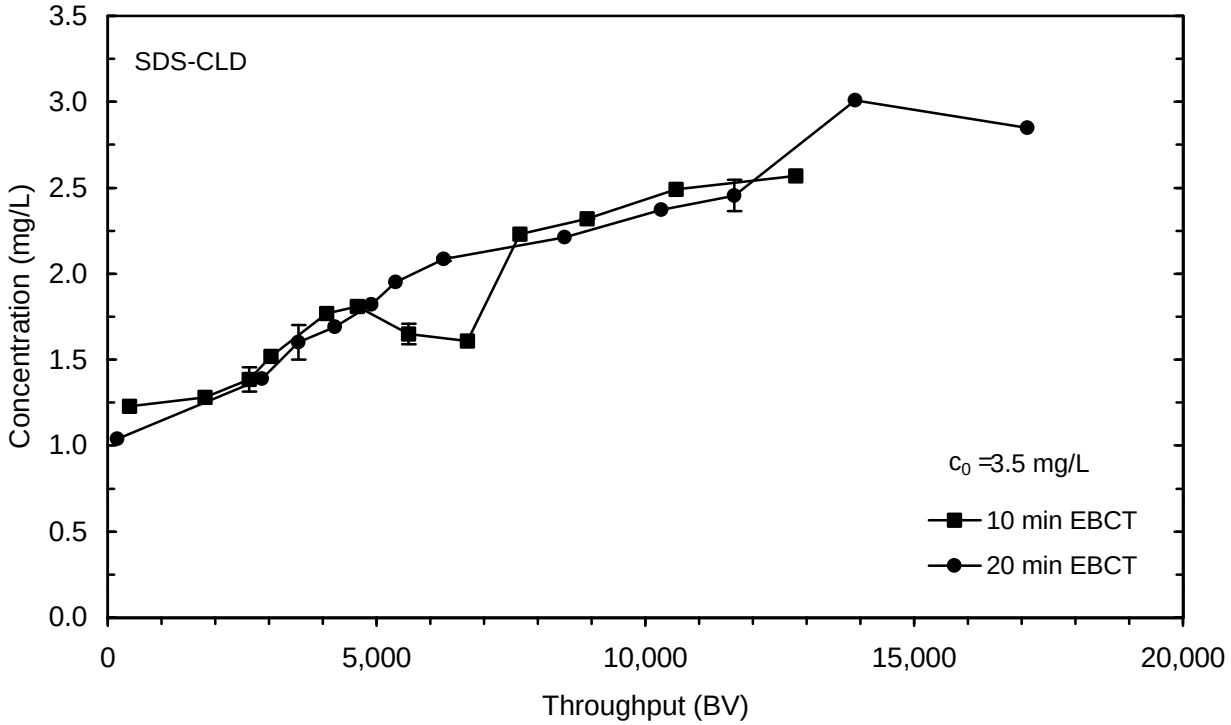


Figure 58 SDS-CLD breakthrough for 10 and 20 minute EBCT contactors during session 2 (May), plotted as throughput in bed volumes treated

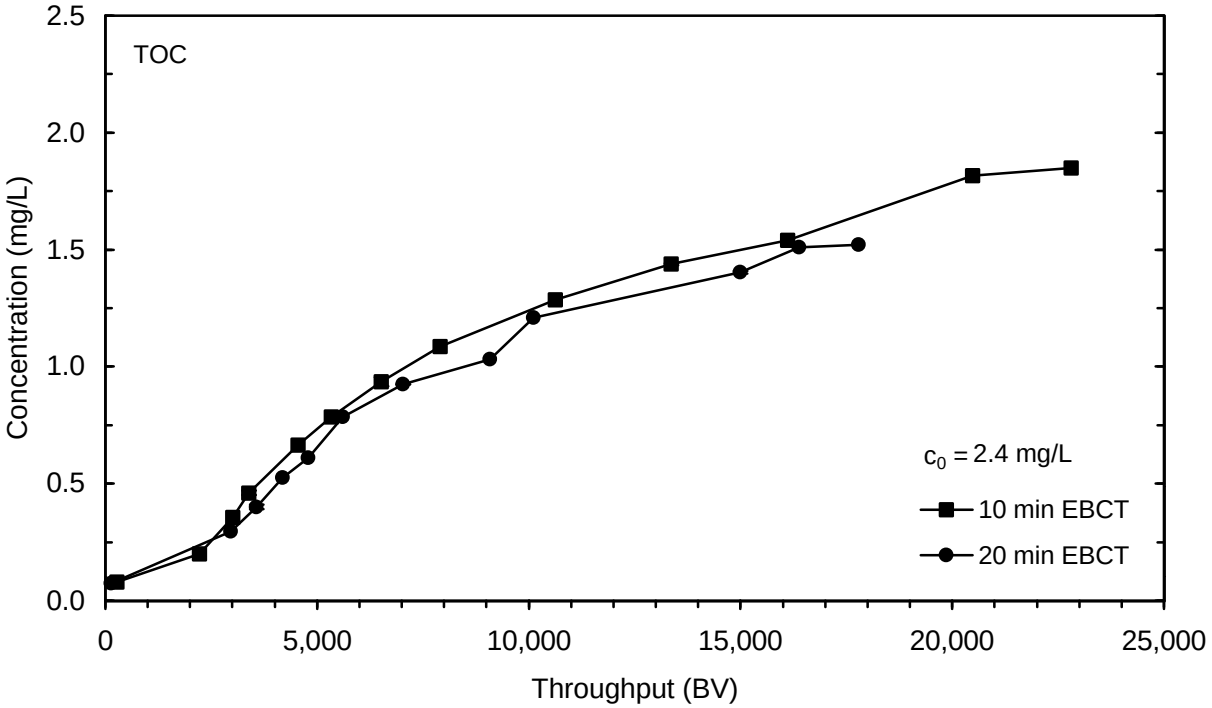


Figure 59 TOC breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

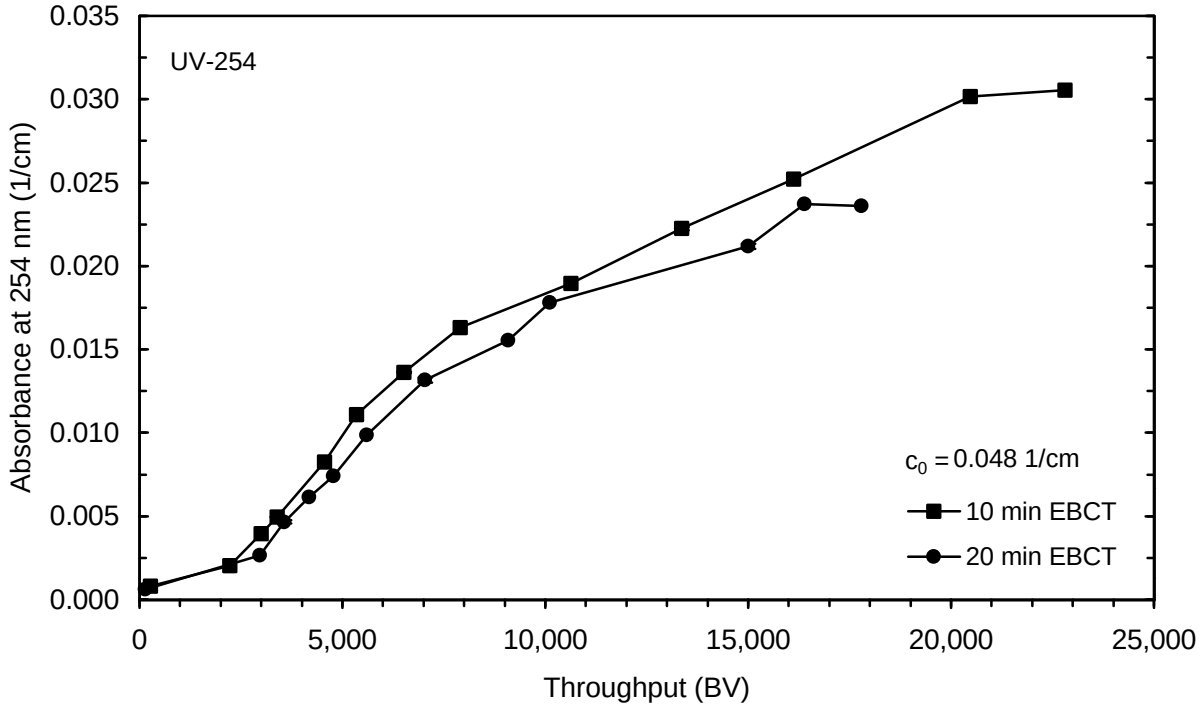


Figure 60 UV-254 breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

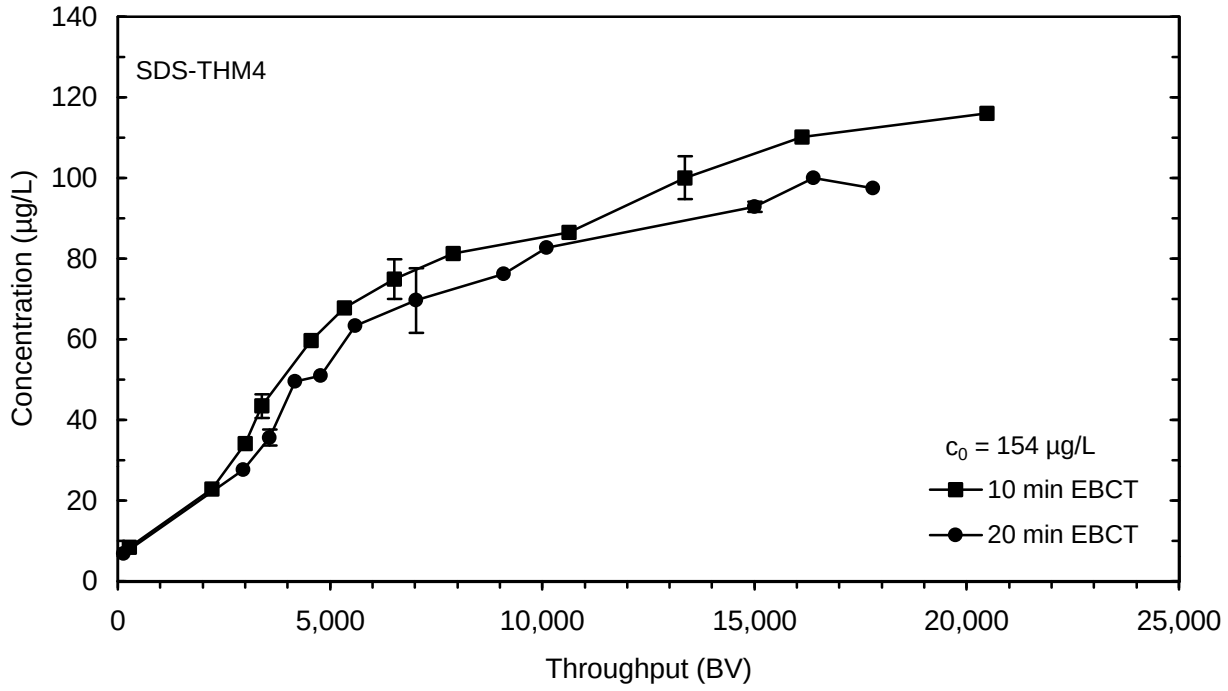


Figure 61 SDS-THM4 breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

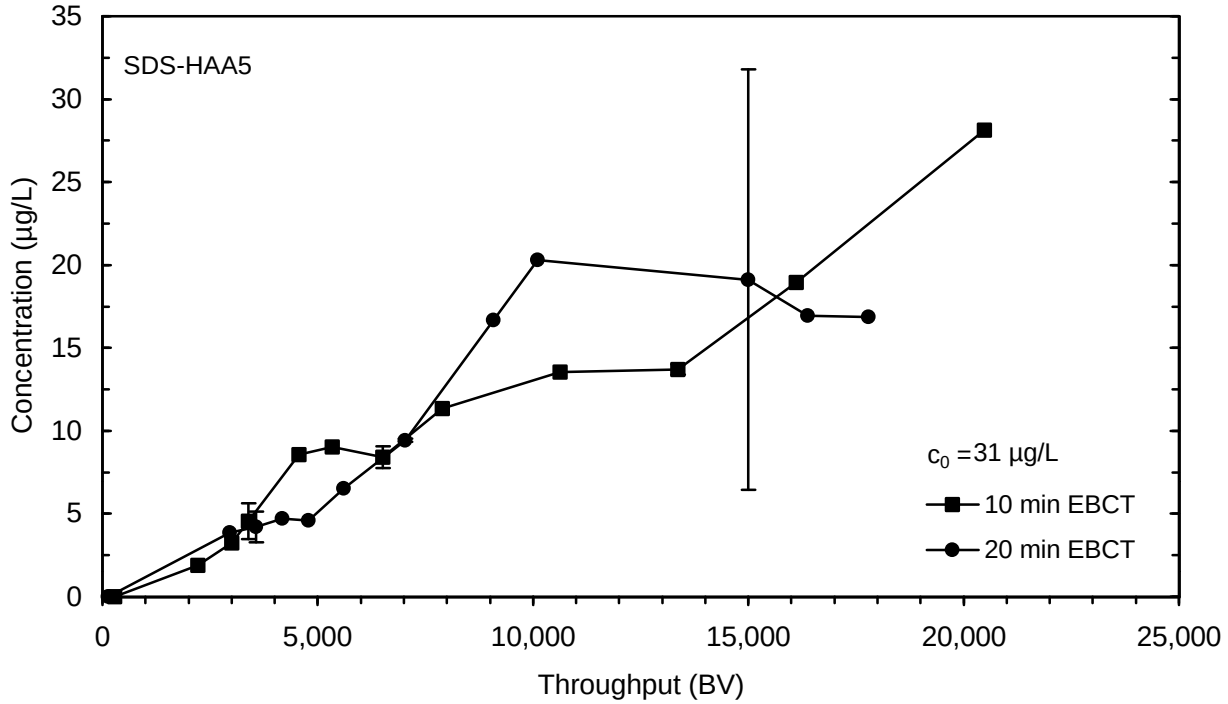


Figure 62 SDS-HAA5 breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

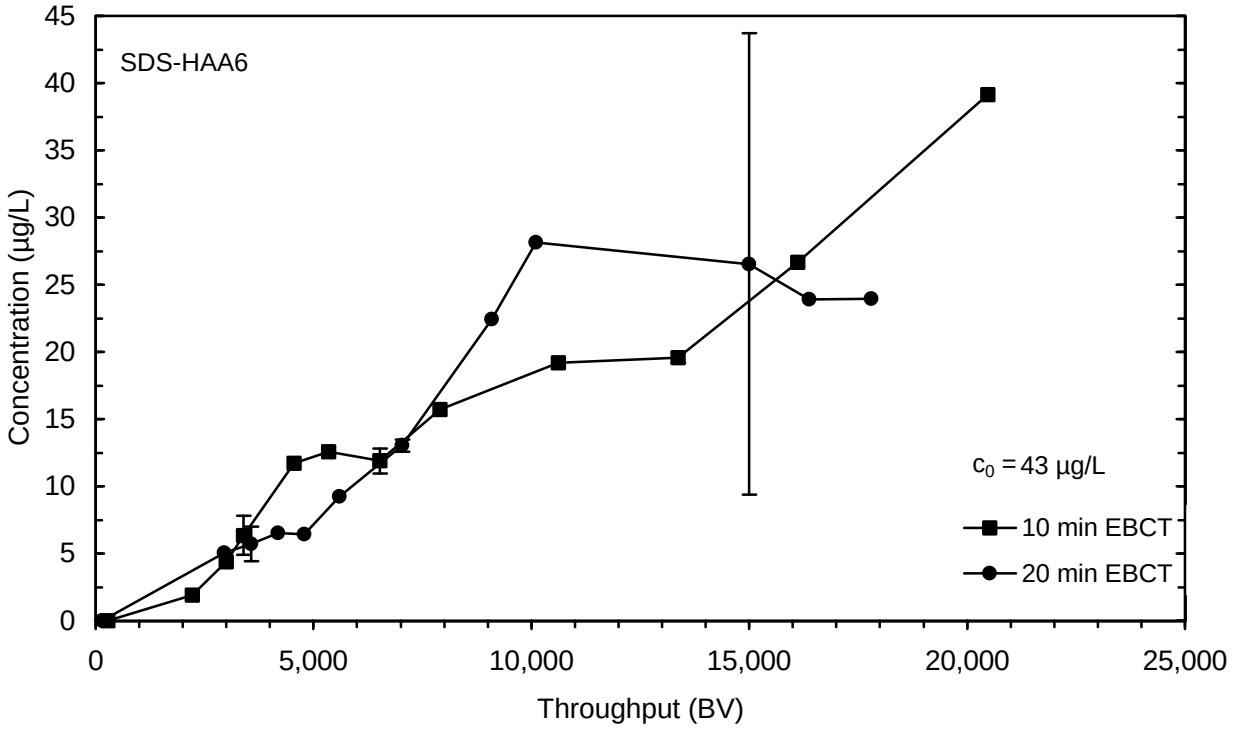


Figure 63 SDS-HAA6 breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

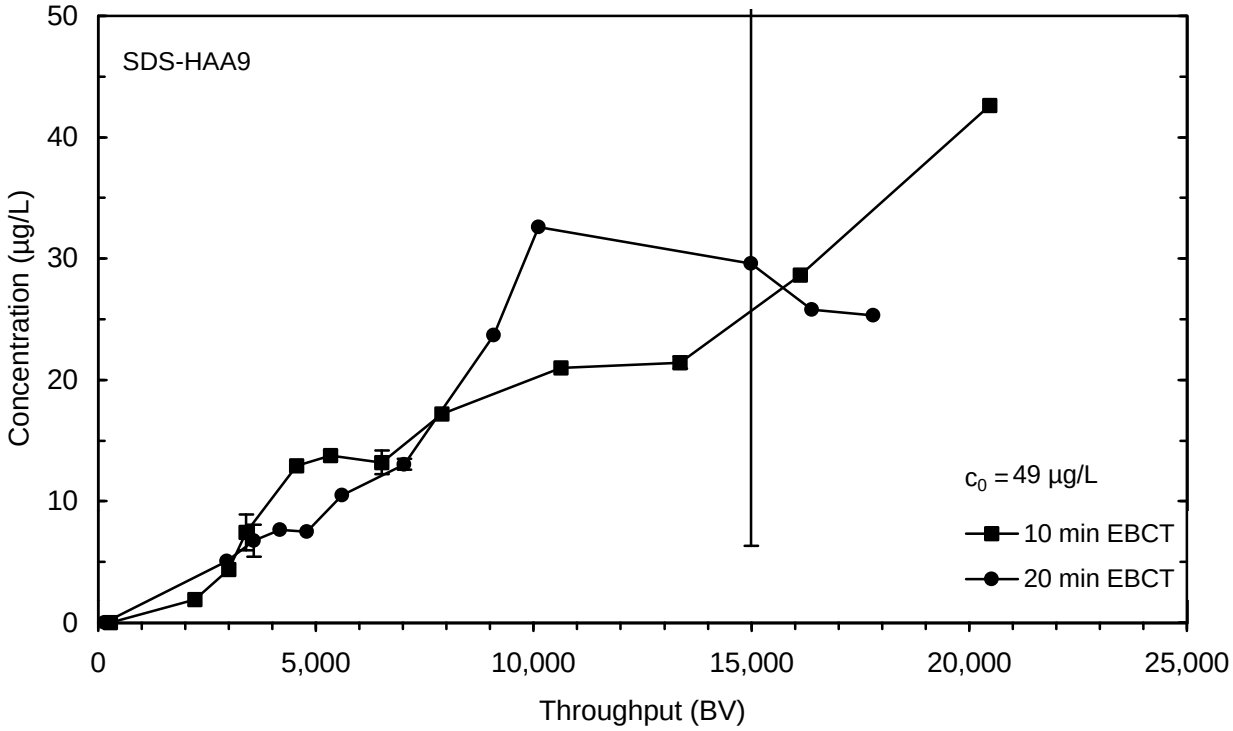


Figure 64 SDS-HAA9 breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

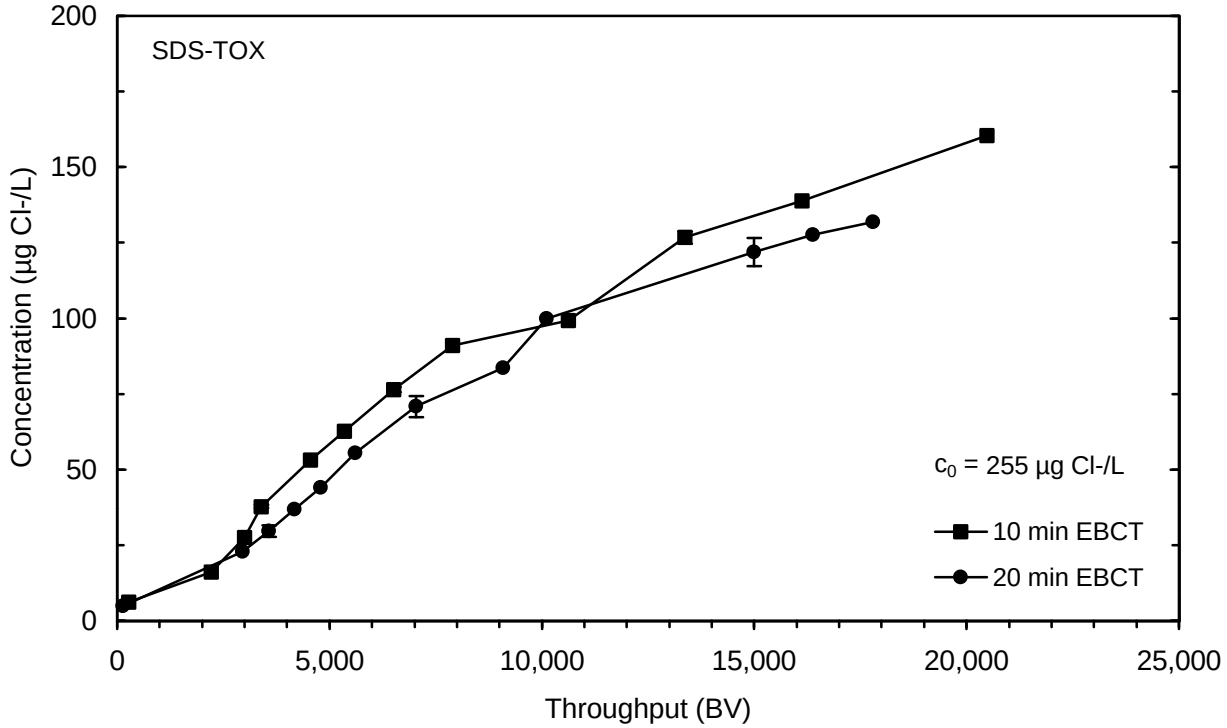


Figure 65 SDS-TOX breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

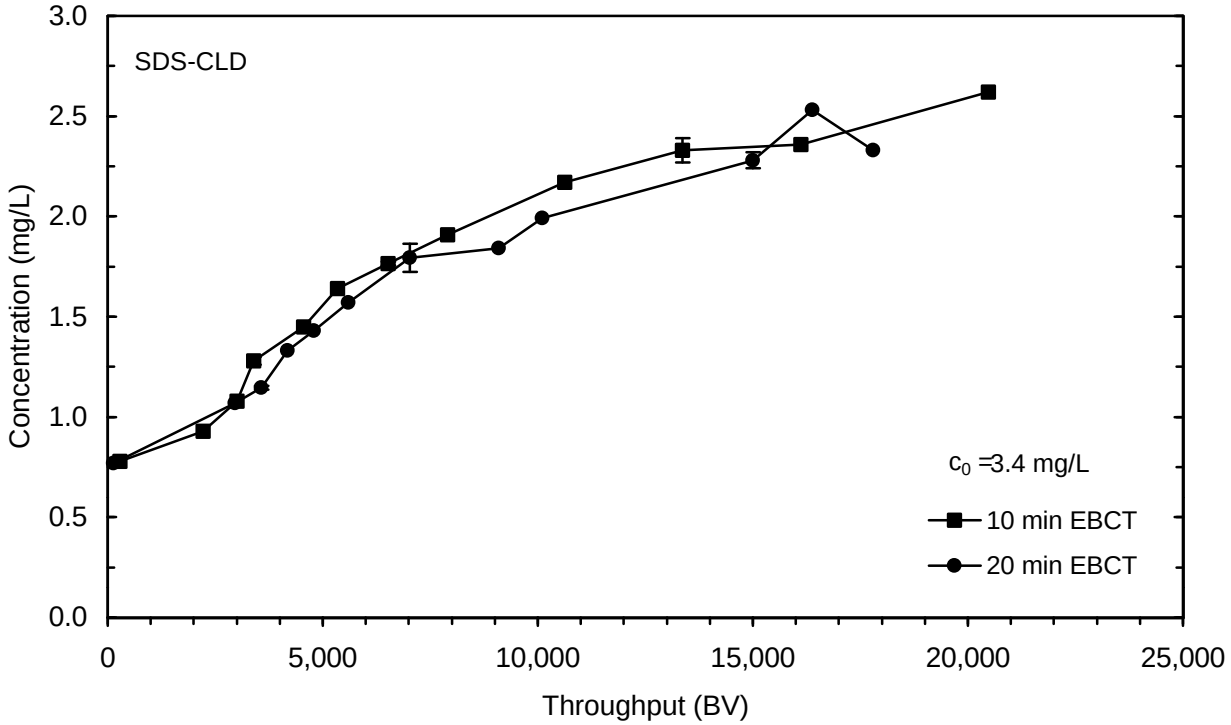


Figure 66 SDS-CLD breakthrough for 10 and 20 minute EBCT contactors during session 3 (September), plotted as throughput in bed volumes treated

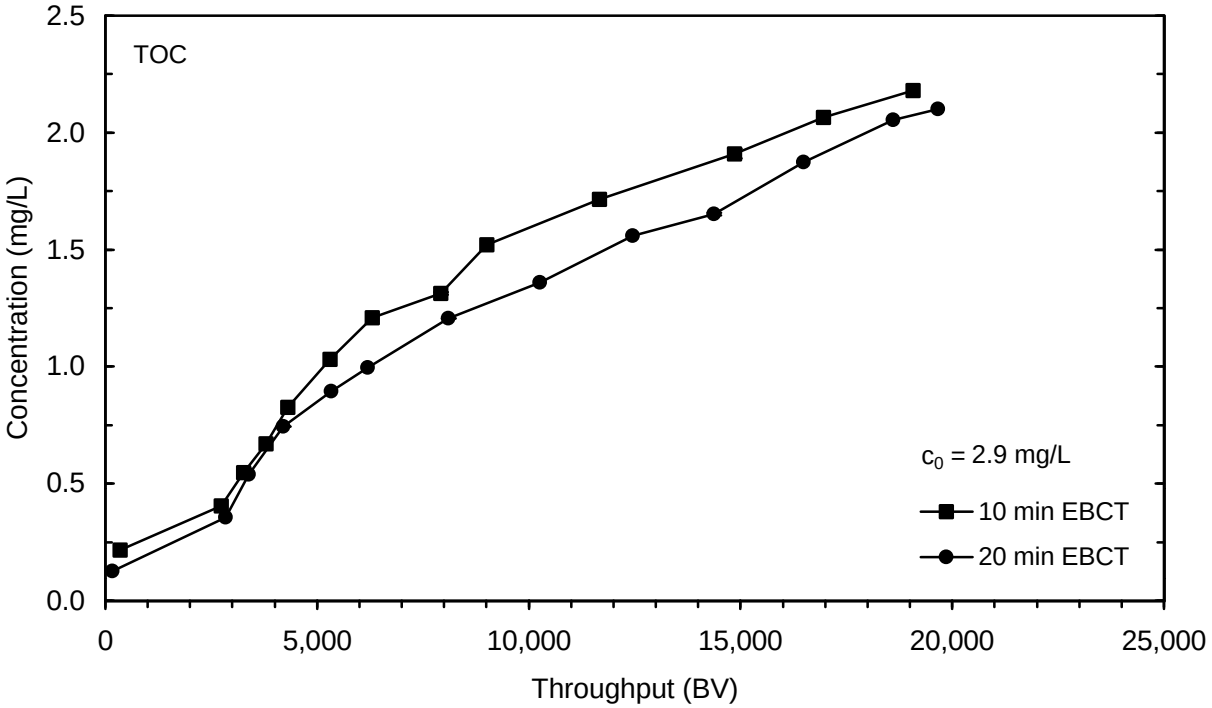


Figure 67 TOC breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

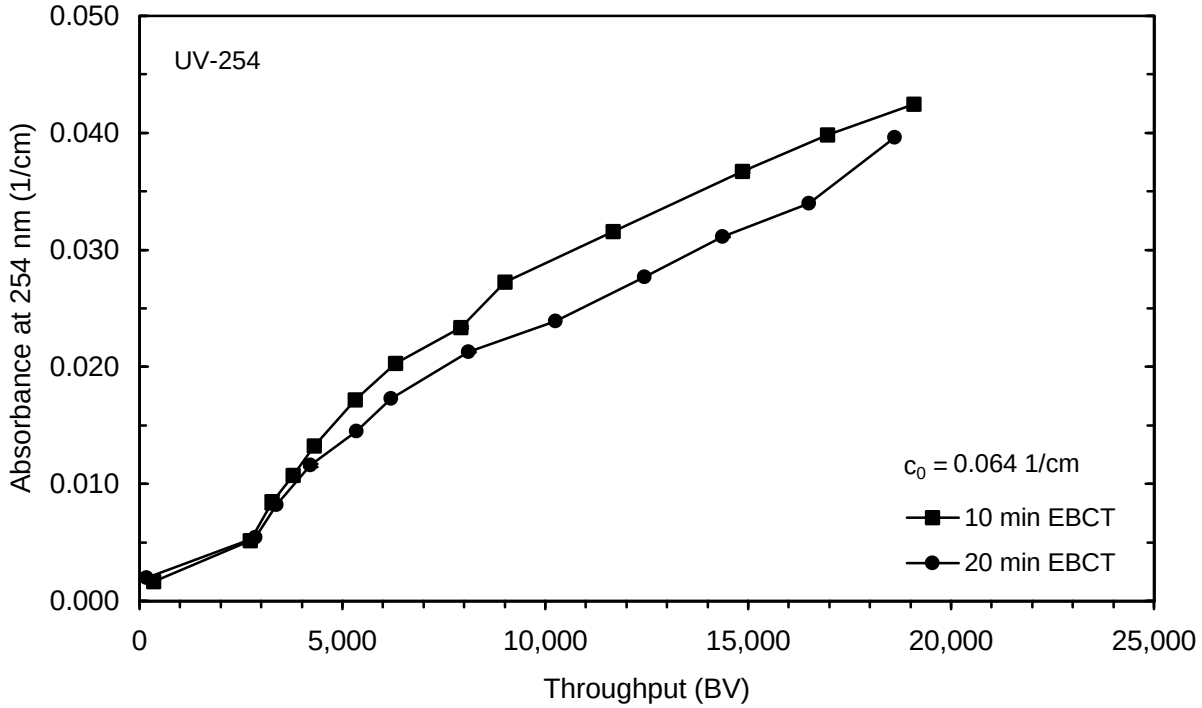


Figure 68 UV-254 breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

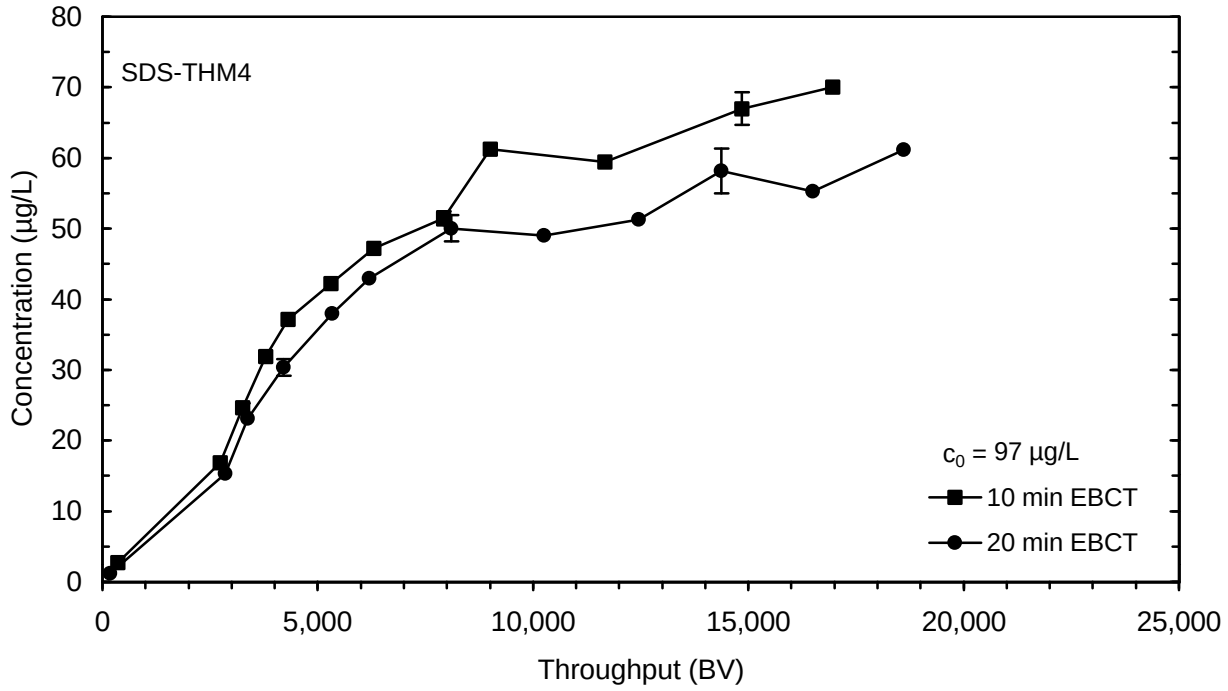


Figure 69 SDS-THM4 breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

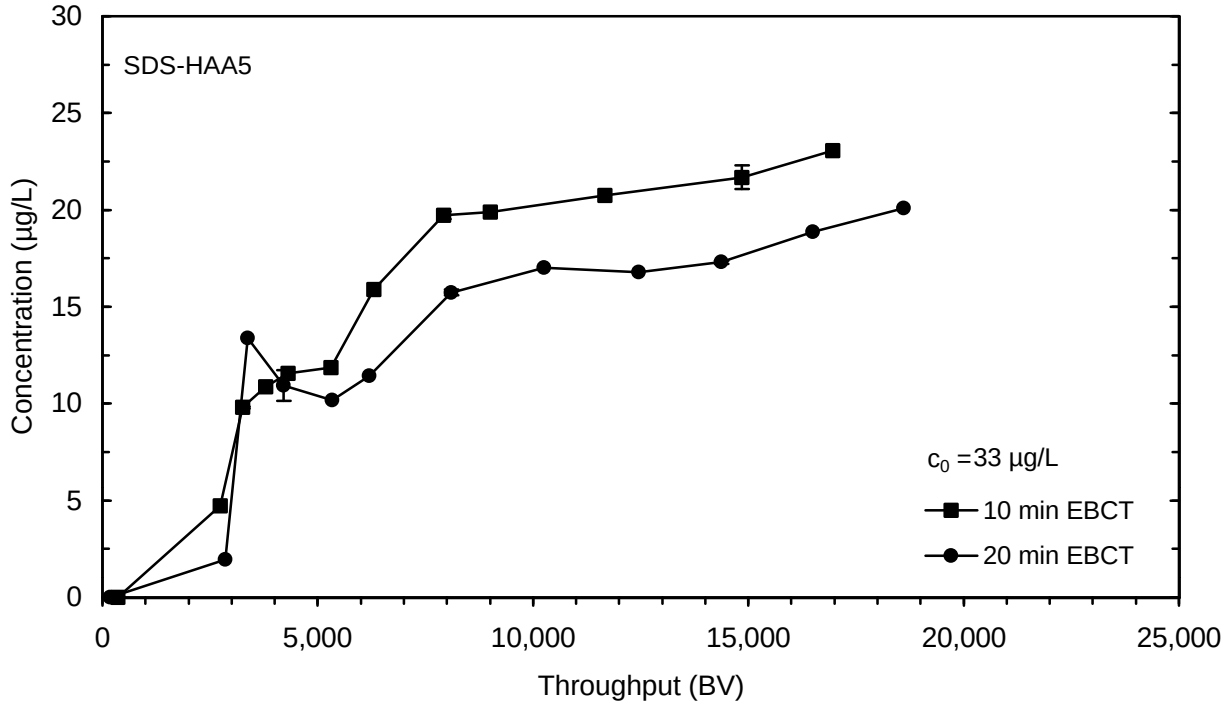


Figure 70 SDS-HAA5 breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

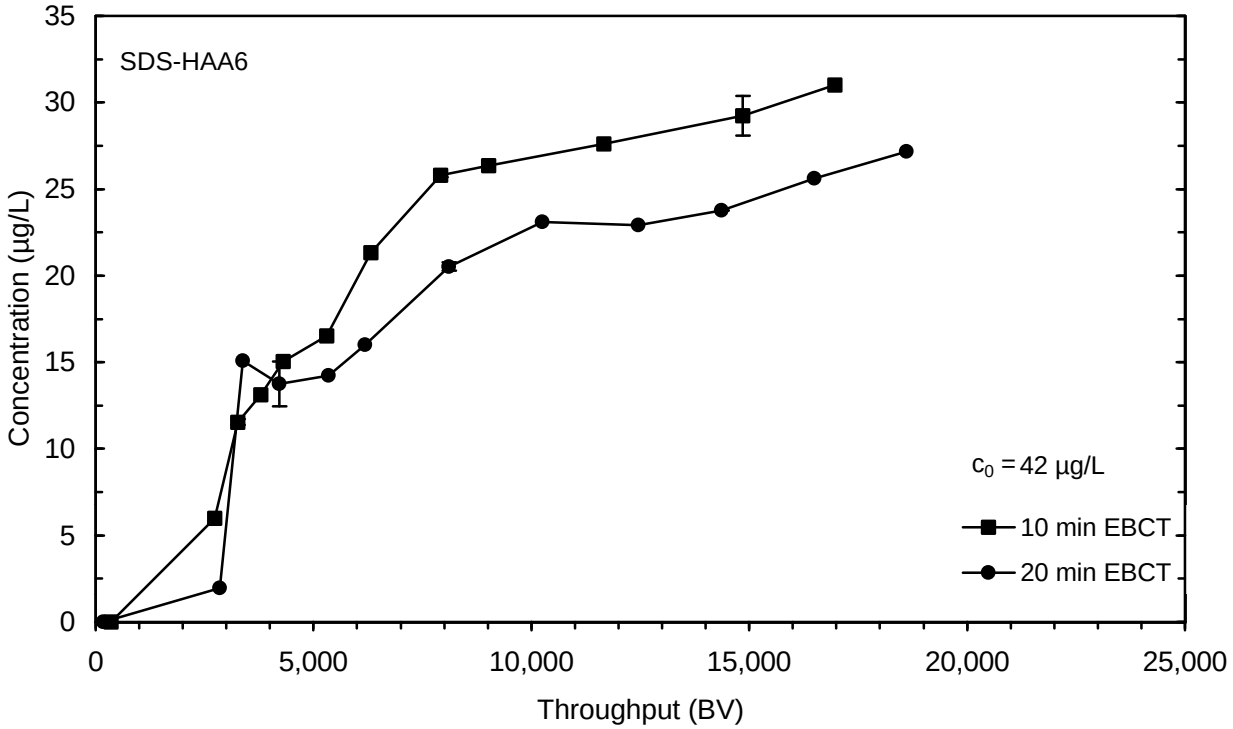


Figure 71 SDS-HAA6 breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

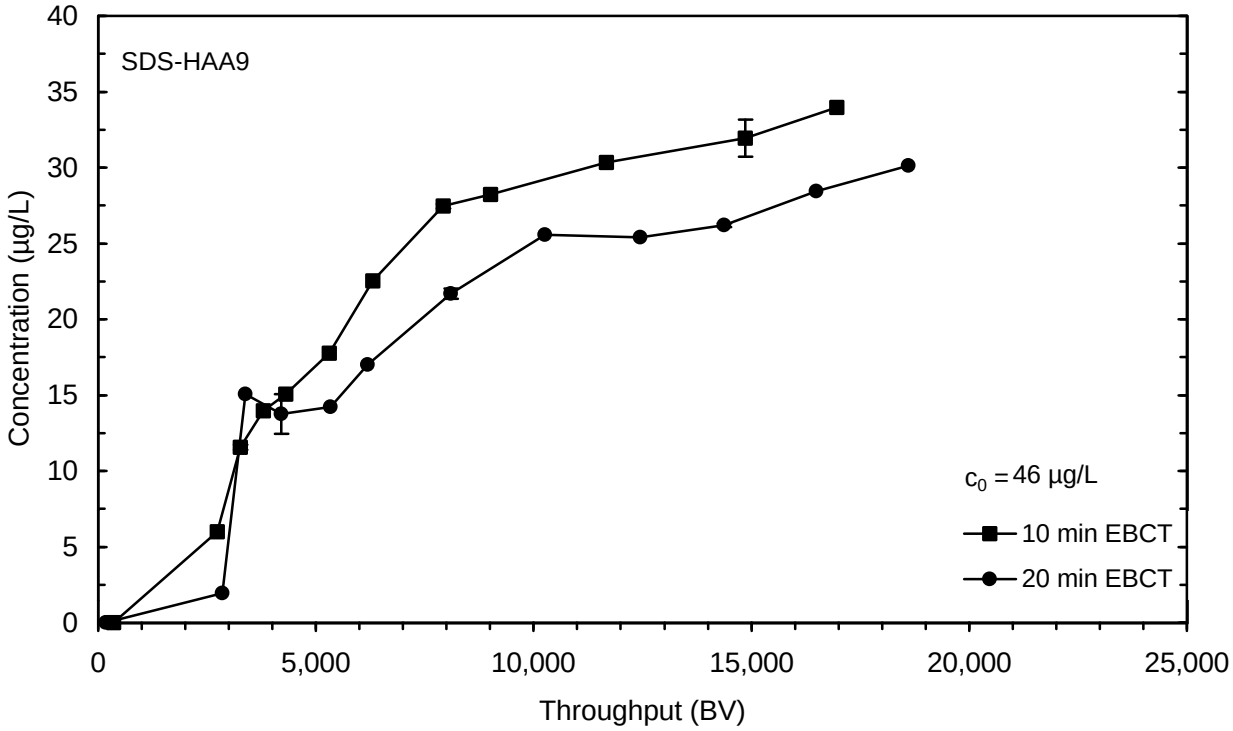


Figure 72 SDS-HAA9 breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

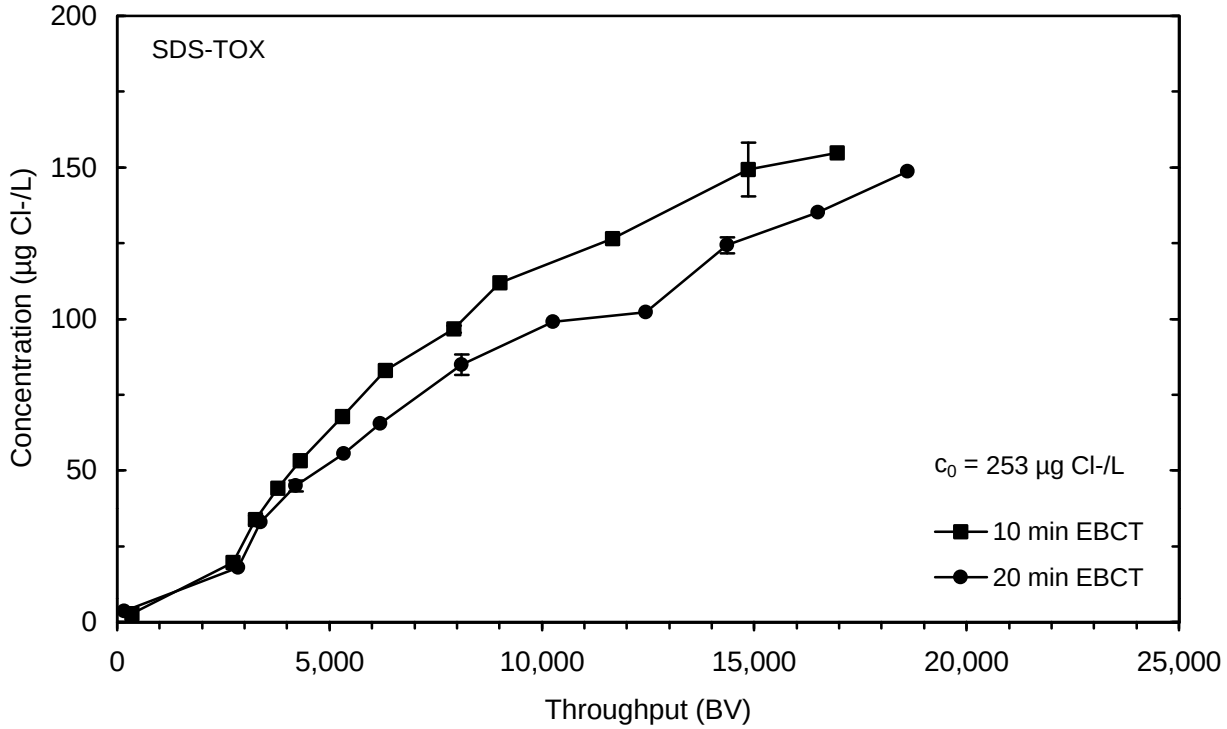


Figure 73 SDS-TOX breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

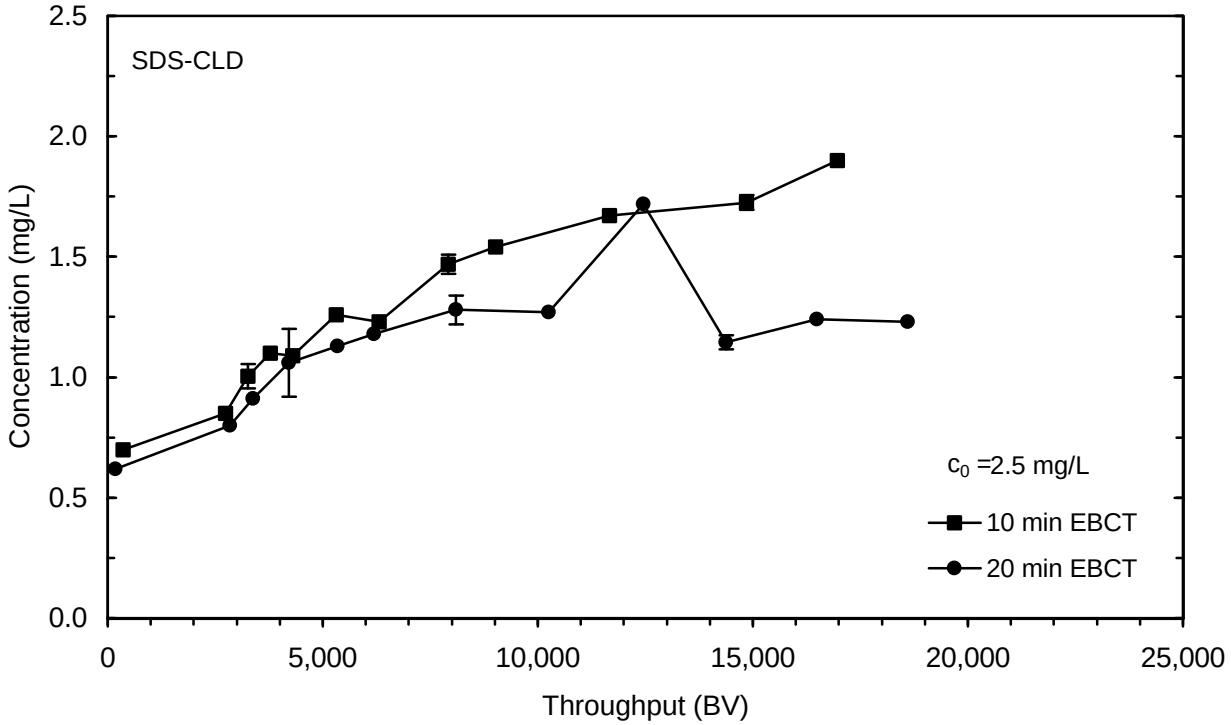


Figure 74 SDS-CLD breakthrough for 10 and 20 minute EBCT contactors during session 4 (November), plotted as throughput in bed volumes treated

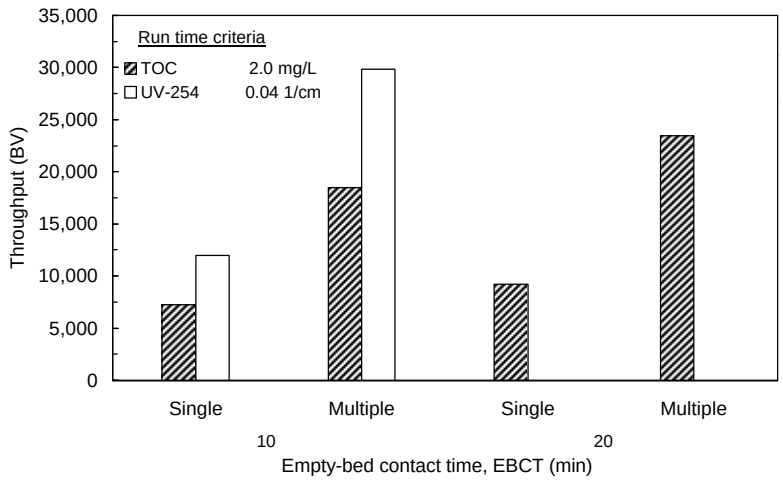


Figure 75 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 1 (February)

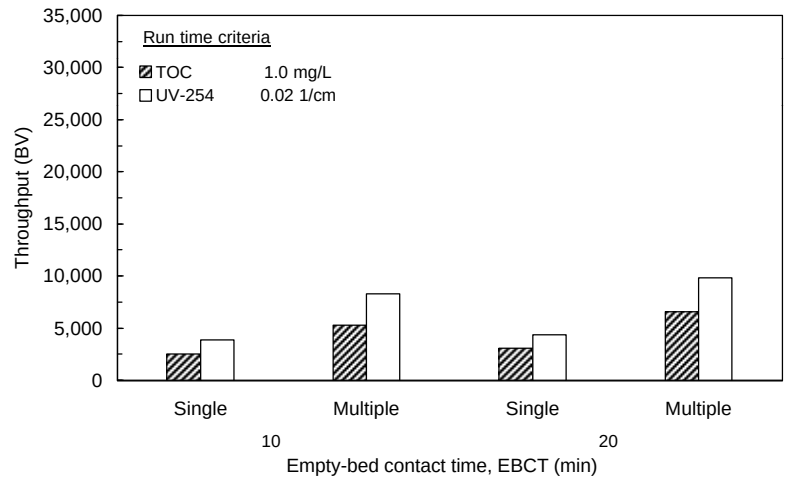


Figure 76 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 1 (February)

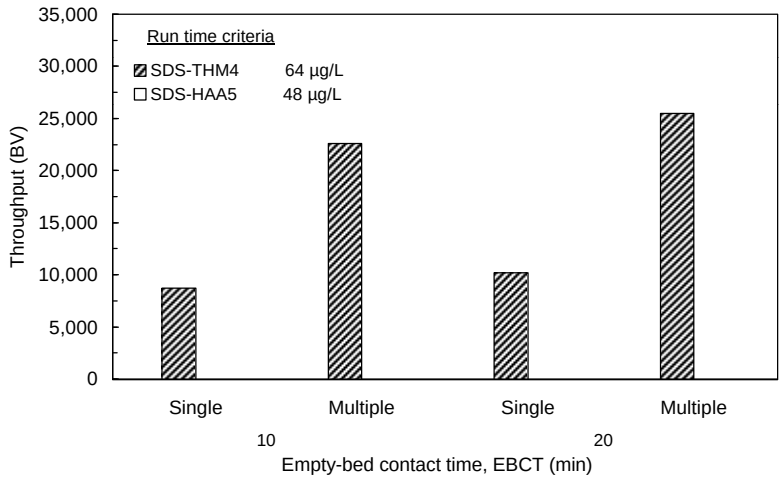


Figure 77 Throughput based on single contactors and effluent blending for Stage 1 SDS-THM4 and SDS-HAA5 effluent criteria during session 1 (February)

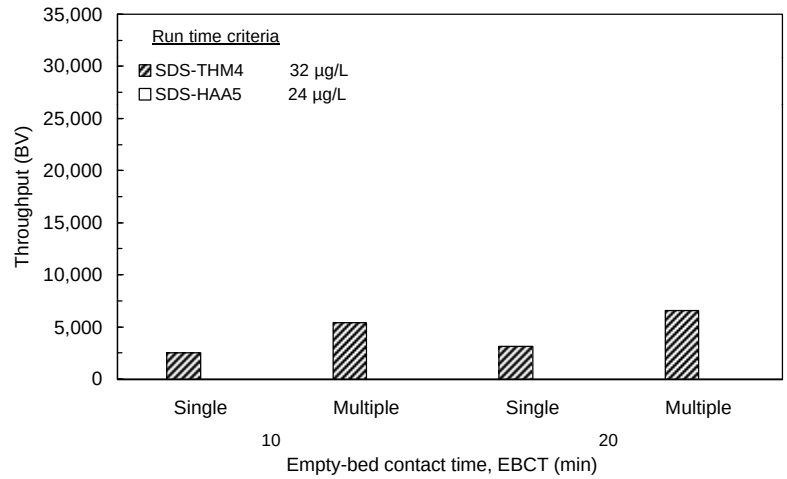


Figure 78 Throughput based on single contactors and effluent blending for Stage 2 SDS-THM4 and SDS-HAA5 effluent criteria during session 1 (February)

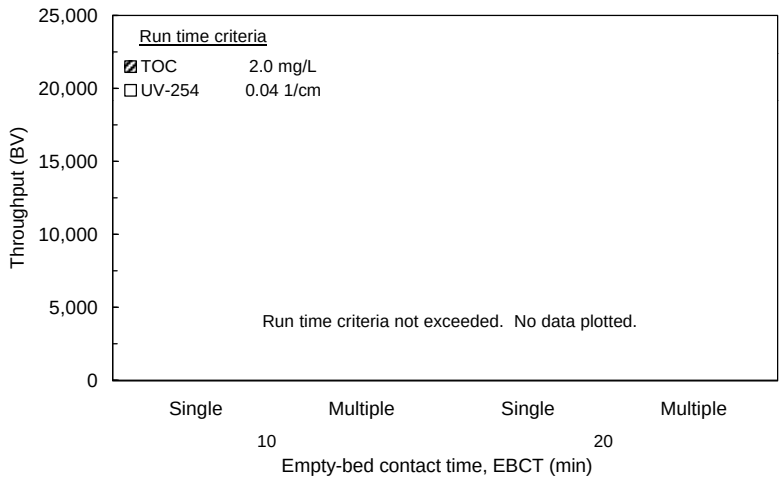


Figure 79 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 2 (May)

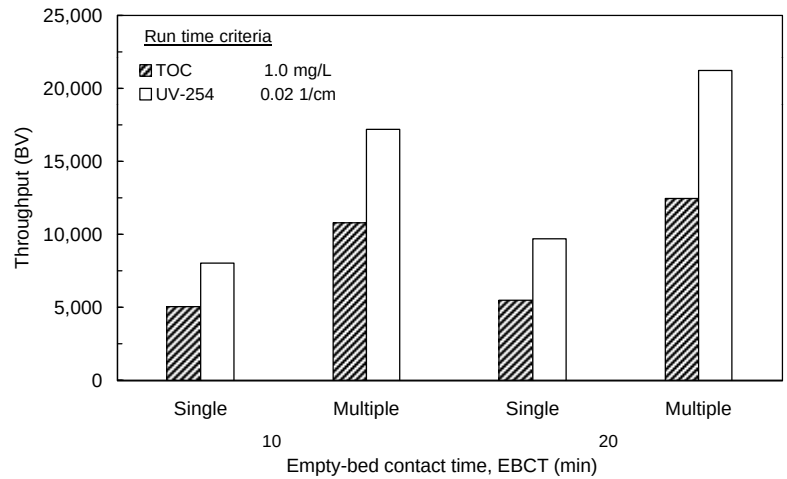


Figure 80 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 2 (May)

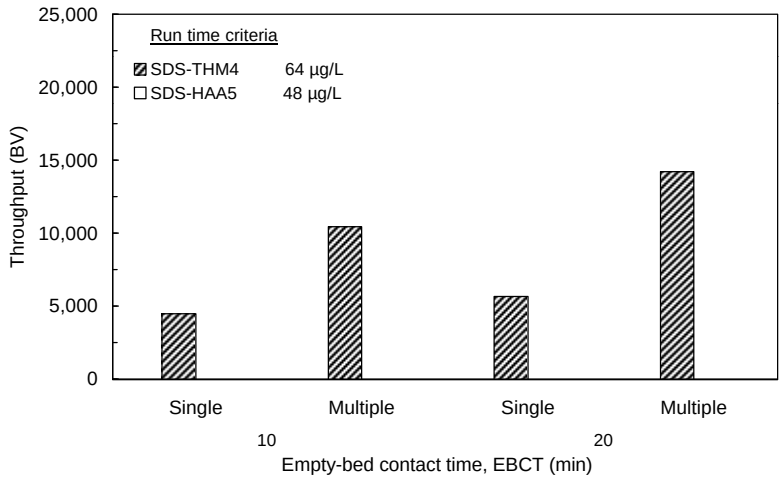


Figure 81 Throughput based on single contactors and effluent blending for Stage 1 SDS-THM4 and SDS-HAA5 effluent criteria during session 2 (May)

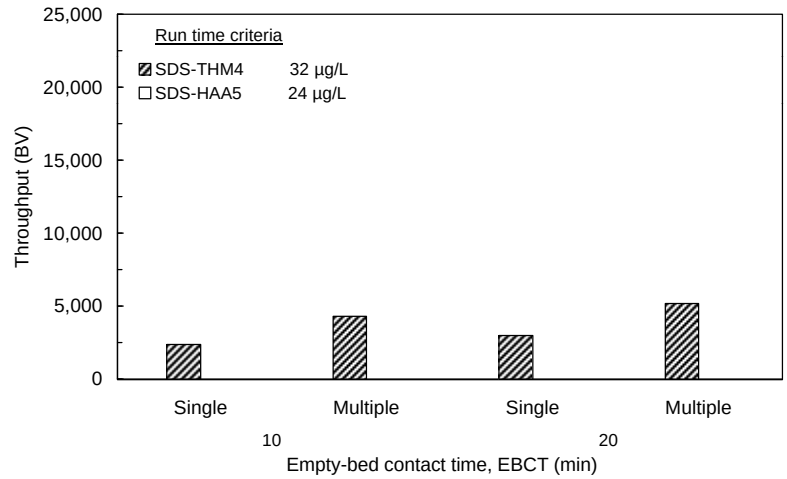


Figure 82 Throughput based on single contactors and effluent blending for Stage 2 SDS-THM4 and SDS-HAA5 effluent criteria during session 2 (May)

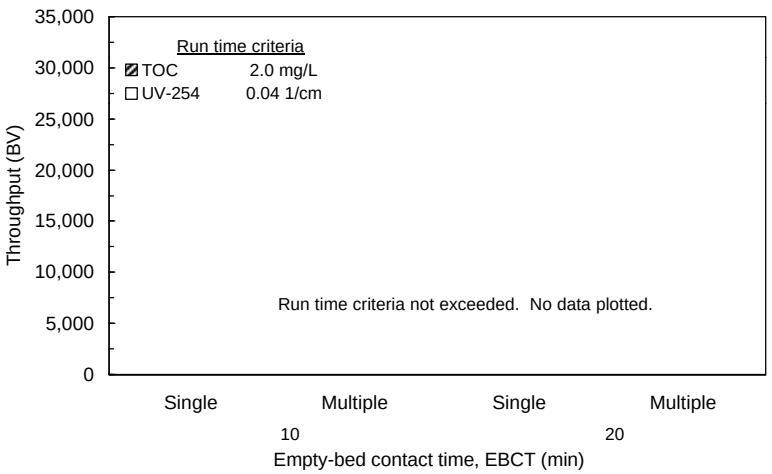


Figure 83 Throughput based on single and multiple contactor breakthrough for TOC and UV-254 effluent criteria (high) during session 3 (September)

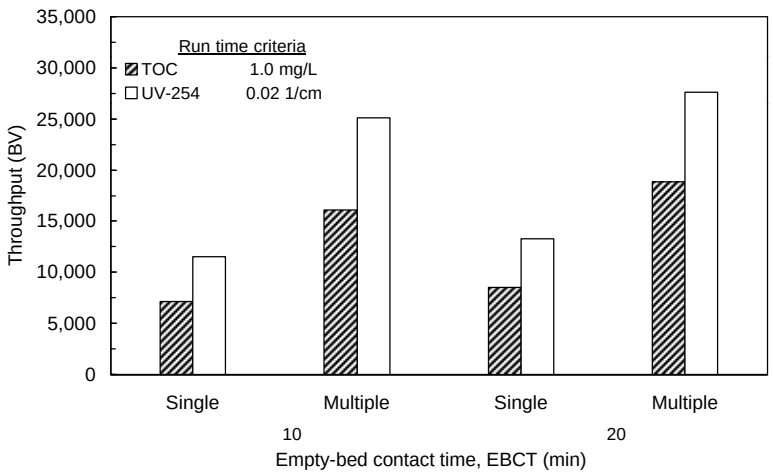


Figure 84 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 3 (September)

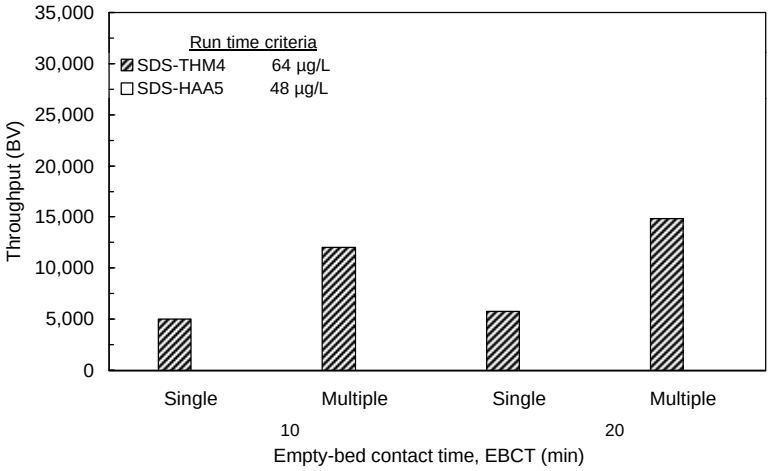


Figure 85 Throughput based on single contactors and effluent blending for Stage 1 SDS-THM4 and SDS-HAA5 effluent criteria during session 3 (September)

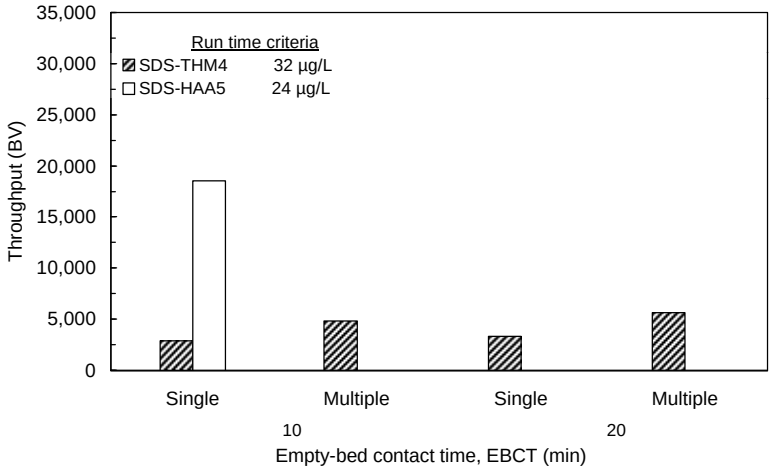


Figure 86 Throughput based on single contactors and effluent blending for Stage 2 SDS-THM4 and SDS-HAA5 effluent criteria during session 3 (September)

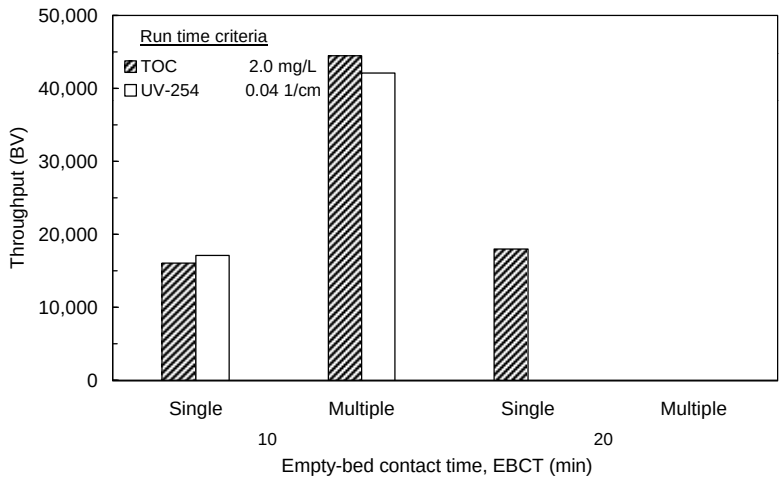


Figure 87 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 4 (November)

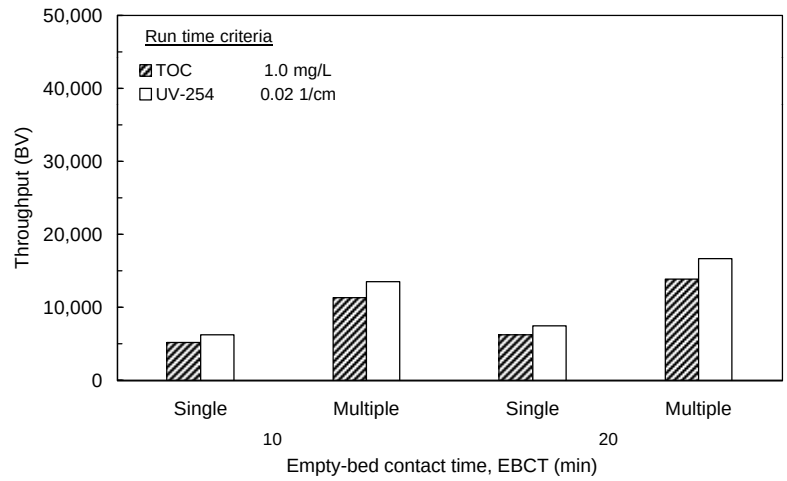


Figure 88 Throughput based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 4 (November)

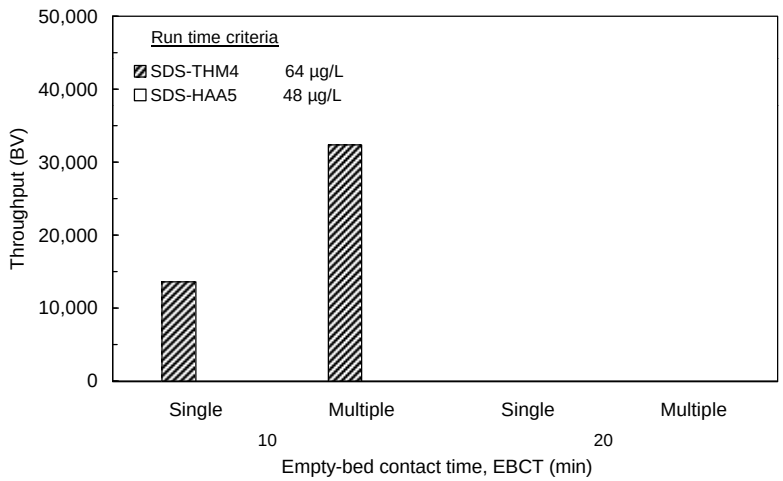


Figure 89 Throughput based on single contactors and effluent blending for Stage 1 SDS-THM4 and SDS-HAA5 effluent criteria during session 4 (November)

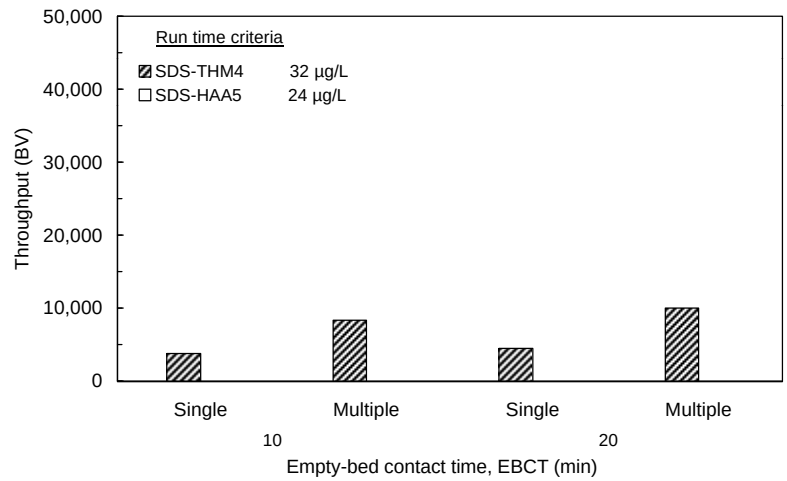


Figure 90 Throughput based on single contactors and effluent blending for Stage 2 SDS-THM4 and SDS-HAA5 effluent criteria during session 4 (November)

10 *Blended Effluent Simulation and Breakthrough Curve Extrapolation*

10 Blended Effluent Simulation and Breakthrough Curve Extrapolation

The data generated by an RSSCT simulates the performance of a single GAC contactor for DBP precursor control. For single contactor operation, when the effluent water quality exceeds levels set as run time criteria, the GAC must be replaced with reactivated or virgin GAC. In practice, multiple GAC contactors in parallel are used, and GAC run times are lengthened significantly by operating the contactors in a staggered mode: the GAC in each contactor is replaced with reactivated or virgin GAC at regular intervals (Westrick and Cohen, 1976; Roberts and Summers, 1982). The effluent from all contactors is blended prior to disinfection. Since only the blended effluent must meet a given water quality objective, each contactor can be operated longer and produce a water quality in excess of the system water quality objective. As a prelude to any type of cost analysis, the impact of blended GAC contactor effluents should be considered.

It is possible to model the performance of contactors operated in parallel staggered mode using the data produced by a single RSSCT. The breakthrough curve data are first fit to the logistic function, a function that results in a characteristic S-shape curve typical of breakthrough curves:

$$C(t) = \frac{A_f - A_0}{1 + Be^{-Dt}} + A_0 \qquad (2)$$

This form of the logistic function is a variation of that presented in Chowdhury et al. (1996). The parameters A_f, A_0, B, and D are varied for a best-fit of the data by a sum of squares minimization algorithm. An equation that simulates a blended effluent scenario can be derived by the following integration of the logistic function:

$$\overline{C}(t) = \frac{1}{t}\int_0^t C(t)dt \qquad (3)$$

For applications involving 10 or more staggered contactors operated in parallel, Equation 3 provides a good approximation of blended effluent water quality (Roberts and Summers, 1982). Integration of Equation 2 and substitution into Equation 3 yields:

$$\overline{C}(t) = A_f + \frac{A_f - A_0}{Dt}\ln\frac{1 + Be^{-Dt}}{1 + B} \qquad (4)$$

After a best fit of the breakthrough data to Equation 2 was determined (using a least squares minimization approach), the parameter values were input into Equation 4. A plot of Equation 4, therefore, gives the blended effluent concentration for any contactor run time. A summary of the best fit parameter values and r^2 values for fits to all 64 breakthrough sets is given in Table 36. As can be seen by the high r^2 for curve fits (mean: 0.95, 25th percentile: 0.93, 75th percentile: 0.98), the model well fit the data. For all breakthrough curves, except those for SDS-CLD, the

value for A_0 is zero and A_0 can be dropped from Equations 2 and 4, yielding a three parameter model. The parameter A_0 is needed for SDS-CLD to account for the high initial breakthrough.

For the February session, Figures 91 through 98 contain single column and blended effluent breakthrough curves for both 10 and 20 minute EBCT contactors for TOC, UV_{254}, SDS-THM4, SDS-HAA5, SDS-HAA6, SDS-HAA9, SDS-TOX, and SDS-CLD. The analysis summarized in these plots demonstrates the significant impact on overall costs of accounting for a blended effluent situation. For example, the 10 minute EBCT contactor TOC breakthrough curve plotted in Figure 91 reaches an effluent concentration of 1.0 mg/L after 17 days. The multiple contactor blended effluent breakthrough curve does not reach an effluent TOC concentration of 1.0 mg/L until after 37 days of single contactor operation time (a 118 percent increase). Thus, the operation time for each single contactor as a part of multiple GAC contactors operated in parallel staggered mode is more than doubled. A similar analysis can be made for the SDS-DBPs. For example, the run time to the Stage 1 THM4 MCL based on a 10 minute EBCT contactor during the May session (as shown in Figure 101) is 31 days. After accounting for effluent blending, this run time is estimated to be 72 days, a 132 percent increase. The single contactor and blended effluent (multiple contactors) comparisons are presented for the May, September, and November sessions for all parameters in Figures 99 through 122.

Table 37 summarizes the run time for a 10 minute EBCT contactor, assuming a blended effluent, for the February session. For each parameter and criterion, the value of other parameters is given when the run time criterion is met. Table 37 also includes, when applicable, run time calculations based on effluent blending of extrapolated breakthrough curves (described below). Tables 38 through 40 summarize the same information for the May, September, and November sessions. Tables 41 through 44 summarize the same information for the 20 minute EBCT contactor for all sessions.

For single and multiple contactor configurations, Tables 45 through 48 summarize the percent increase in run times observed between a 10 and 20 minute EBCT contactor, for all sessions. Based on the range of run time criteria applied, the average increase in run time between a 10 and 20 minute EBCT contactor over all sessions was 151 percent for both single and multiple contactor configurations. The similarity in percentages indicates that the percent increase in run time gained by the additional contact time for a single contactor is equivalent to that for a multiple contactor simulation. The increase in run time between the 10 and 20 minute EBCT contactors is also evident in the breakthrough curves plotted in Figures 91 through 122.

By accounting for multiple contactor configurations, the estimated contactor run time increased by an average of 127 and 129 percent as compared to single contactor performance for 10 and 20 minute EBCTs, respectively, and over all sessions. Thus, when 10 or more contactors are operated in staggered mode, the run time of each contactor more than doubled that of a single GAC contactor.

The carbon usage rate (CUR) is a measure of the amount of carbon needed to treat water to the given GAC effluent run time criterion. The CUR is calculated by the following equation:

$$\mathrm{CUR} = \frac{\mathrm{EBCT} * r}{\mathrm{RT}} \qquad (5)$$

where r is the GAC density and RT is the run time. The CUR is normally reported with units of lbs/MG. Tables 49 through 52 summarize the percent decrease in CUR observed between 10 and 20 minute EBCT contactors for both single and multiple contactor configurations for all sessions. On average, the CUR for 20 minute EBCT contactors was 17 and 19 percent lower than the CUR for 10 minute EBCT contactors, based on single and multiple contactor breakthrough data, respectively. For either the 10 or 20 minute EBCT contactors, the CUR based on effluent blending was on average 56 percent lower than the CUR based on single contactor data, for all sessions.

A seasonal comparison of multiple contactor simulation run times is summarized in Table 53, for a 10 minute EBCT, and in Table 54, for a 20 minute EBCT. The mean, standard deviation, and RSD of run times over the four quarterly sessions are listed in each table, providing a measure of the degree of seasonal variability evident in GAC performance after accounting for multiple contactor operation. For example, the run time to a GAC effluent TOC concentration of 1.0 mg/L for 10 minute EBCT contactors ranged from 37 to 112 days, with a RSD of 41 percent. Run times to meet the placeholder for Stage 2 THM4 MCL ranged from 30 to 58 days, with a RSD of 31 percent.

Bar graph summaries of run times to effluent criteria for single and multiple contactor configurations and for 10 and 20 minute EBCTs for the February session are shown in Figures 123 through 126. The same data are shown for the May, September, and November sessions in Figures 127 through 138.

The calculated CURs are presented in a bar graph format for single and multiple contactor configurations and for both the 10 and 20 minute EBCTs for all sessions in Figures 139 through 154.

In many cases, the blended effluent simulation results did not exceed run time criteria. To increase the benefit of the data set, a breakthrough curve extrapolation procedure was developed to allow reasonable and conservative run time estimates to be made, when blended effluent levels did not exceed the reactivation criteria. To the original breakthrough curve data set for each parameter, three points were added at 150, 200, and 250 percent of the run time at which the last sample point was reported (t_{max}), based on the following set of equations:

Point	Run time	Concentration	
A	$1.5t_{max}$	$C(t_{max}) + 0.5[C_{inf} - C(t_{max})]$	(6)
B	$2.0t_{max}$	$C(t_{max}) + 0.6[C_{inf} - C(t_{max})]$	(7)
C	$2.5t_{max}$	$C(t_{max}) + 0.7[C_{inf} - C(t_{max})]$	(8)

where C_{inf} is the influent concentration for each parameter, and $C(t_{max})$ is the effluent concentration of the parameter at t_{max}.

The logistic function curve was fit to the data set including the three extrapolation points. The integrated form of the logistic function (Equation 4) was again used to estimate blended effluent water quality for the extrapolation. The run time data contained in the figures and tables presented earlier in this section include the estimates derived by the extrapolation procedure, when applicable. No breakthrough curves were extrapolated beyond 250 percent of the maximum run time. Figures 155 through 210 contain the extrapolated breakthrough curves for all runs. Table 55 summarizes the best fit parameter values and r^2 values for all curve fits with extrapolation.

Parameter	Coefficient	10 minute EBCT				20 minute EBCT			
		February	May	September	November	February	May	September	November
TOC	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	2.32	1.85	1.74	2.09	2.31	1.78	1.50	2.11
	B	6.0	8.7	8.4	7.4	5.4	6.4	9.5	6.4
	D	0.080	0.064	0.046	0.048	0.030	0.026	0.027	0.018
	r^2	0.976	0.995	0.973	0.984	0.991	0.983	0.985	0.975
UV_{254}	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	0.039	0.026	0.030	0.041	0.035	0.024	0.023	0.039
	B	11.0	11.5	10.6	10.3	10.3	20.0	20.0	7.9
	D	0.086	0.069	0.042	0.048	0.041	0.041	0.032	0.018
	r^2	0.987	0.993	0.972	0.983	0.988	0.966	0.986	0.973
SDS-THM4	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	64.6	99.8	106.9	65.4	65.5	88.6	95.3	55.2
	B	16.2	8.3	6.8	9.1	10.6	8.5	7.1	13.2
	D	0.147	0.085	0.060	0.075	0.050	0.041	0.031	0.045
	r^2	0.952	0.985	0.965	0.971	0.987	0.962	0.977	0.974
SDS-HAA5	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	18.0	19.1	43.7	21.9	15.2	15.2	18.5	18.3
	B	9.2	8.1	12.3	11.0	10.4	4.3	49.4	7.2
	D	0.119	0.102	0.021	0.079	0.066	0.044	0.045	0.033
	r^2	0.910	0.885	0.929	0.965	0.929	0.825	0.952	0.836
SDS-HAA6	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	23.7	26.6	55.6	29.2	20.6	22.5	25.9	24.8
	B	10.4	10.2	11.7	12.9	10.4	4.3	47.4	9.4
	D	0.124	0.101	0.023	0.082	0.063	0.033	0.044	0.036
	r^2	0.919	0.913	0.929	0.979	0.953	0.885	0.959	0.893
SDS-HAA9	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	28.3	33.3	60.0	32.1	26.0	28.5	28.4	27.9
	B	8.8	8.3	11.4	13.4	10.4	5.1	43.1	9.8
	D	0.102	0.073	0.022	0.080	0.053	0.027	0.043	0.033
	r^2	0.888	0.912	0.924	0.982	0.962	0.928	0.932	0.915
SDS-TOX	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	138	125	153	151	116	123	131	145
	B	13.7	13.4	8.8	12.4	8.9	7.1	11.6	8.9
	D	0.100	0.085	0.043	0.058	0.038	0.029	0.026	0.021
	r^2	0.968	0.992	0.972	0.984	0.976	0.977	0.993	0.971
SDS-CLD	A_o	1.29	0.99	-0.24	0.02	1.10	-0.37	0.19	0.57
	A_f	2.13	2.88	2.56	1.92	2.33	3.15	2.48	1.32
	B	15.4	7.2	2.1	2.0	3.6	1.5	3.0	14.4
	D	0.137	0.043	0.035	0.033	0.020	0.013	0.018	0.053
	r^2	0.959	0.906	0.987	0.981	0.974	0.965	0.979	0.746

Table 36 Summary of logistic function curve fit parameters and r2 values

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	3.2	2.0	128#	18,460	2.0	0.034	61	17	22	26	122
			1.0	37	5,270	1.0	0.013	31	9	12	12	48
			1.6†	77	11,020	1.6	0.024	48	13	18	20	90
UV_{254}	(1/cm)	0.061	0.040	207#	29,840	2.3	0.040	67	19	25	29	141
			0.020	58	8,320	1.4	0.020	43	12	16	17	75
			0.030†	106#	15,240	1.9	0.030	58	16	21	24	112
SDS-THM4	(µg/L)	95	80	*	*							
			64	157#	22,570	2.1	0.037	64	18	23	27	131
			32	38	5,430	1.0	0.013	32	9	12	13	50
SDS-HAA5	(µg/L)	27	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	34	48	*	*							
			24	179#	25,840	2.2	0.038	66	19	24	28	136
SDS-HAA9	(µg/L)	40	48	*	*							
			24	107#	15,340	1.9	0.030	58	16	21	24	112
SDS-TOX	(µg Cl^-/L)	208	120	123#	17,680	2.0	0.033	60	17	22	25	120
			70	53	7,630	1.3	0.019	41	11	15	17	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 37 Run times to selected GAC effluent criteria based on effluent blending (10 minute EBCT) during session 1, February

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.6	2.0	*	*							
			1.0	75	10,790	1.0	0.014	65	14	18	20	73
			1.3†	108#	15,530	1.3	0.018	80	16	22	25	97
UV_{254}	(1/cm)	0.046	0.040	*	*							
			0.020	120#	17,210	1.4	0.020	84	17	23	27	104
			0.023†	147#	21,170	1.5	0.023	90	18	25	29	117
SDS-THM4	(µg/L)	136	80	106#	15,330	1.3	0.018	80	16	22	25	96
			64	72	10,430	1.0	0.013	64	13	18	20	72
			32	30	4,300	0.5	0.006	32	7	9	9	29
SDS-HAA5	(µg/L)	29	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	40	48	*	*							
			24	126#	18,210	1.4	0.021	86	18	24	27	107
SDS-HAA9	(µg/L)	47	48	*	*							
			24	99#	14,260	1.2	0.017	77	16	21	24	91
SDS-TOX	(µg Cl^-/L)	221	120	155#	22,290	1.5	0.024	91	19	26	30	120
			70	70	10,100	1.0	0.013	63	13	18	19	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 38 Run times to selected GAC effluent criteria based on effluent blending (10 minute EBCT) during session 2, May

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.4	2.0	*	*							
			1.0	112	16,110	1.0	0.015	74	10	14	16	83
			1.2†	149	21,470	1.2	0.018	86	14	19	21	100
UV_{254}	(1/cm)	0.048	0.040	*	*							
			0.020	174#	25,130	1.3	0.020	92	16	22	24	113
			0.024†	225#	32,450	1.5	0.024	100	19	26	28	133
SDS-THM4	(µg/L)	154	80	136	19,600	1.1	0.017	80	12	17	19	94
			64	84	12,040	0.8	0.011	64	8	11	12	65
			32	33	4,790	0.4	0.005	32	5	6	7	30
SDS-HAA5	(µg/L)	31	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	43	48	*	*							
			24	199#	28,610	1.4	0.022	96	17	24	26	123
SDS-HAA9	(µg/L)	49	48	*	*							
			24	176#	25,330	1.3	0.020	92	16	22	24	113
SDS-TOX	(µg Cl^-/L)	255	120	191#	27,510	1.4	0.021	95	17	23	26	120
			70	90	13,020	0.9	0.012	67	8	12	13	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 39 Run times to selected GAC effluent criteria based on effluent blending (10 minute EBCT) during session 3, September

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.9	2.0	309#	44,460	2.0	0.041	*	*	*	*	*
			1.0	79	11,340	1.0	0.017	40	13	17	19	70
			1.4†	135#	19,480	1.4	0.026	54	18	24	26	105
UV_{254}	(1/cm)	0.064	0.040	293#	42,140	2.0	0.040	68	23	29	32	159
			0.020	94	13,520	1.1	0.020	44	15	19	21	81
			0.032†	184#	26,500	1.7	0.032	61	20	27	29	130
SDS-THM4	(µg/L)	97	80	*	*							
			64	225#	32,360	1.8	0.036	64	22	28	30	144
			32	58	8,310	0.8	0.013	32	11	14	14	51
SDS-HAA5	(µg/L)	33	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	42	48	*	*							
			24	135#	19,480	1.4	0.026	54	18	24	26	105
SDS-HAA9	(µg/L)	46	48	*	*							
			24	116#	16,710	1.3	0.023	50	17	22	24	93
SDS-TOX	(µg Cl^-/L)	253	120	162#	23,360	1.6	0.029	58	20	26	28	120
			70	79	11,410	1.0	0.017	40	13	17	19	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 40 Run times to selected GAC effluent criteria based on effluent blending (10 minute EBCT) during session 4, November

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	3.2	2.0	326#	23,480	2.0	0.034	63	16	21	26	114
			1.0	91	6,550	1.0	0.014	32	9	12	13	47
			1.6†	195	14,010	1.6	0.025	52	14	18	22	82
UV_{254}	(1/cm)	0.061	0.040	*	*							
			0.020	137	9,850	1.3	0.020	42	11	15	17	65
			0.030†	256#	18,460	1.8	0.030	59	15	20	24	99
SDS-THM4	(µg/L)	95	80	*	*							
			64	354#	25,490	2.1	0.035	64	17	22	26	118
			32	91	6,570	1.0	0.014	32	9	12	13	47
SDS-HAA5	(µg/L)	27	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	34	48	*	*							
			24	*	*							
SDS-HAA9	(µg/L)	40	48	*	*							
			24	257#	18,520	1.8	0.030	59	15	20	24	100
SDS-TOX	(µg Cl^-/L)	208	120	368#	26,510	2.1	0.036	65	17	22	26	120
			70	152	10,960	1.4	0.021	45	12	15	18	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 41 Run times to selected GAC effluent criteria based on effluent blending (20 minute EBCT) during session 1, February

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.6	2.0	*	*							
			1.0	173	12,470	1.0	0.014	61	12	16	18	72
			1.3†	269#	19,340	1.3	0.019	75	14	19	22	94
UV_{254}	(1/cm)	0.046	0.040	*	*							
			0.020	295#	21,250	1.4	0.020	79	15	20	24	100
			0.023†	368#	26,520	1.5	0.023	85	16	22	26	113
SDS-THM4	(µg/L)	136	80	309#	22,220	1.4	0.021	80	15	21	24	102
			64	197	14,210	1.1	0.015	64	12	17	19	78
			32	72	5,170	0.5	0.005	32	8	10	10	36
SDS-HAA5	(µg/L)	29	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	40	48	*	*							
			24	440#	31,680	1.6	0.025	90	17	24	28	124
SDS-HAA9	(µg/L)	47	48	*	*							
			24	305#	21,960	1.4	0.020	80	15	21	24	102
SDS-TOX	(µg Cl^-/L)	221	120	411#	29,600	1.6	0.024	88	17	23	28	120
			70	165	11,900	1.0	0.013	59	12	16	17	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 42 Run times to selected GAC effluent criteria based on effluent blending (20 minute EBCT) during session 2, May

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.4	2.0	*	*							
			1.0	262#	18,850	1.0	0.014	71	14	19	20	81
			1.2†	335#	24,090	1.2	0.018	81	16	22	23	100
UV_{254}	(1/cm)	0.048	0.040	*	*							
			0.020	383#	27,590	1.3	0.020	87	16	23	25	111
			0.024†	495#	35,670	1.4	0.024	96	18	25	28	131
SDS-THM4	(µg/L)	154	80	322#	23,200	1.1	0.017	80	15	21	23	97
			64	206	14,840	0.9	0.012	64	11	15	16	70
			32	78	5,640	0.4	0.004	32	3	4	4	27
SDS-HAA5	(µg/L)	31	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	43	48	*	*							
			24	436#	31,370	1.4	0.022	92	17	24	26	121
SDS-HAA9	(µg/L)	49	48	*	*							
			24	356#	25,650	1.2	0.019	84	16	22	24	105
SDS-TOX	(µg Cl^-/L)	255	120	429#	30,900	1.3	0.022	91	17	24	26	120
			70	207	14,920	0.9	0.013	64	11	15	16	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 43 Run times to selected GAC effluent criteria based on effluent blending (20 minute EBCT) during session 3, September

Parameter	Units	Influent concen-tration	Breakthrough criterion	Value of listed parameter when breakthrough criterion is met (blended effluent)								
				Run time (days)	Throughput (bed volumes)	TOC (mg/L)	UV_{254} (1/cm)	SDS-THM4 (µg/L)	SDS-HAA5 (µg/L)	SDS-HAA6 (µg/L)	SDS-HAA9 (µg/L)	SDS-TOX (µg Cl^-/L)
TOC	(mg/L)	2.9	2.0	*	*							
			1.0	193	13,900	1.0	0.017	38	12	16	17	68
			1.4†	329#	23,680	1.4	0.026	49	16	21	23	102
UV_{254}	(1/cm)	0.064	0.040	*	*							
			0.020	231	16,660	1.1	0.020	41	13	18	19	78
			0.032†	433#	31,170	1.7	0.032	56	18	24	27	125
SDS-THM4	(µg/L)	97	80	*	*							
			64	*	*							
			32	138	9,960	0.8	0.013	32	10	13	14	50
SDS-HAA5	(µg/L)	33	48	*	*							
			24	*	*							
SDS-HAA6	(µg/L)	42	48	*	*							
			24	423#	30,460	1.6	0.032	55	18	24	26	123
SDS-HAA9	(µg/L)	46	48	*	*							
			24	349#	25,130	1.5	0.028	51	16	22	24	107
SDS-TOX	(µg Cl^-/L)	253	120	408#	29,360	1.6	0.031	54	18	24	26	120
			70	200	14,430	1.0	0.018	39	13	17	18	70

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Value of listed parameter is left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 44 Run times to selected GAC effluent criteria based on effluent blending (20 minute EBCT) during session 4, November

Parameter	Units	Influent concen-tration	Breakthrough criterion	Run time (days) at given EBCT (min)				Increase in run time (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	3.2	2.0	50	128	128	326	156	154	155	154
			1.0	17	37	43	91	148	149	111	112
			1.6†	32	77	82	195	153	154	137	138
UV-254	(1/cm)	0.061	0.040	83	207	*	*			149	
			0.020	27	58	60	137	125	137	116	127
			0.030†	46	106	113	256	144	142	130	128
SDS-THM4	(µg/L)	95	80	*	*	*	*				
			64	60	157	142	354	135	126	160	149
			32	18	38	44	91	147	142	114	109
SDS-HAA5	(µg/L)	27	48	*	*	*	*				
			24	*	*	*	*				
SDS-HAA6	(µg/L)	34	48	*	*	*	*				
			24	77	179	*	*			132	
SDS-HAA9	(µg/L)	40	48	*	*	*	*				
			24	44	107	95	257	117	141	144	171
SDS-TOX	(µg Cl^-/L)	208	120	53	123	173	368	227	200	132	113
			70	22	53	63	152	188	187	142	142

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 45 Summary of GAC run times to selected GAC effluent criteria during session 1, February

Parameter	Units	Influent concen-tration	Breakthrough criterion	Run time (days) at given EBCT (min)				Increase in run time (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	2.6	2.0	*	*	*	*				
			1.0	35	75	76	173	116	131	113	128
			1.3†	46	108	113	269	144	149	132	137
UV-254	(1/cm)	0.046	0.040	*	*	*	*				
			0.020	56	120	135	295	142	147	115	119
			0.023†	68	147	167	368	144	151	115	121
SDS-THM4	(µg/L)	136	80	44	106	128	309	193	190	144	141
			64	31	72	79	197	153	172	133	150
			32	17	30	41	72	151	140	80	73
SDS-HAA5	(µg/L)	29	48	*	*	*	*				
			24	*	*	*	*				
SDS-HAA6	(µg/L)	40	48	*	*	*	*				
			24	49	126	236	440	381	248	157	86
SDS-HAA9	(µg/L)	47	48	*	*	*	*				
			24	45	99	125	305	176	208	119	145
SDS-TOX	(µg Cl^-/L)	221	120	69	155	197	411	185	166	124	109
			70	33	70	76	165	133	136	115	118

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 46 Summary of GAC run times to selected GAC effluent criteria during session 2, May

Parameter	Units	Influent concen-tration	Breakthrough criterion	Run time (days) at given EBCT (min)				Increase in run time (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	2.4	2.0	*	*	*	*				
			1.0	49	112	118	262	139	134	126	122
			1.2†	63	149	138	335	117	124	135	143
UV-254	(1/cm)	0.048	0.040	*	*	*	*				
			0.020	80	174	185	383	131	120	119	108
			0.024†	104	225	*	495		120	118	
SDS-THM4	(µg/L)	154	80	53	136	135	322	154	137	157	139
			64	35	84	80	206	131	147	142	159
			32	20	33	46	78	131	135	68	71
SDS-HAA5	(µg/L)	31	48	*	*	*	*				
			24	129	*	*	*				
SDS-HAA6	(µg/L)	43	48	*	*	*	*				
			24	105	199	130	436	24	119	90	235
SDS-HAA9	(µg/L)	49	48	*	*	*	*				
			24	100	176	127	356	27	103	77	181
SDS-TOX	(µg Cl^-/L)	255	120	88	191	203	429	130	125	117	112
			70	41	90	97	207	133	129	118	115

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 47 Summary of GAC run times to selected GAC effluent criteria during session 3, September

Parameter	Units	Influent concen-tration	Breakthrough criterion	Run time (days) at given EBCT (min)				Increase in run time (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	2.9	2.0	112	309	249	*	123		177	
			1.0	36	79	87	193	142	145	120	123
			1.4†	59	135	153	329	158	143	129	116
UV-254	(1/cm)	0.064	0.040	119	293	*	*			146	
			0.020	43	94	104	231	141	147	118	123
			0.032†	83	184	209	433	152	135	121	107
SDS-THM4	(µg/L)	97	80	*	*	*	*				
			64	94	225	*	*			138	
			32	26	58	62	138	135	140	119	124
SDS-HAA5	(µg/L)	33	48	*	*	*	*				
			24	*	*	*	*				
SDS-HAA6	(µg/L)	42	48	*	*	*	*				
			24	51	135	204	423	303	213	168	108
SDS-HAA9	(µg/L)	46	48	*	*	*	*				
			24	47	116	130	349	176	201	146	168
SDS-TOX	(µg Cl^-/L)	253	120	73	162	194	408	167	151	123	110
			70	38	79	92	200	143	153	109	118

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 48 Summary of GAC run times to selected GAC effluent criteria during session 4, November

Parameter	Units	Influent concen-tration	Breakthrough criterion	Carbon usage rate, CUR (lbs/MG) at given EBCT (min)				Decrease in CUR (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	3.2	2.0	570	220	450	180	21	18	61	60
			1.0	1,660	790	1,340	630	19	20	52	53
			1.6†	890	380	700	300	21	21	57	57
UV-254	(1/cm)	0.061	0.040	350	140	*	*			60	
			0.020	1,080	500	950	420	12	16	54	56
			0.030†	620	270	510	220	18	19	56	57
SDS-THM4	(µg/L)	95	80	*	*	*	*				
			64	480	180	410	160	15	11	63	61
			32	1,630	760	1,320	630	19	17	53	52
SDS-HAA5	(µg/L)	27	48	*	*	*	*				
			24	*	*	*	*				
SDS-HAA6	(µg/L)	34	48	*	*	*	*				
			24	370	160	*	*			57	
SDS-HAA9	(µg/L)	40	48	*	*	*	*				
			24	660	270	610	220	8	19	59	64
SDS-TOX	(µg Cl^-/L)	208	120	540	230	330	160	39	30	57	52
			70	1,320	540	910	380	31	30	59	58

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.

Table 49 Summary of carbon usage rates to selected GAC effluent criteria during session 1, February

Parameter	Units	Influent concen-tration	Breakthrough criterion	Carbon usage rate, CUR (lbs/MG) at given EBCT (min)				Decrease in CUR (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	2.6	2.0	*	*	*	*				
			1.0	820	380	760	330	7	13	54	57
			1.3†	620	270	510	210	18	22	56	59
UV-254	(1/cm)	0.046	0.040	*	*	*	*				
			0.020	520	240	430	200	17	17	54	53
			0.023†	420	200	340	160	19	20	52	53
SDS-THM4	(µg/L)	136	80	660	270	450	190	32	30	59	58
			64	930	400	730	290	22	28	57	60
			32	1,740	960	1,390	800	20	17	45	42
SDS-HAA5	(µg/L)	29	48	*	*	*	*				
			24	*	*	*	*				
SDS-HAA6	(µg/L)	40	48	*	*	*	*				
			24	590	230	240	130	59	43	61	46
SDS-HAA9	(µg/L)	47	48	*	*	*	*				
			24	640	290	460	190	28	34	55	59
SDS-TOX	(µg Cl^-/L)	221	120	420	190	290	140	31	26	55	52
			70	880	410	760	350	14	15	53	54

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.

Table 50 Summary of carbon usage rates to selected GAC effluent criteria during session 2, May

Parameter	Units	Influent concen-tration	Breakthrough criterion	Carbon usage rate, CUR (lbs/MG) at given EBCT (min)				Decrease in CUR (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	2.4	2.0	*	*	*	*				
			1.0	580	260	490	220	16	15	55	55
			1.2†	450	190	420	170	7	11	58	60
UV-254	(1/cm)	0.048	0.040	*	*	*	*				
			0.020	360	160	310	150	14	6	56	52
			0.024†	280	130	*	120		8	54	
SDS-THM4	(µg/L)	154	80	540	210	430	180	20	14	61	58
			64	830	340	720	280	13	18	59	61
			32	1,450	860	1,260	740	13	14	41	41
SDS-HAA5	(µg/L)	31	48	*	*	*	*				
			24	220	*	*	*				
SDS-HAA6	(µg/L)	43	48	*	*	*	*				
			24	270	140	440	130	-63	7	48	70
SDS-HAA9	(µg/L)	49	48	*	*	*	*				
			24	290	160	450	160	-55	0	45	64
SDS-TOX	(µg Cl^-/L)	255	120	330	150	280	130	15	13	55	54
			70	690	320	600	280	13	13	54	53

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.

Table 51 Summary of carbon usage rates to selected GAC effluent criteria during session 3, September

Parameter	Units	Influent concen-tration	Breakthrough criterion	Carbon usage rate, CUR (lbs/MG) at given EBCT (min)				Decrease in CUR (%)			
				10		20		10 to 20 min EBCT		Single to multiple contactors EBCT (min)	
				Contactor configuration				Contactor configuration			
				Single	Multiple	Single	Multiple	Single	Multiple	10	20
TOC	(mg/L)	2.9	2.0	260	90	230	*	12		65	
			1.0	800	370	660	300	18	19	54	55
			1.4†	490	210	380	180	22	14	57	53
UV-254	(1/cm)	0.064	0.040	240	100	*	*			58	
			0.020	670	310	550	250	18	19	54	55
			0.032†	350	160	280	130	20	19	54	54
SDS-THM4	(µg/L)	97	80	*	*	*	*				
			64	300	130	*	*			57	
			32	1,090	500	930	420	15	16	54	55
SDS-HAA5	(µg/L)	33	48	*	*	*	*				
			24	*	*	*	*				
SDS-HAA6	(µg/L)	42	48	*	*	*	*				
			24	570	210	280	140	51	33	63	50
SDS-HAA9	(µg/L)	46	48	*	*	*	*				
			24	610	250	440	160	28	36	59	64
SDS-TOX	(µg Cl^-/L)	253	120	400	180	300	140	25	22	55	53
			70	760	360	620	290	18	19	53	53

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.

Table 52 Summary of carbon usage rates to selected GAC effluent criteria during session 4, November

Parameter	Units	Value	Run time (days) Session 1 February	2 May	3 September	4 November	Mean	Standard deviation	Relative standard deviation (%)
TOC	(mg/L)	2.0	128#	*	*	309#	218	±128	58%
		1.0	37	75	112	79	76	±31	41%
		c/c_0 = 50%†	77	108#	149	135#	117	±32	27%
UV-254	(1/cm)	0.040	207#	*	*	293#	250	±60	24%
		0.020	58	120#	174#	94	111	±49	44%
		c/c_0 = 50%†	106#	147#	225#	184#	166	±51	31%
SDS-THM4	(µg/L)	80	*	106#	136	*	121	±21	17%
		64	157#	72	84	225#	134	±71	53%
		32	38	30	33	58	40	±12	31%
SDS-HAA5	(µg/L)	48	*	*	*	*			
		24	*	*	*	*			
SDS-HAA6	(µg/L)	48	*	*	*	*			
		24	179#	126#	199#	135#	160	±35	22%
SDS-HAA9	(µg/L)	48	*	*	*	*			
		24	107#	99#	176#	116#	124	±35	28%
SDS-TOX	(µg Cl^-/L)	120	123#	155#	191#	162#	158	±28	18%
		70	53	70	90	79	73	±16	22%
Extrapolated run time (days)		--	209	222	356	294	270	±68	25%

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 53 Run times to selected GAC effluent criteria based on effluent blending (10 minute EBCT)

Parameter	Units	Value	Run time (days) Session 1 February	2 May	3 September	4 November	Mean	Standard deviation	Percent standard deviation (%)
TOC	(mg/L)	2.0	326#	*	*	*	326		
		1.0	91	173	262#	193	180	±70	39%
		c/c_0 = 50%†	195	269#	335#	329#	282	±65	23%
UV-254	(1/cm)	0.040	*	*	*	*			
		0.020	137	295#	383#	231	262	±104	40%
		c/c_0 = 50%†	256#	368#	495#	433#	388	±102	26%
SDS-THM4	(µg/L)	80	*	309#	322#	*	315	±10	3%
		64	354#	197	206	*	252	±88	35%
		32	91	72	78	138	95	±30	32%
SDS-HAA5	(µg/L)	48	*	*	*	*			
		24	*	*	*	*			
SDS-HAA6	(µg/L)	48	*	*	*	*			
		24	*	440#	436#	423#	433	±9	2%
SDS-HAA9	(µg/L)	48	*	*	*	*			
		24	257#	305#	356#	349#	317	±46	14%
SDS-TOX	(µg Cl^-/L)	120	368#	411#	429#	408#	404	±26	6%
		70	152	165	207	200	181	±27	15%
Extrapolated run time (days)		--	455	594	618	646	578	±85	15%

†GAC effluent concentration equal to 50 percent of the average influent concentration.
*Effluent concentration criteria not exceeded during GAC run time (including extrapolation procedure). Calculated values are left blank.
#Run time estimated from breakthrough curve extrapolation procedure.

Table 54 Run times to selected GAC effluent criteria based on effluent blending (20 minute EBCT)

Parameter	Coefficient	10 minute EBCT				20 minute EBCT			
		February	May	September	November	February	May	September	November
TOC	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	3.27	2.80	2.89	2.90	3.33	2.75	2.98	2.88
	B	9.1	7.2	6.7	9.5	8.1	9.2	6.3	6.3
	D	0.090	0.057	0.058	0.084	0.030	0.028	0.023	0.027
	r^2	0.950	0.946	0.949	0.972	0.960	0.956	0.967	0.949
UV_{254}	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	0.064	0.055	0.055	0.051	0.067	0.055	0.055	0.053
	B	13.5	10.5	10.0	10.2	12.6	12.6	10.7	9.3
	D	0.074	0.056	0.051	0.067	0.026	0.024	0.022	0.023
	r^2	0.936	0.937	0.945	0.928	0.954	0.946	0.939	0.943
SDS-THM4	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	52.4	49.2	100.3	83.4	54.5	49.5	103.1	82.6
	B	14.1	8.8	9.3	9.3	11.8	12.2	10.7	8.7
	D	0.096	0.069	0.057	0.075	0.033	0.033	0.025	0.031
	r^2	0.931	0.904	0.939	0.948	0.905	0.939	0.960	0.946
SDS-HAA5	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	26.3	27.2	29.0	24.7	28.3	27.2	29.4	24.5
	B	7.1	9.5	9.5	13.5	14.9	9.8	11.0	13.2
	D	0.046	0.055	0.050	0.079	0.023	0.023	0.022	0.028
	r^2	0.820	0.892	0.871	0.927	0.947	0.806	0.914	0.904
SDS-HAA6	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	29.3	31.7	33.8	29.6	31.5	31.6	34.2	29.3
	B	7.6	8.3	9.6	12.6	12.4	9.3	10.0	11.9
	D	0.059	0.057	0.059	0.087	0.025	0.025	0.024	0.031
	r^2	0.834	0.901	0.886	0.937	0.935	0.830	0.904	0.908
SDS-HAA9	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	30.5	34.0	37.1	33.1	31.0	33.5	37.2	34.2
	B	12.4	5.8	7.4	16.8	9.4	5.4	8.6	10.8
	D	0.089	0.055	0.057	0.108	0.025	0.024	0.025	0.031
	r^2	0.896	0.877	0.873	0.923	0.866	0.799	0.914	0.885
SDS-TOX	A_o	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	A_f	162	183	223	194	169	184	224	194
	B	23.3	10.6	10.6	13.6	71.3	14.0	11.0	10.3
	D	0.096	0.052	0.051	0.078	0.046	0.024	0.022	0.025
	r^2	0.923	0.898	0.924	0.957	0.945	0.915	0.928	0.946

Table 55 Summary of logistic function curve fit parameters and r2 values for curve fits after breakthrough curve extrapolation

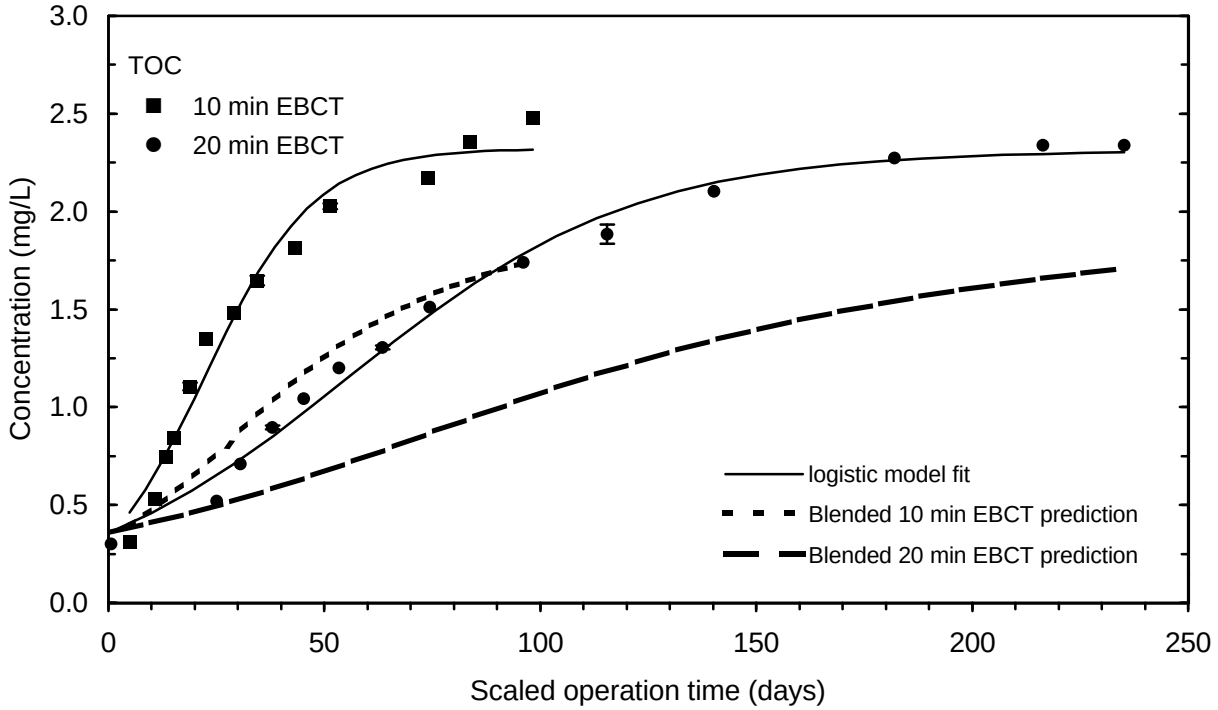


Figure 91 TOC breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

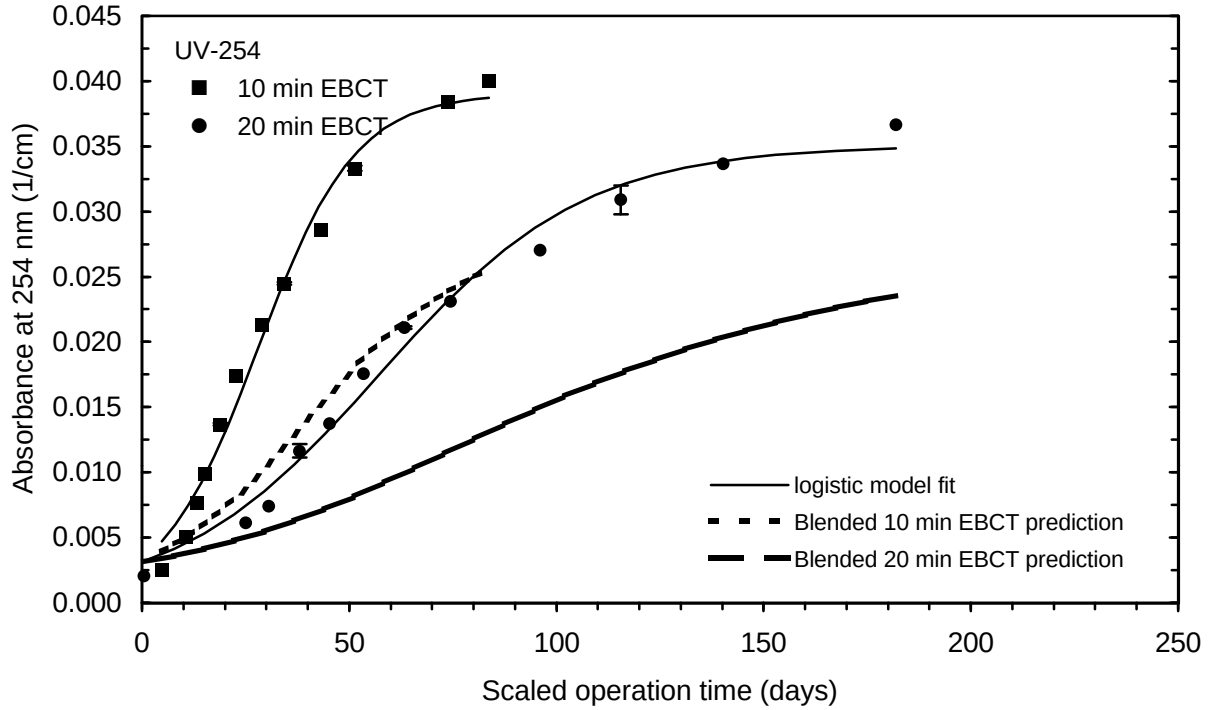


Figure 92 UV-254 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

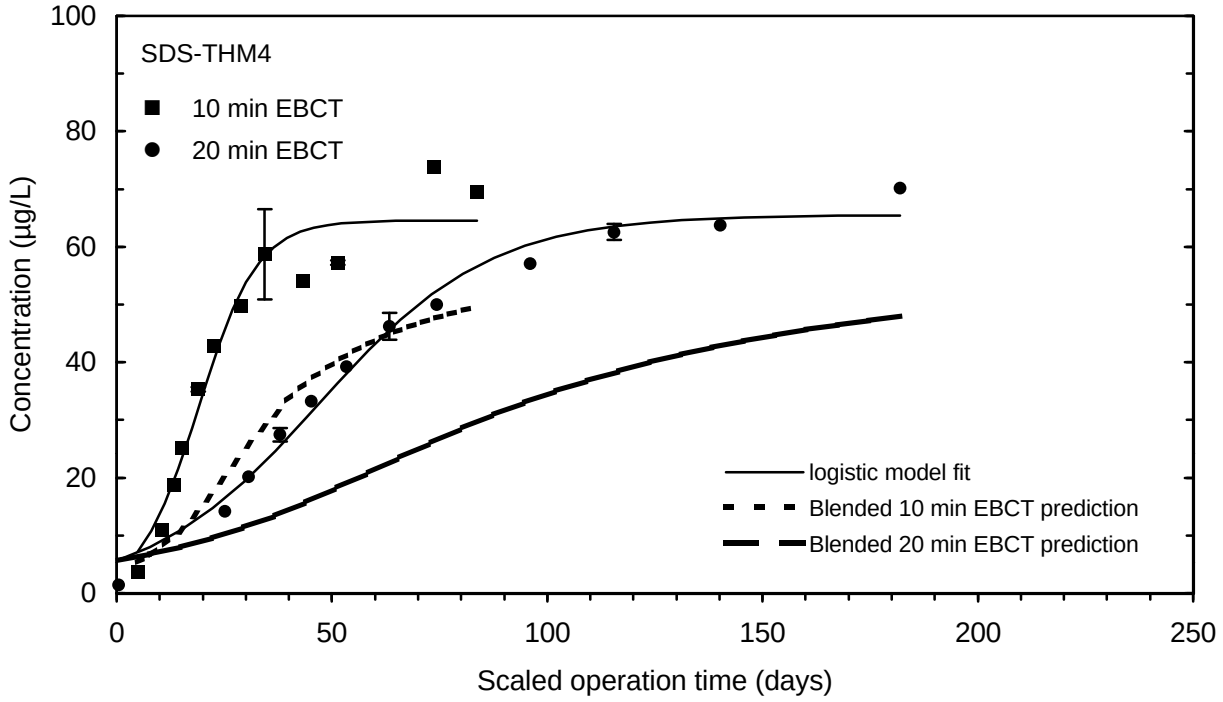


Figure 93 SDS-THM4 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

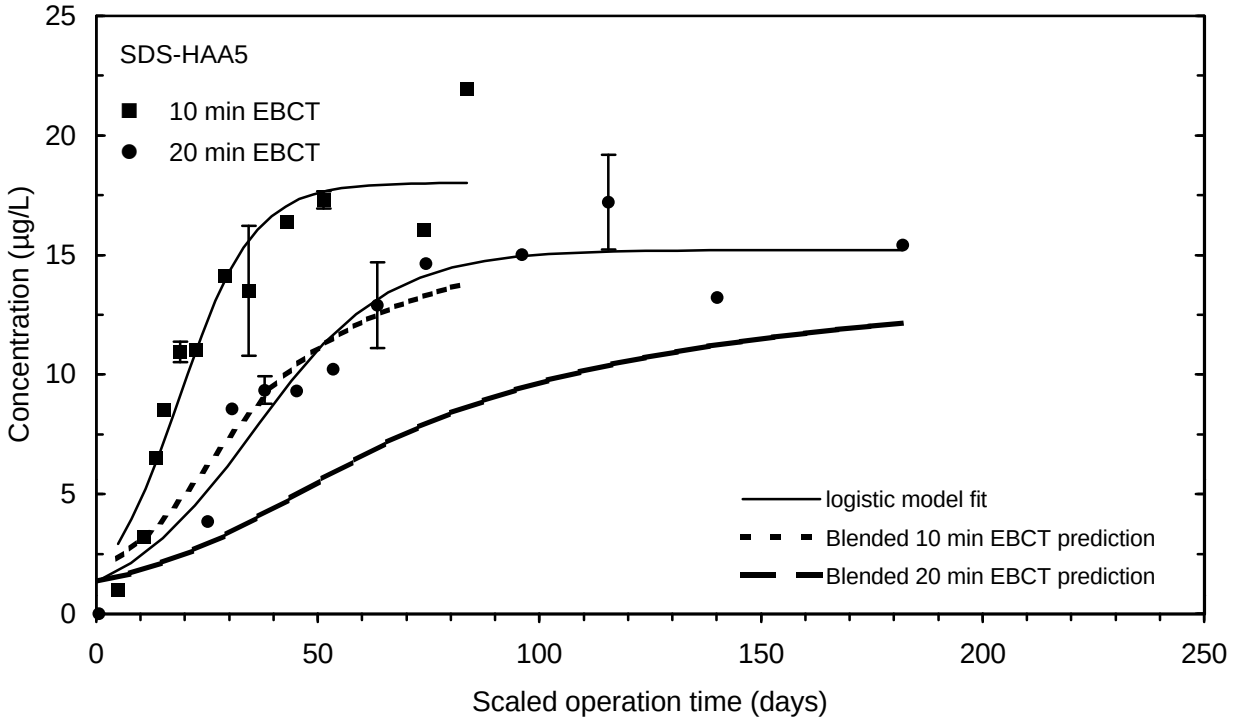


Figure 94 SDS-HAA5 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

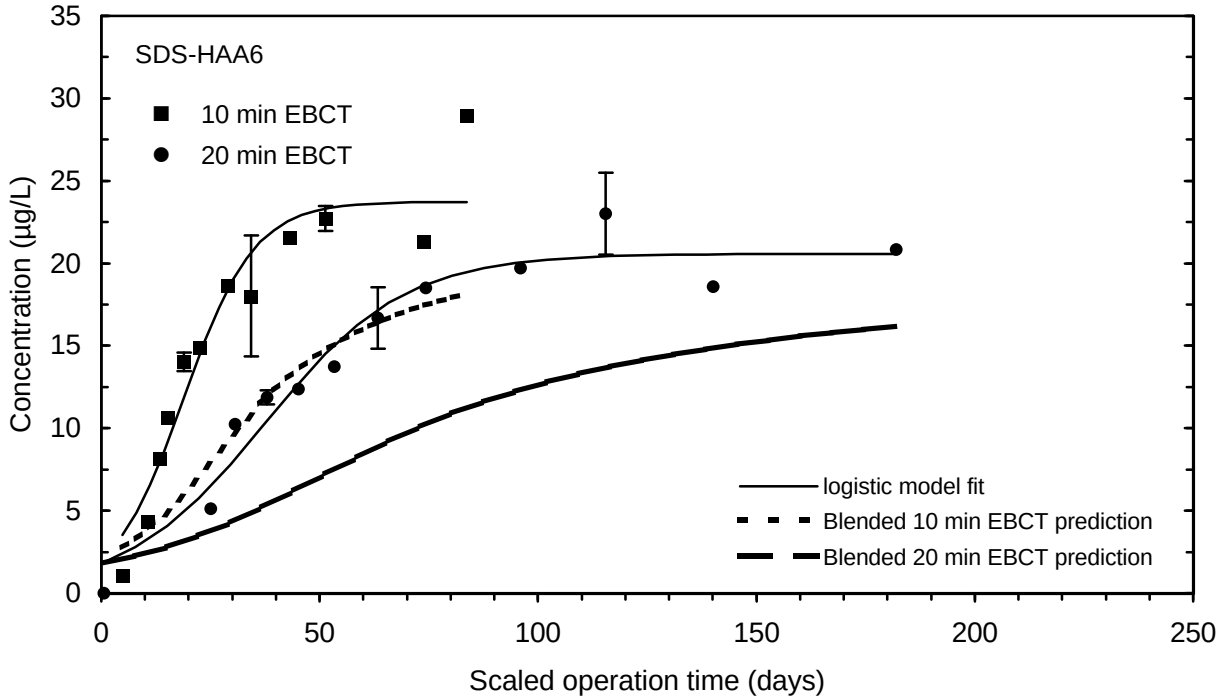


Figure 95 SDS-HAA6 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

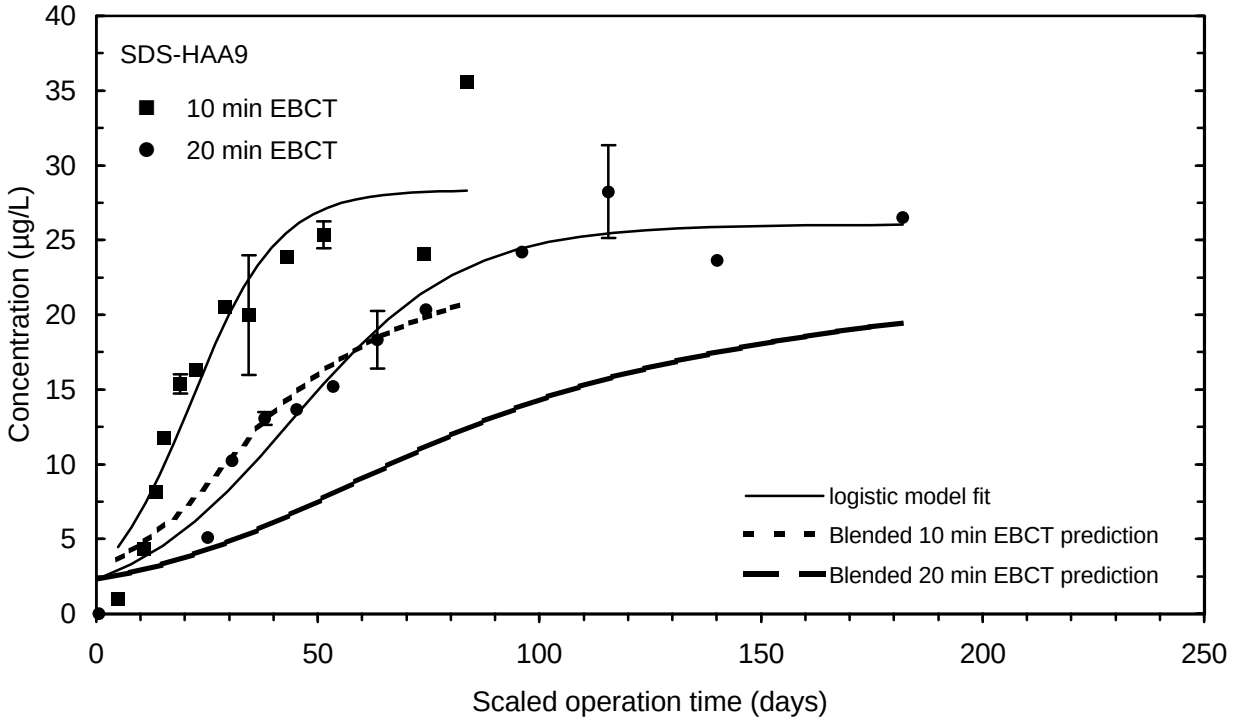


Figure 96 SDS-HAA9 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

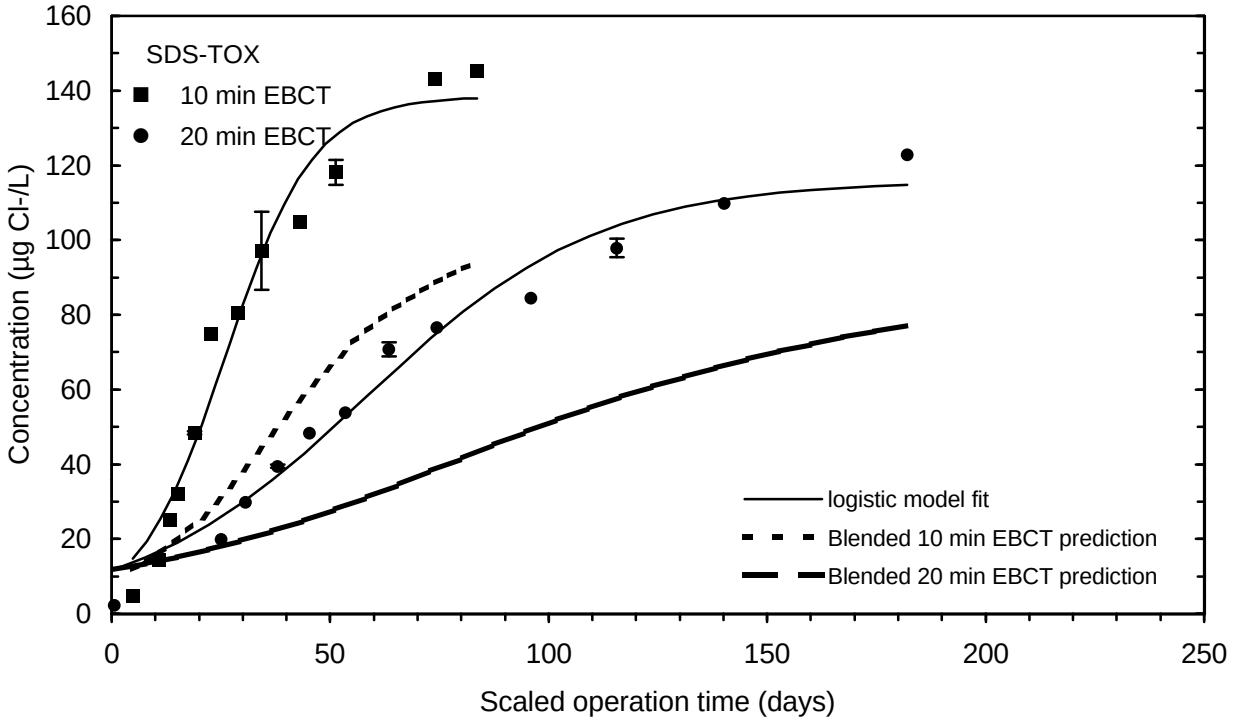


Figure 97 SDS-TOX breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

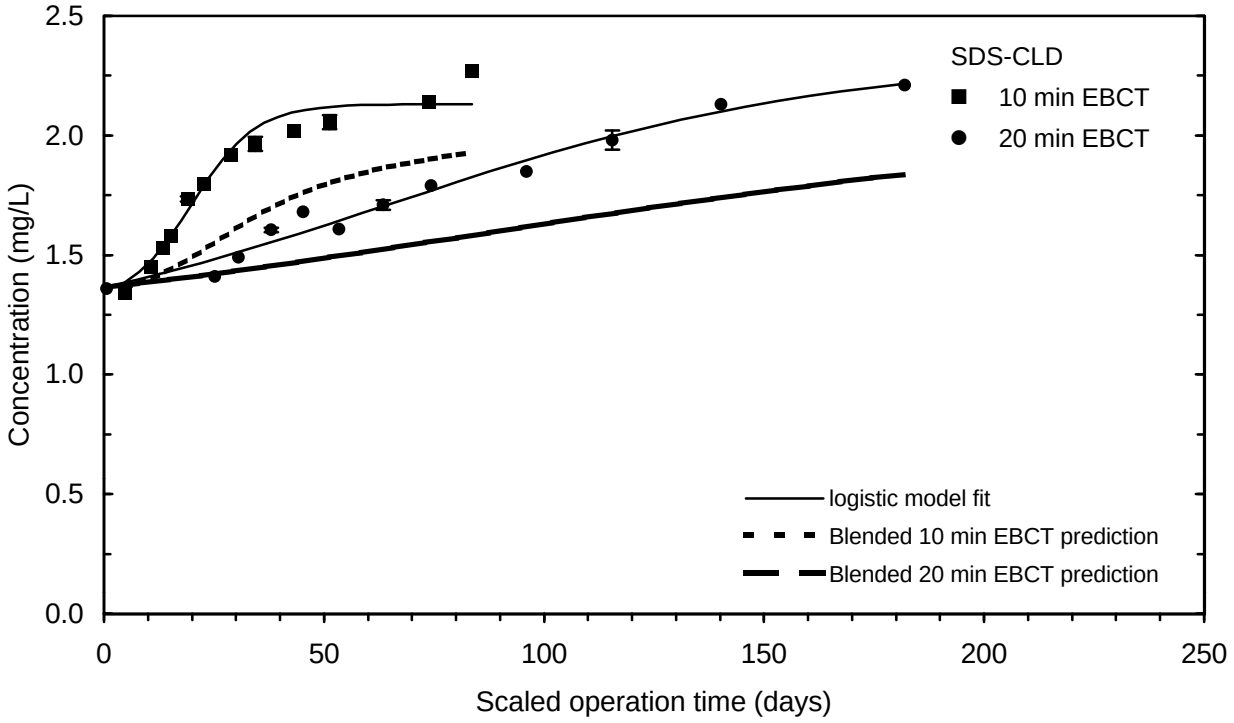


Figure 98 SDS-CLD breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 1 (February)

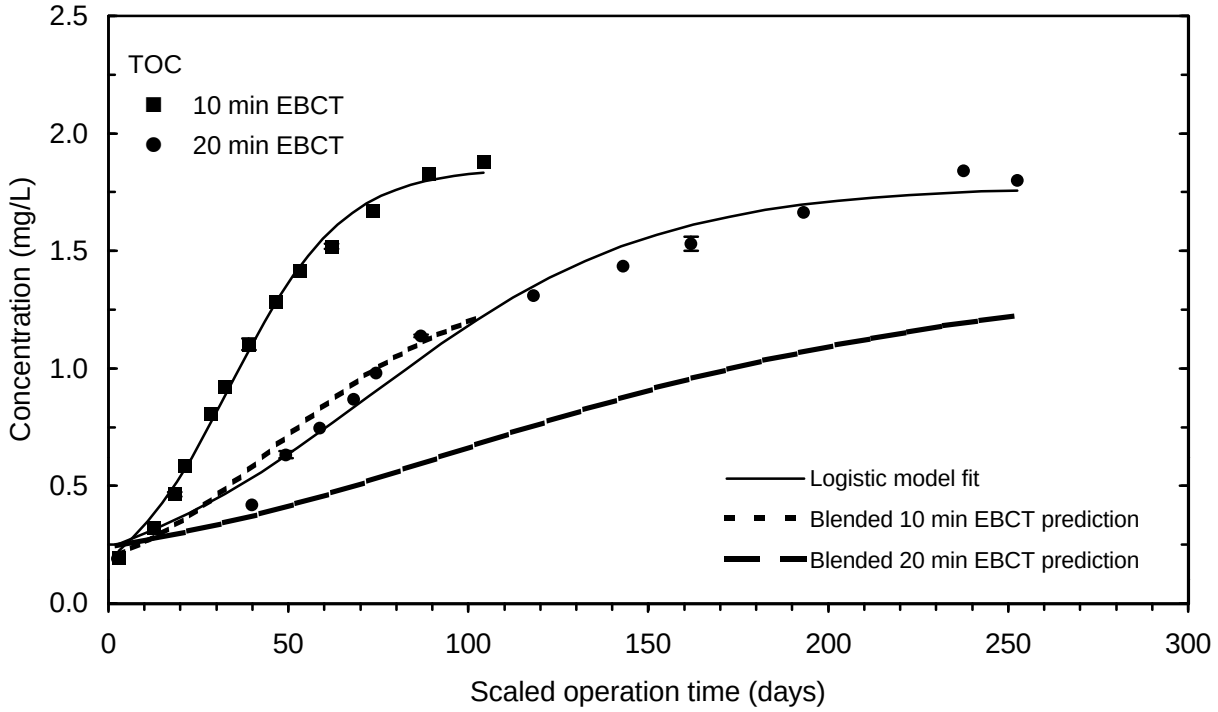


Figure 99 TOC breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

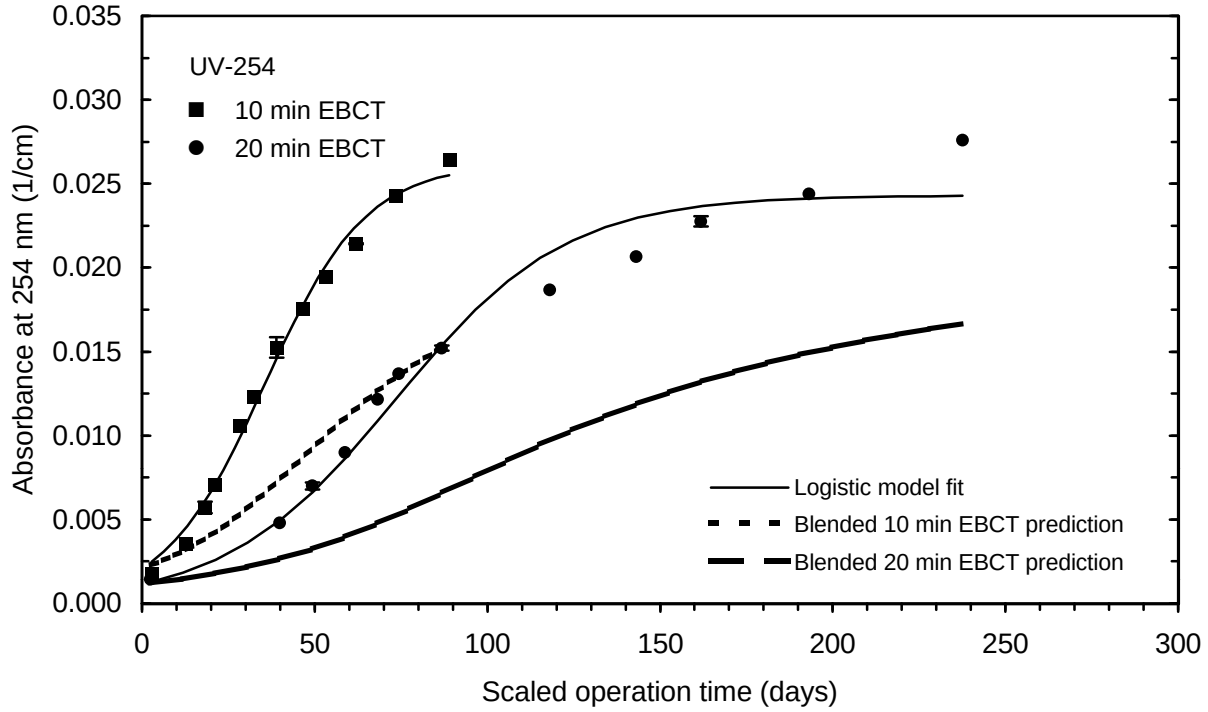


Figure 100 UV-254 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

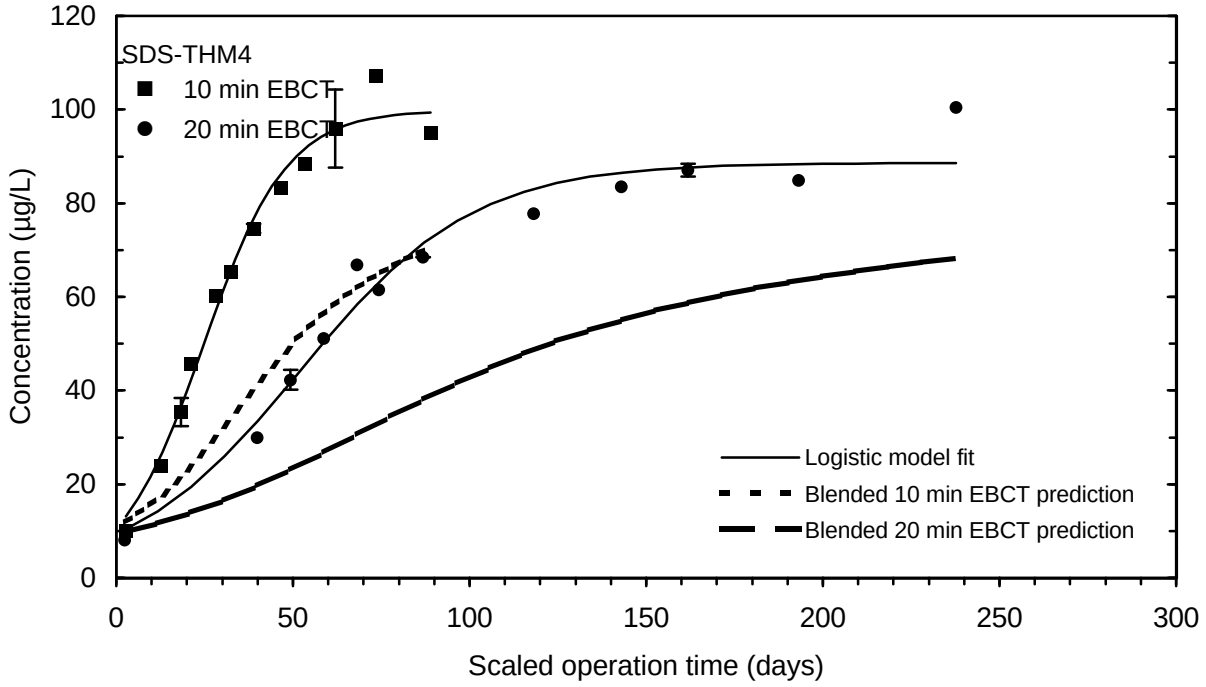


Figure 101 SDS-THM4 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

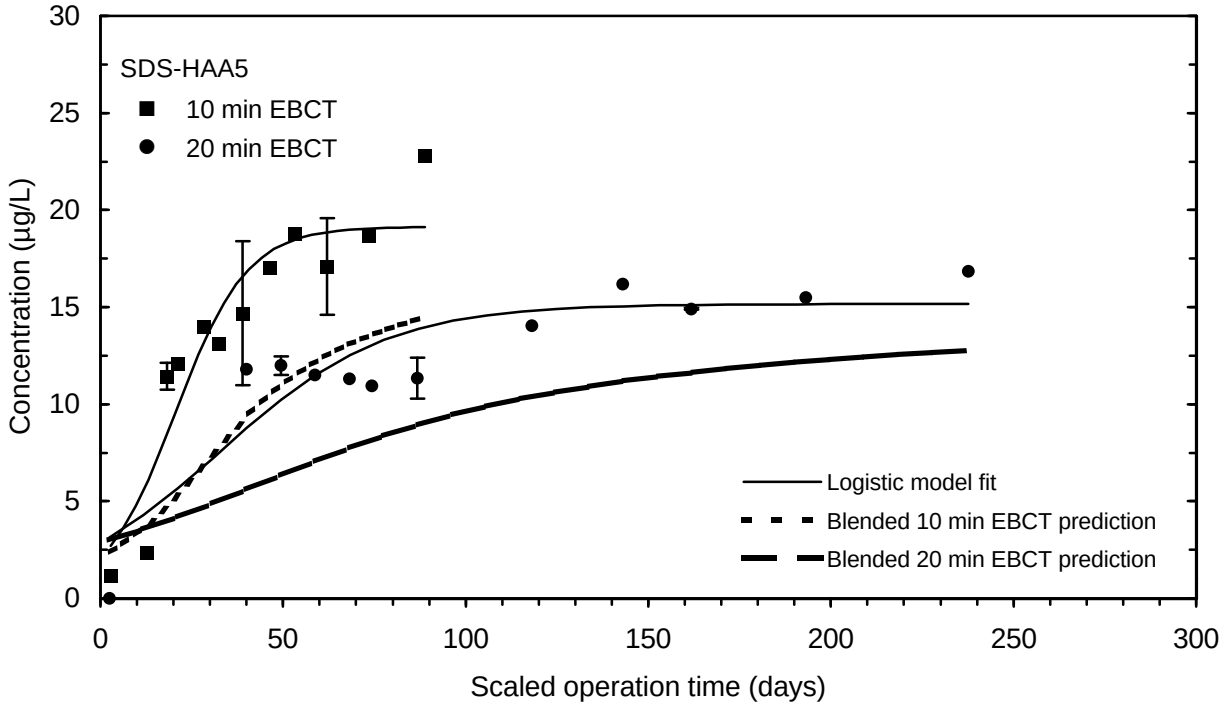


Figure 102 SDS-HAA5 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

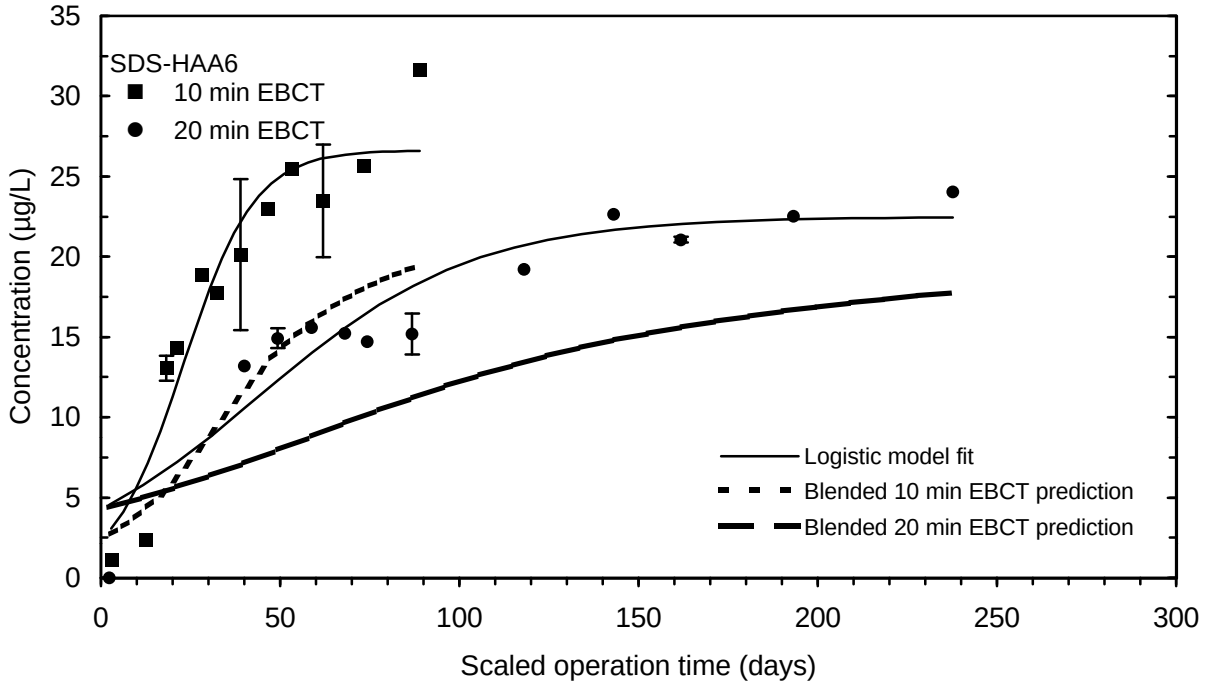


Figure 103 SDS-HAA6 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

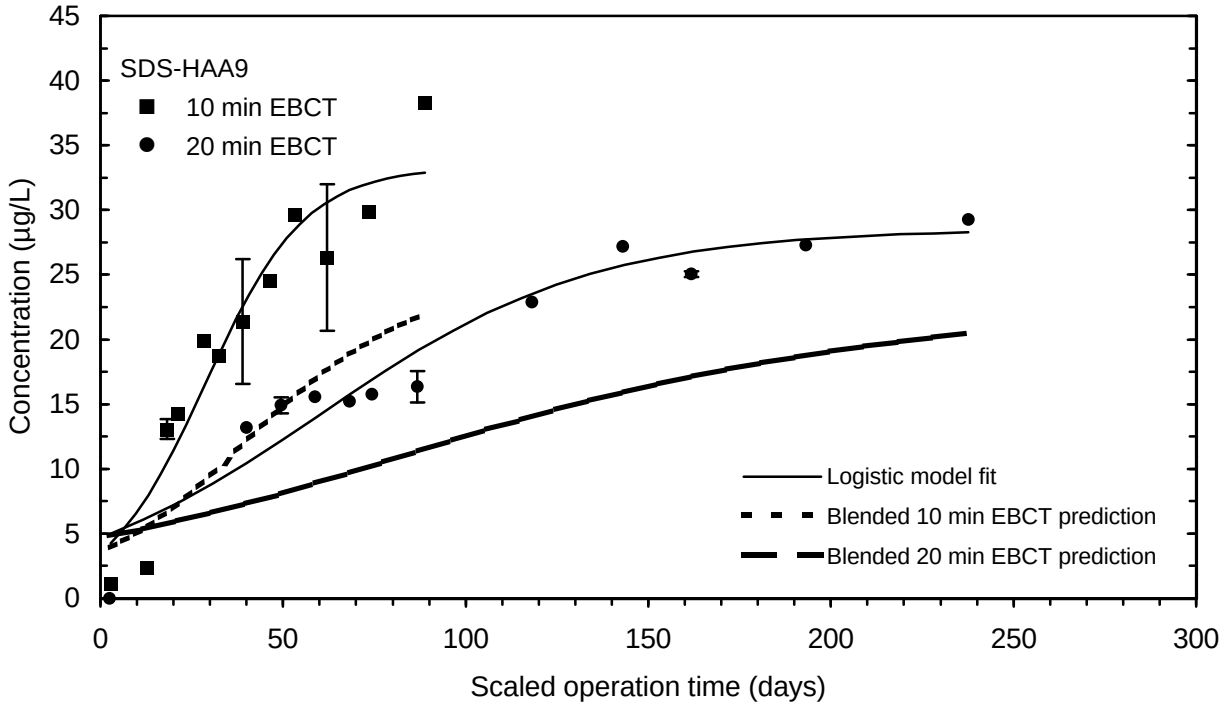


Figure 104 SDS-HAA9 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

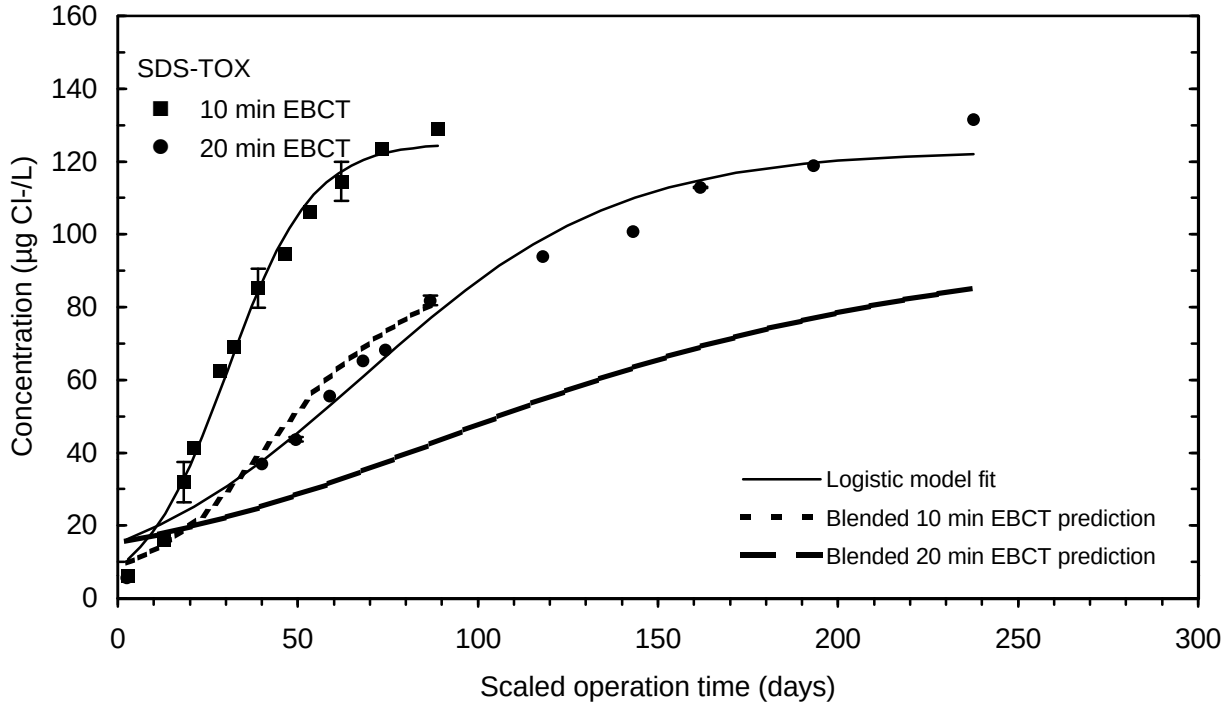


Figure 105 SDS-TOX breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

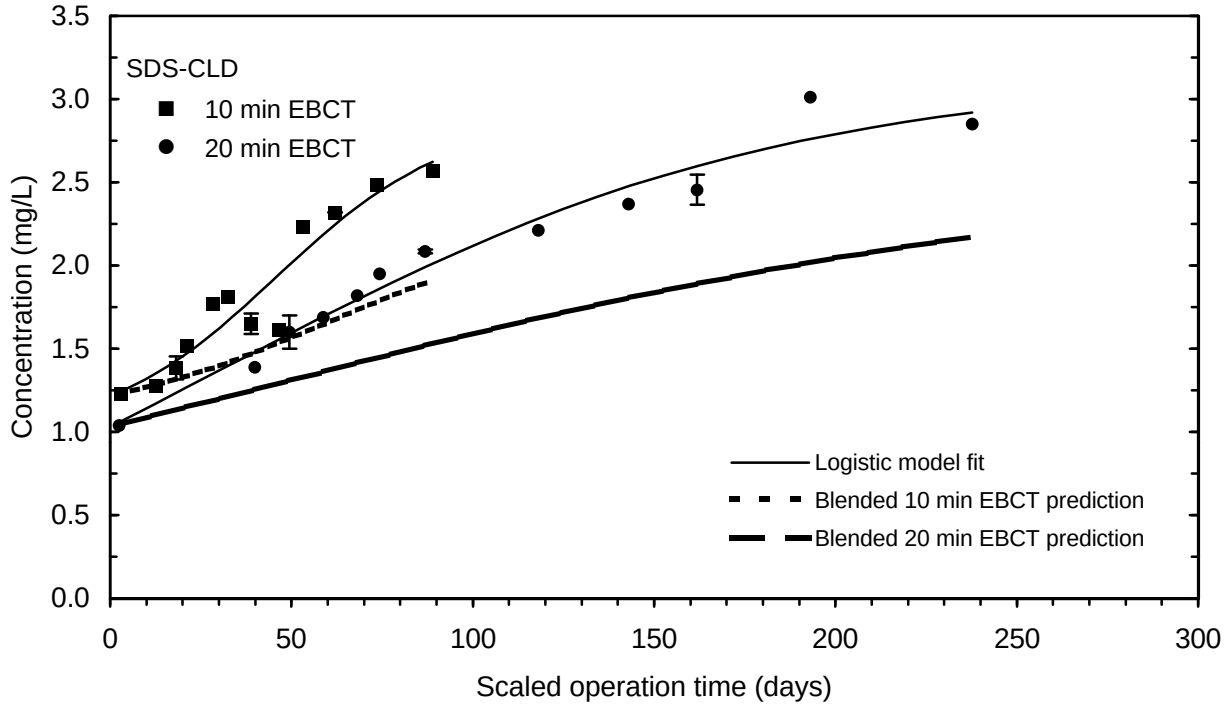


Figure 106 SDS-CLD breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 2 (May)

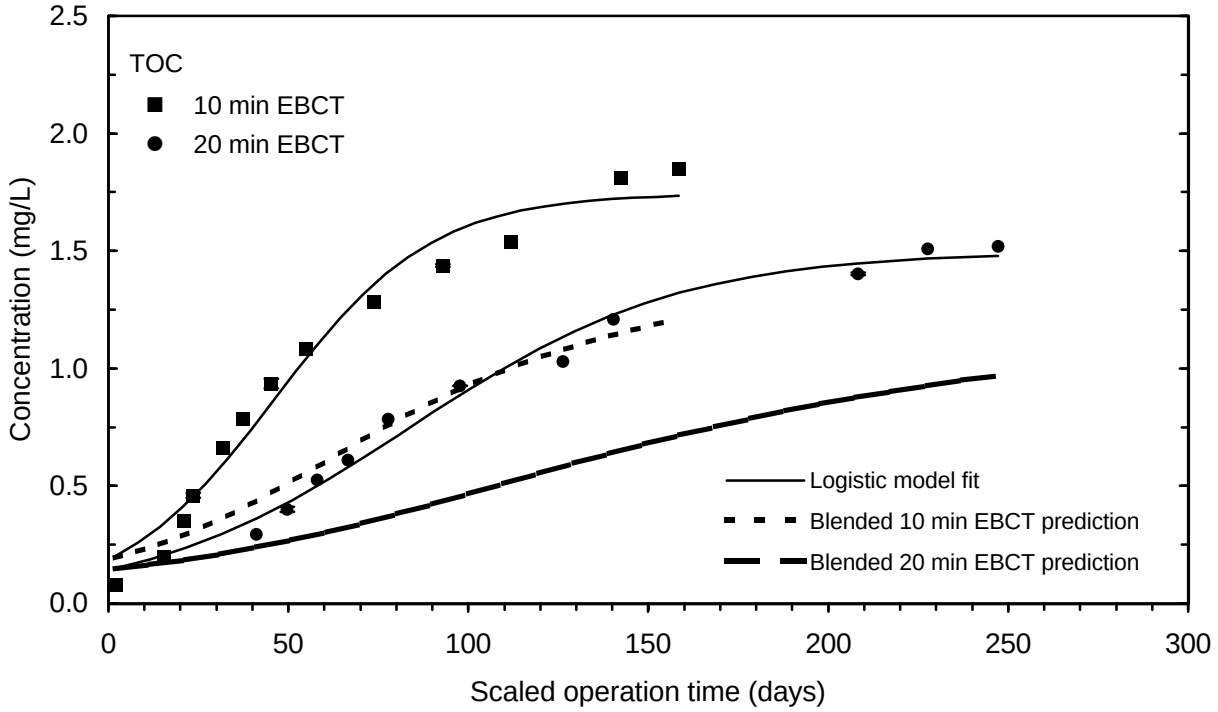


Figure 107 TOC breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

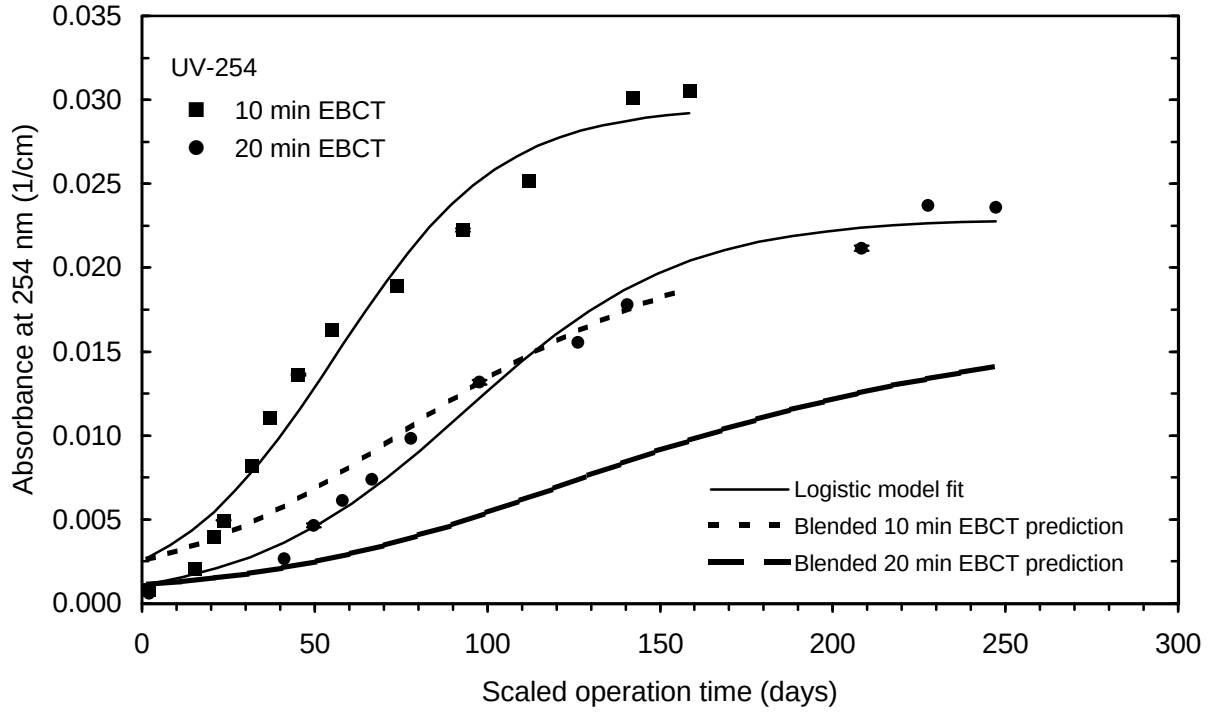


Figure 108 UV-254 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

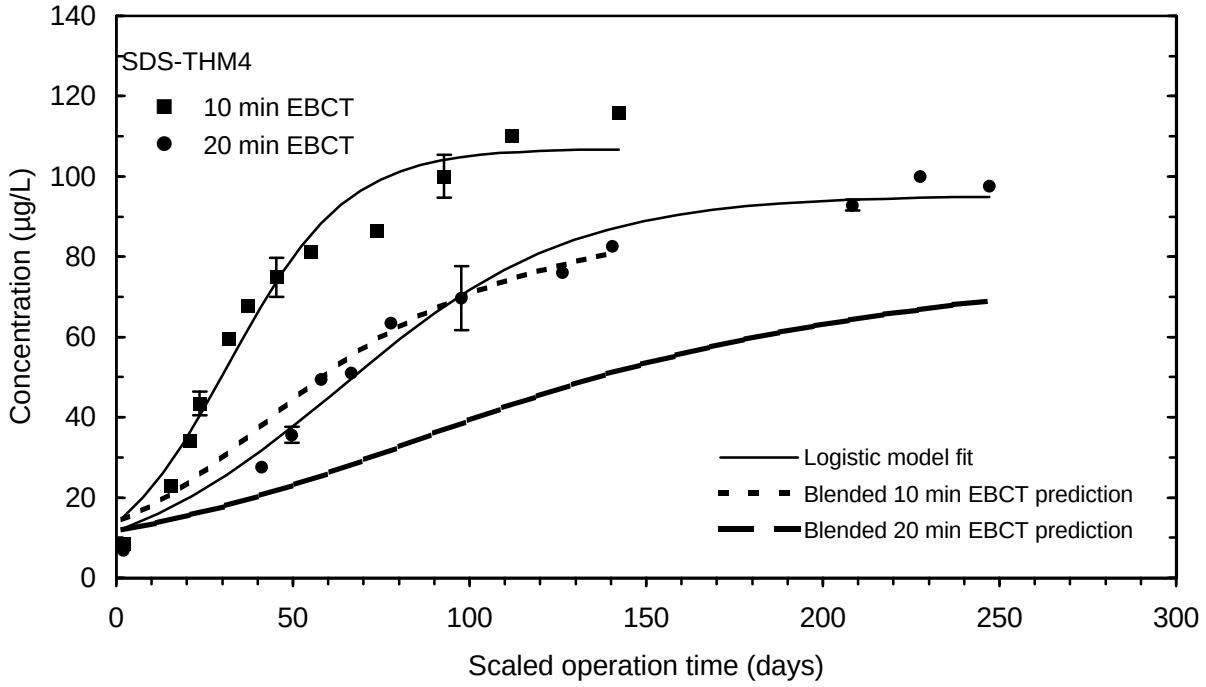


Figure 109 SDS-THM4 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

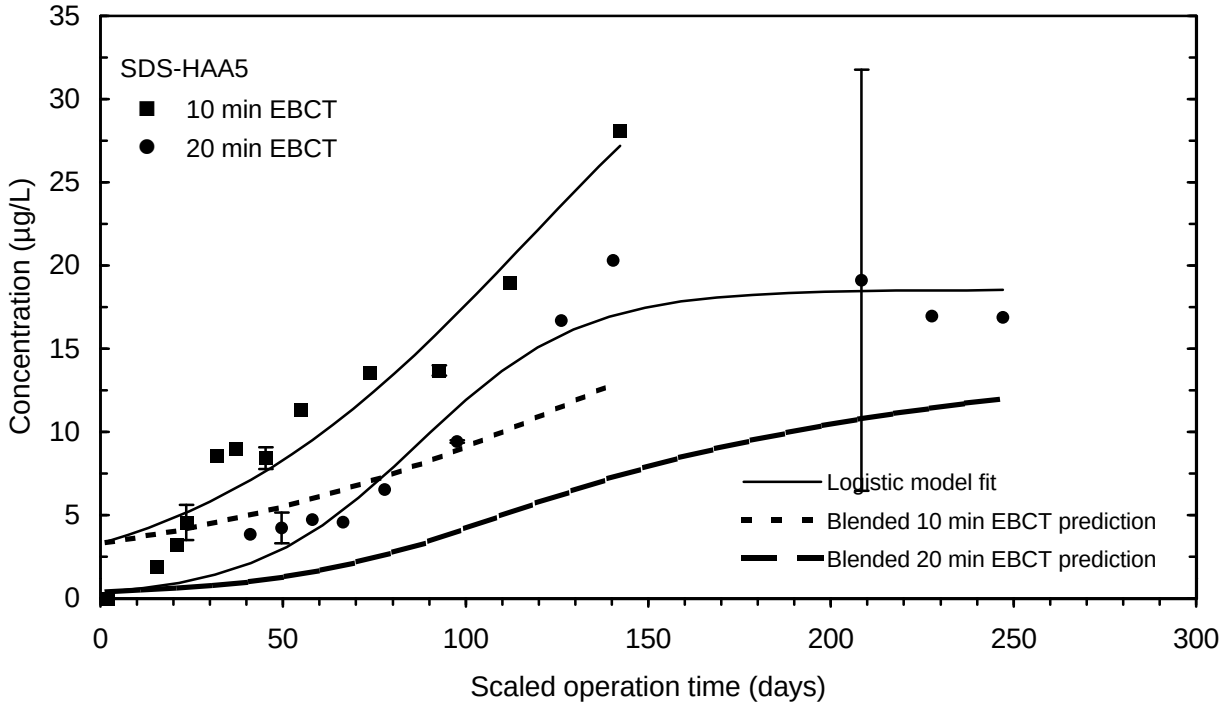


Figure 110 SDS-HAA5 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

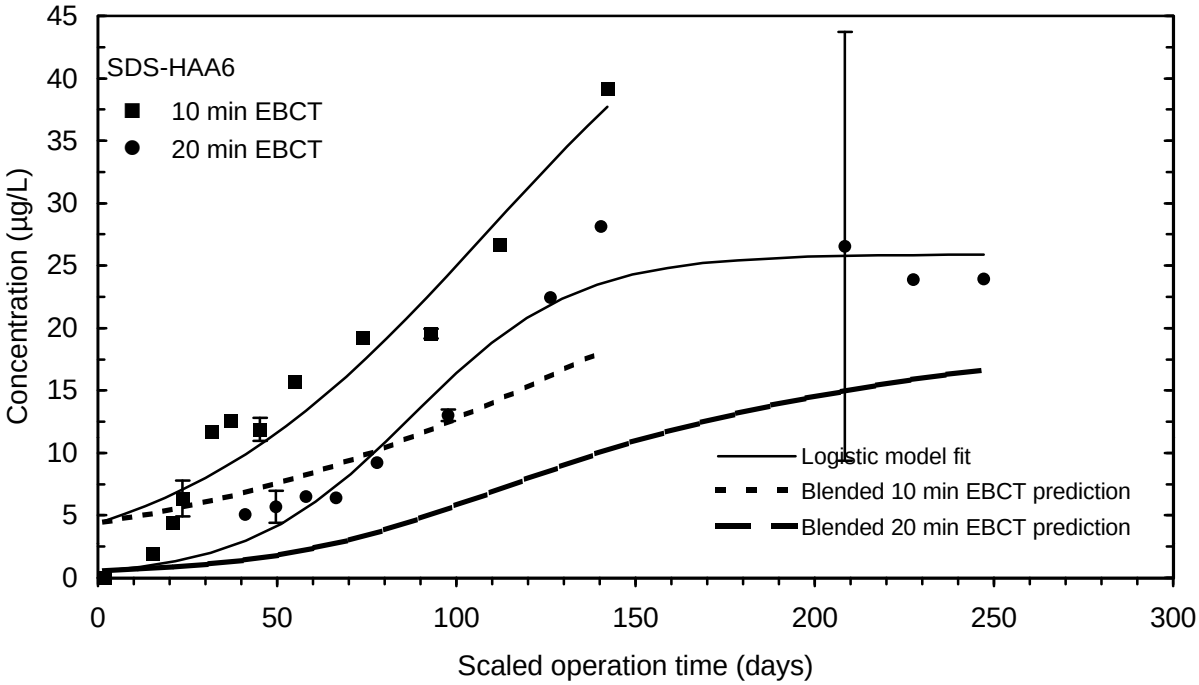


Figure 111 SDS-HAA6 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

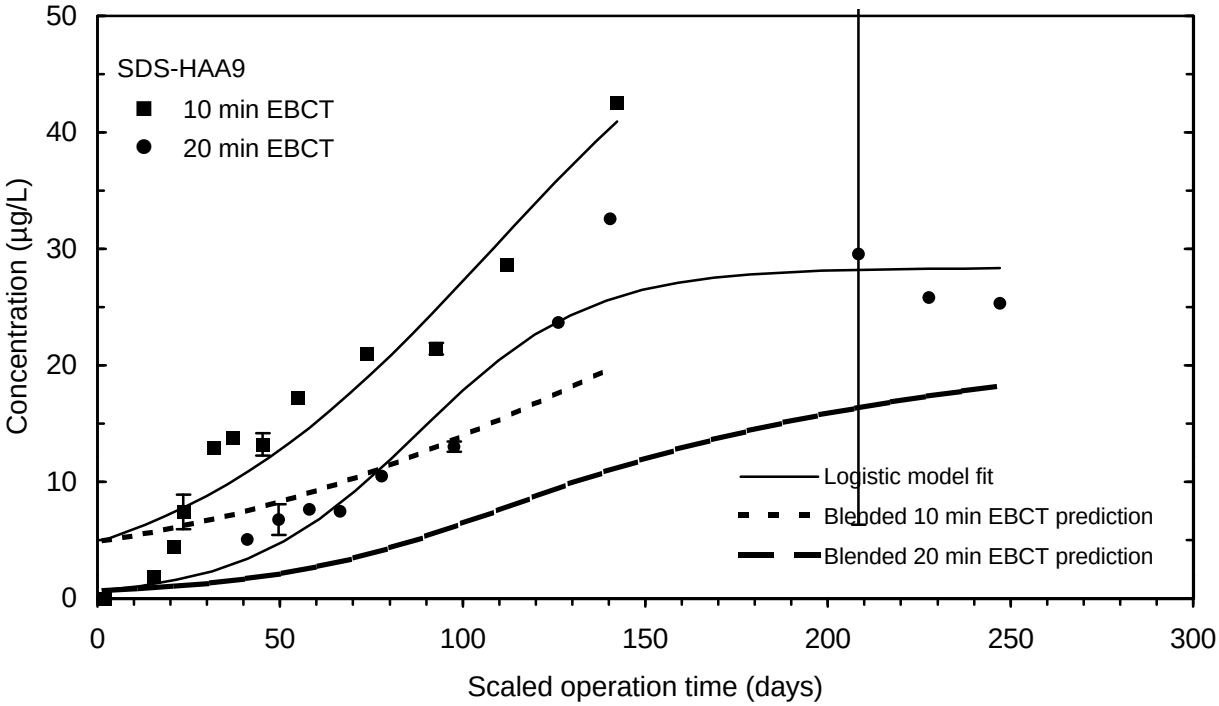


Figure 112 SDS-HAA9 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

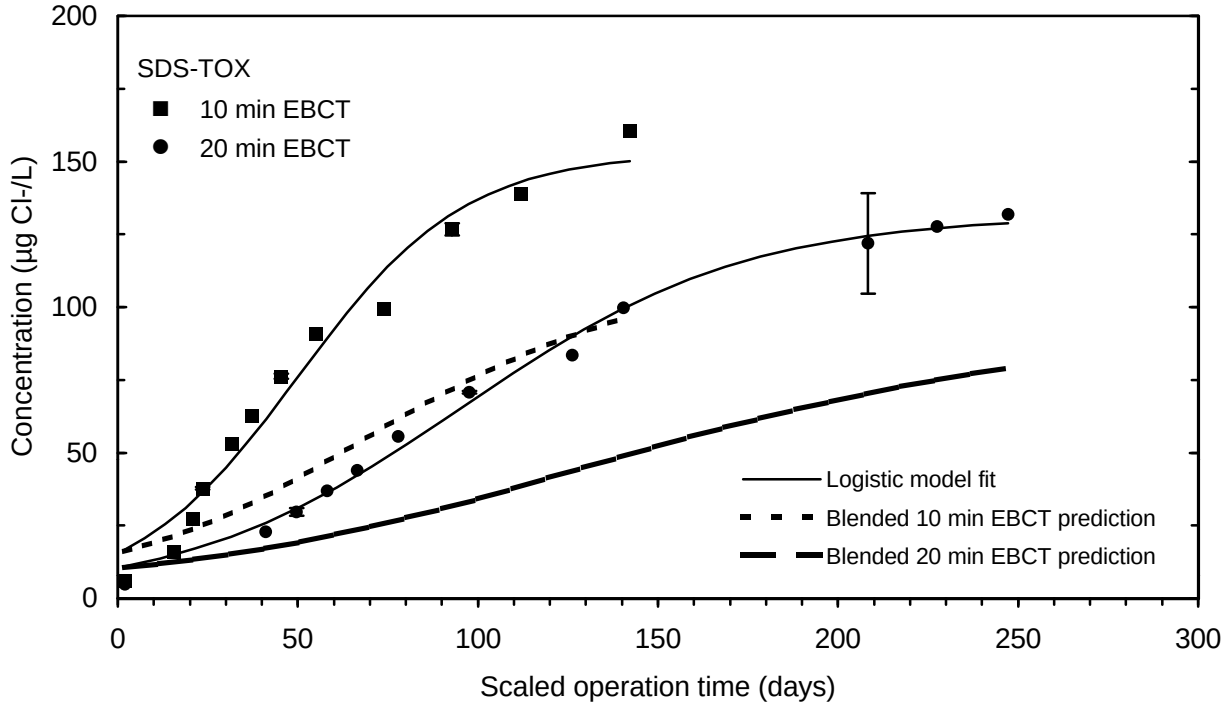


Figure 113 SDS-TOX breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

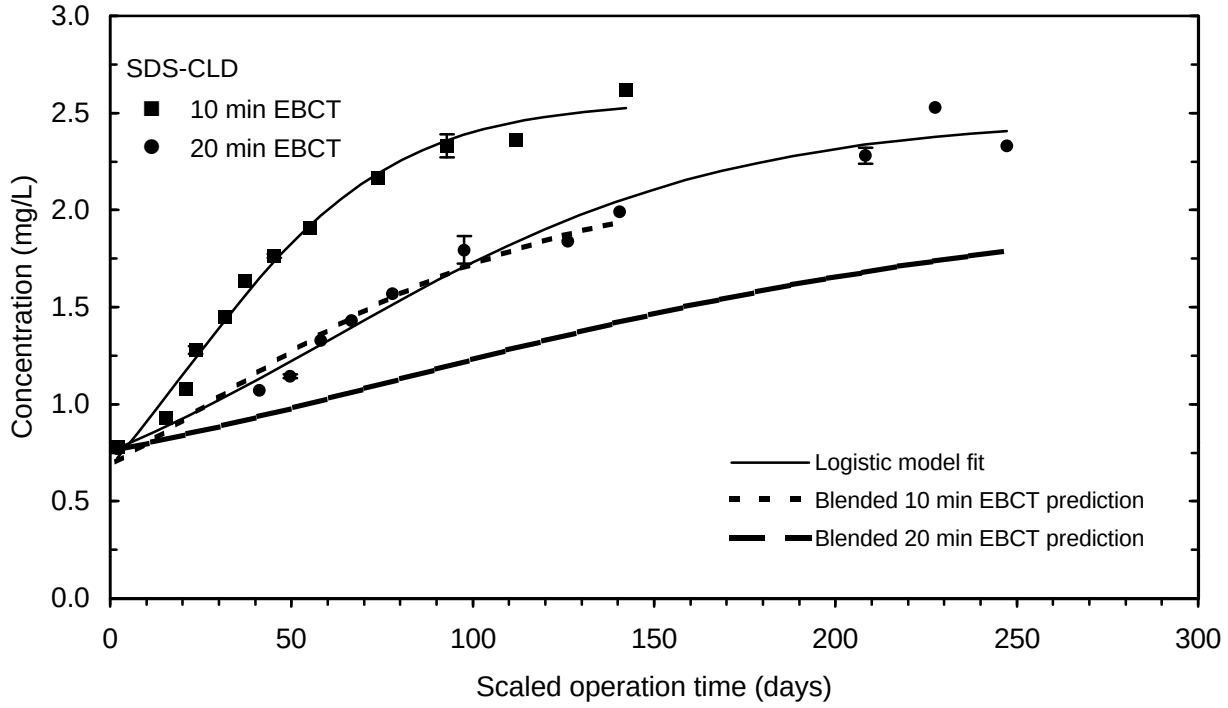


Figure 114 SDS-CLD breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 3 (September)

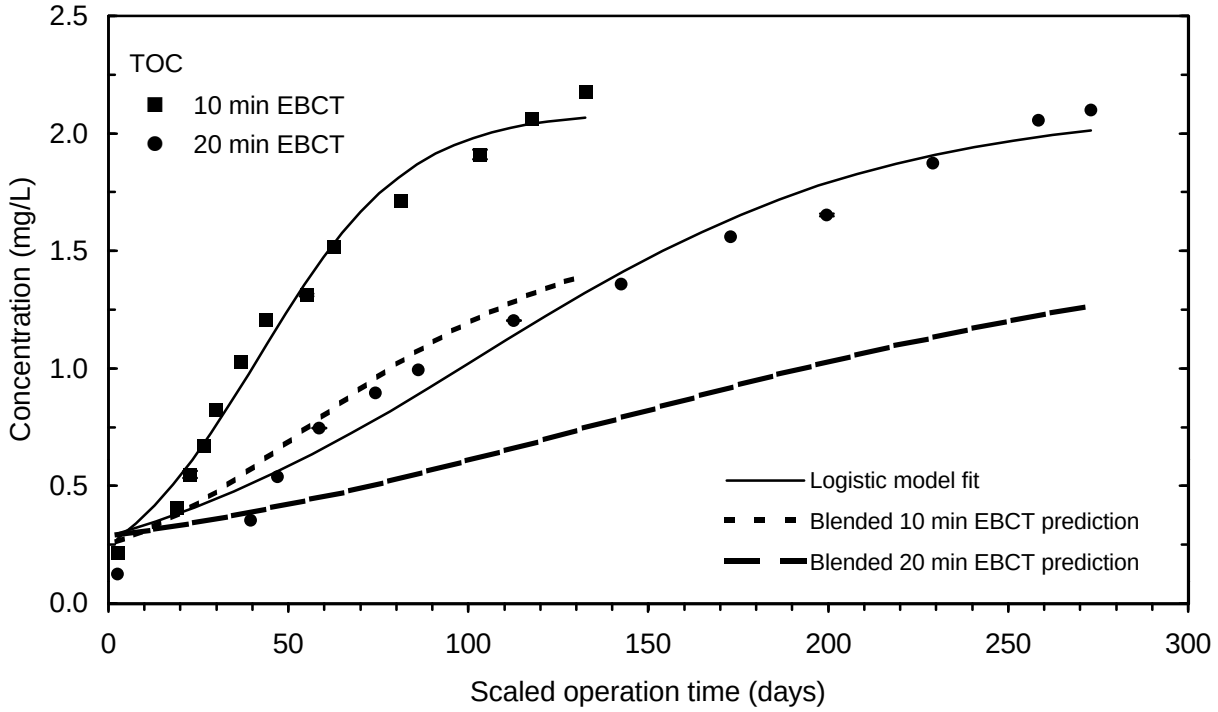


Figure 115 TOC breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

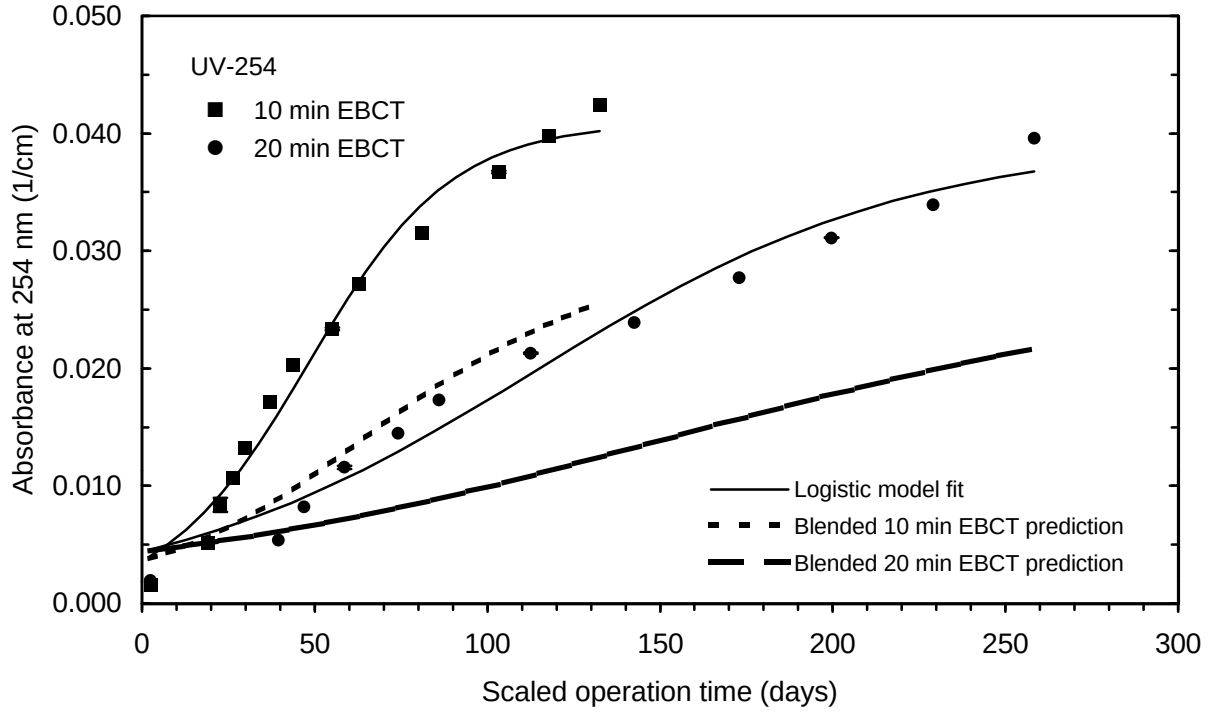


Figure 116 UV-254 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

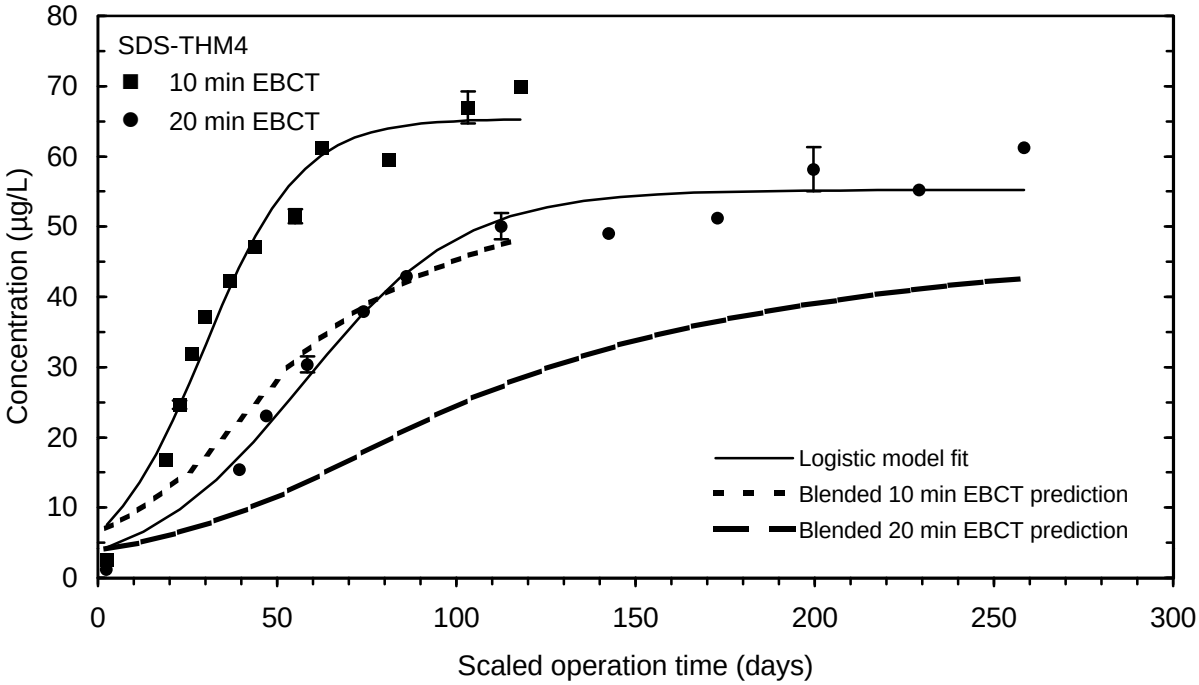


Figure 117 SDS-THM4 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

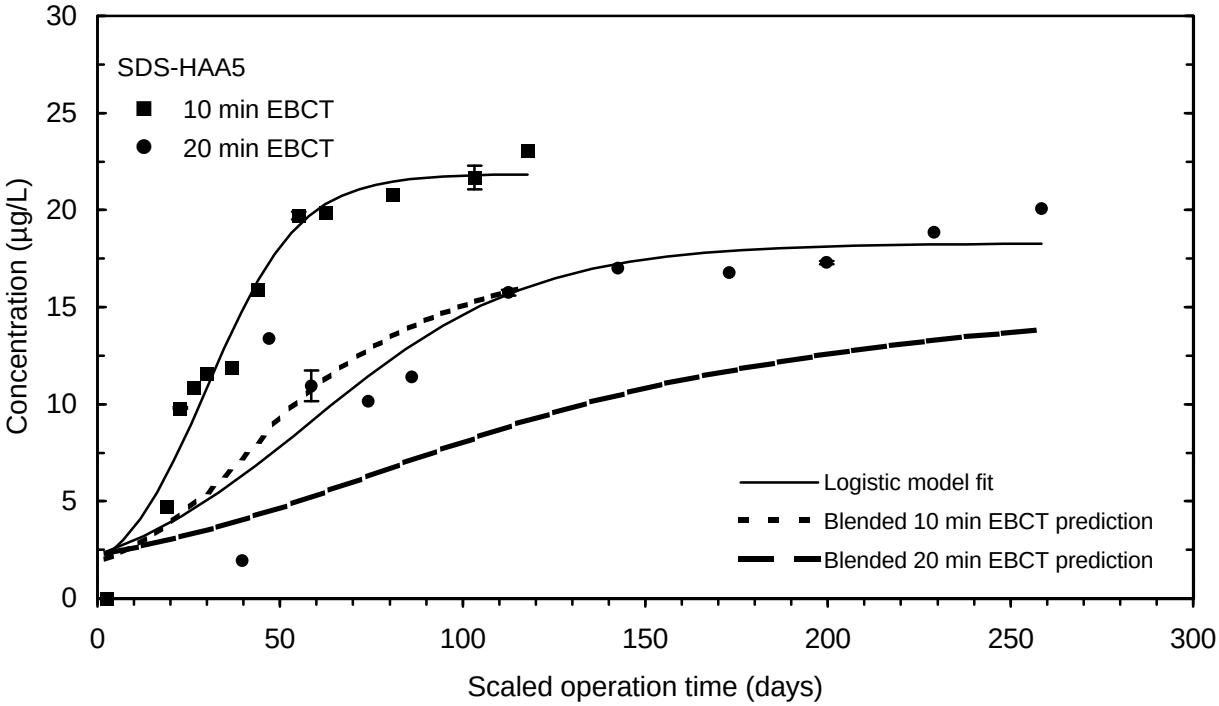


Figure 118 SDS-HAA5 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

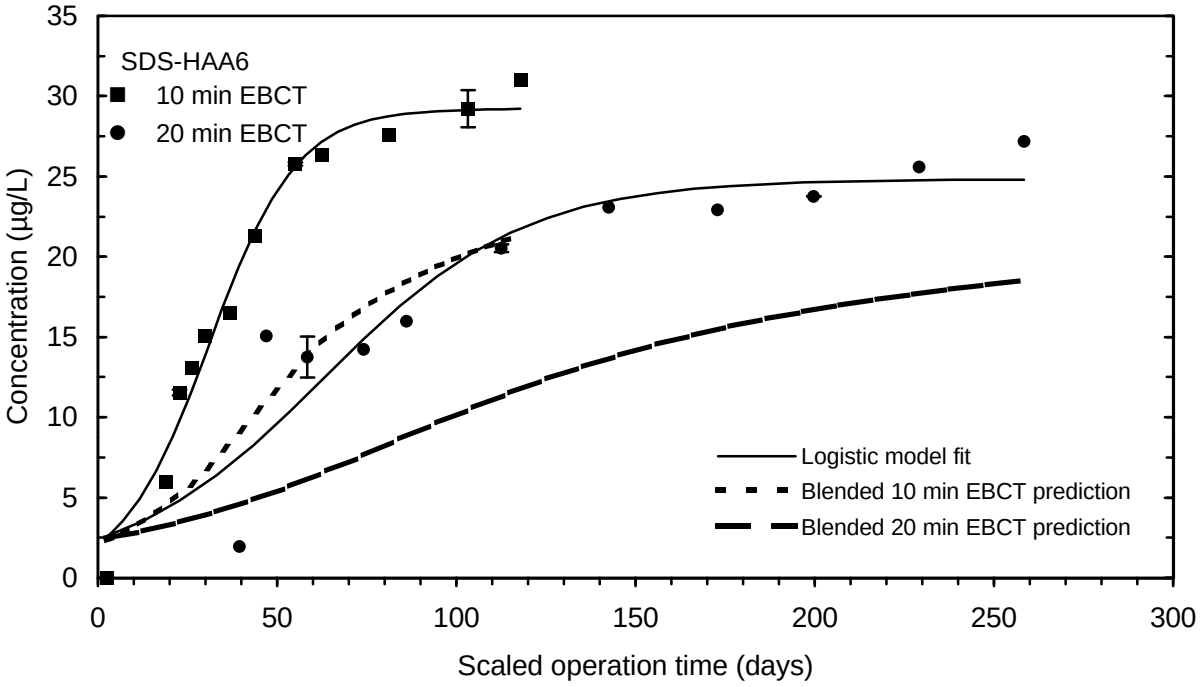


Figure 119 SDS-HAA6 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

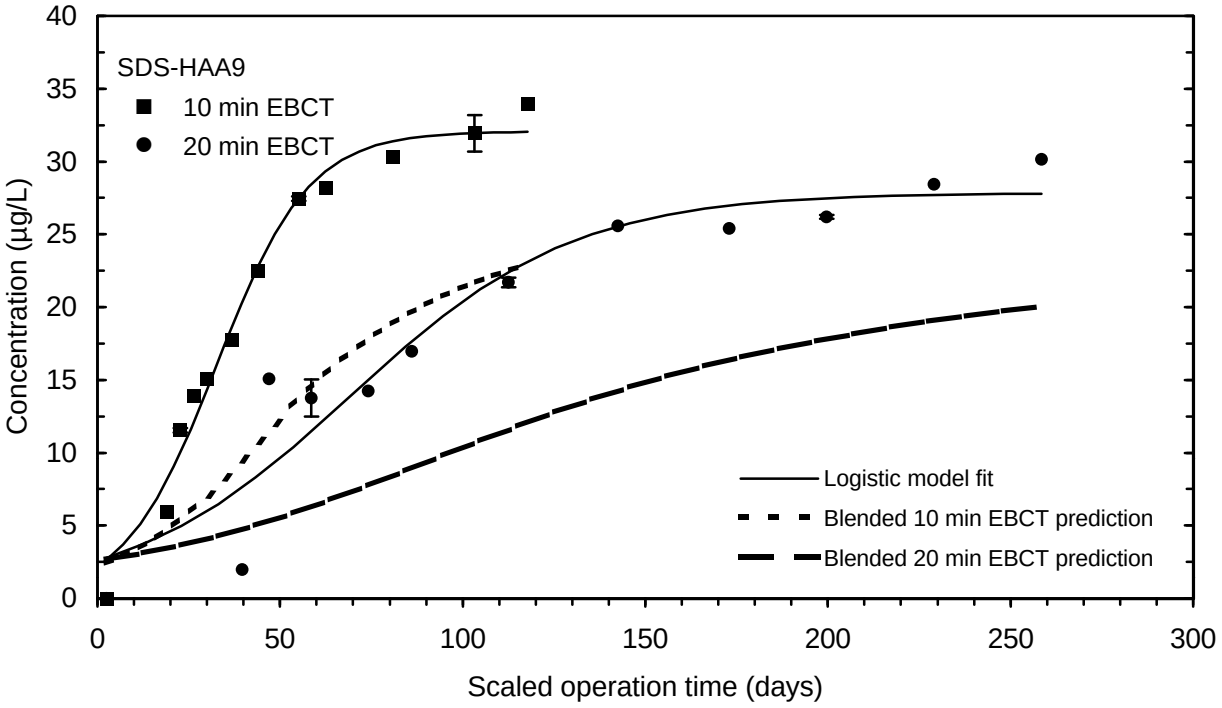


Figure 120 SDS-HAA9 breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

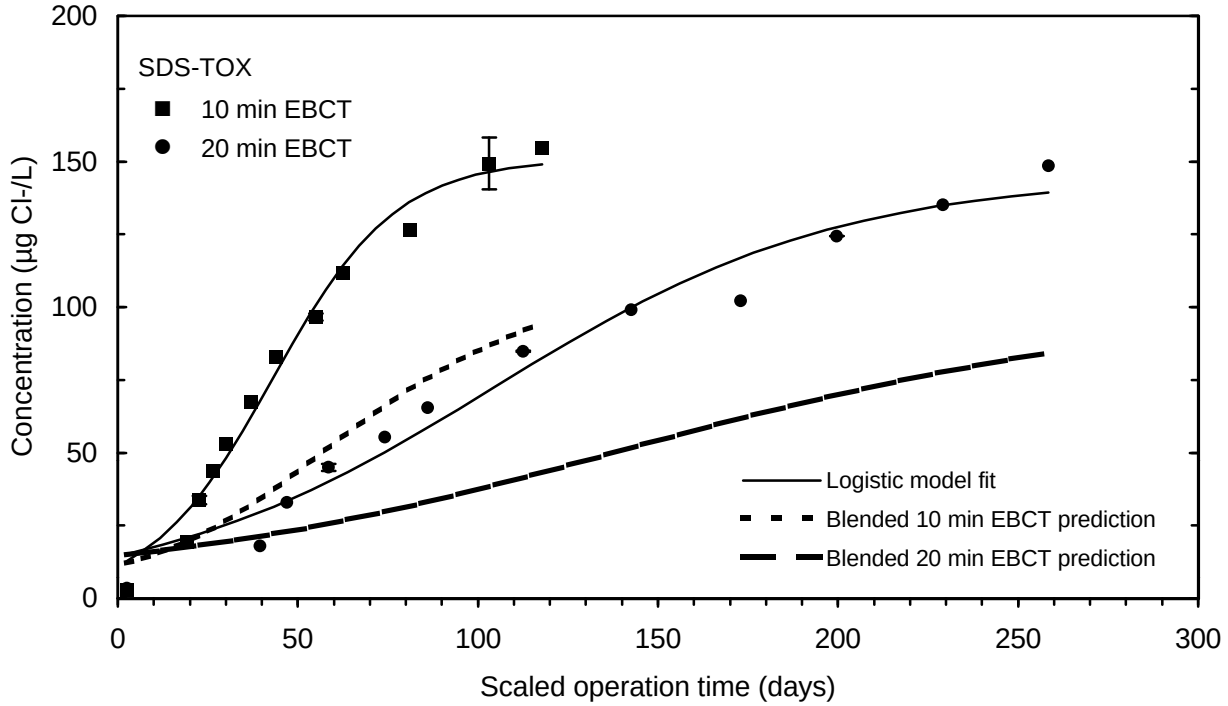


Figure 121 SDS-TOX breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

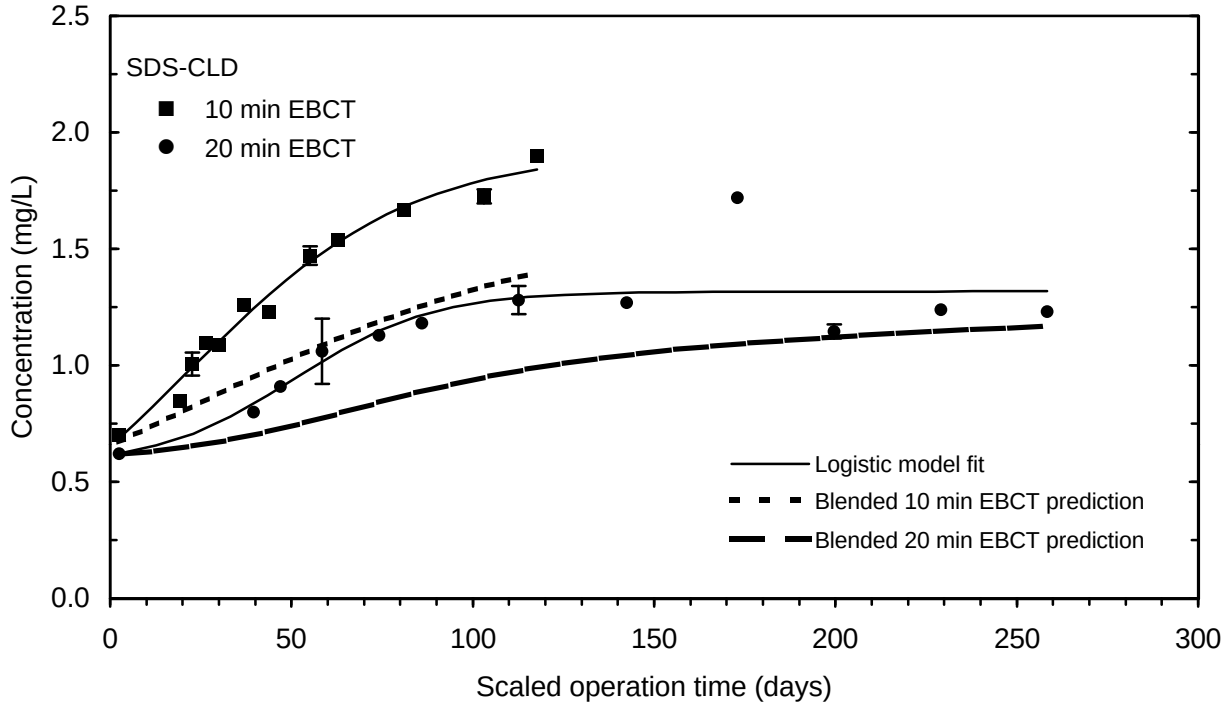


Figure 122 SDS-CLD breakthrough and effluent blending for 10 and 20 minute EBCT contactors during session 4 (November)

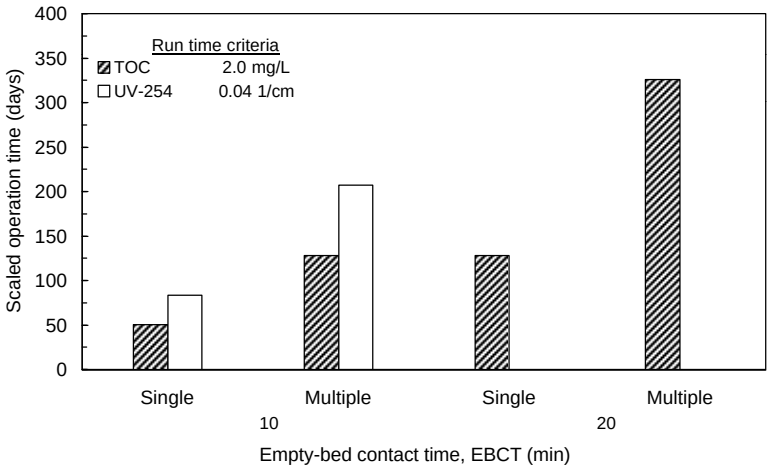


Figure 123 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 1 (February)

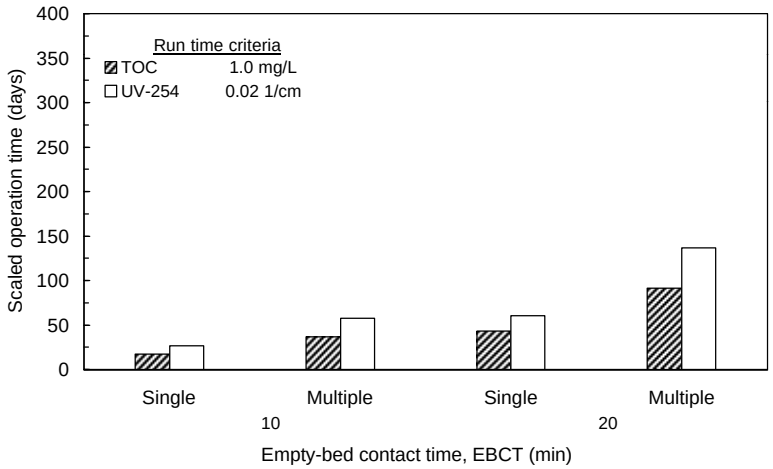


Figure 124 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 1 (February)

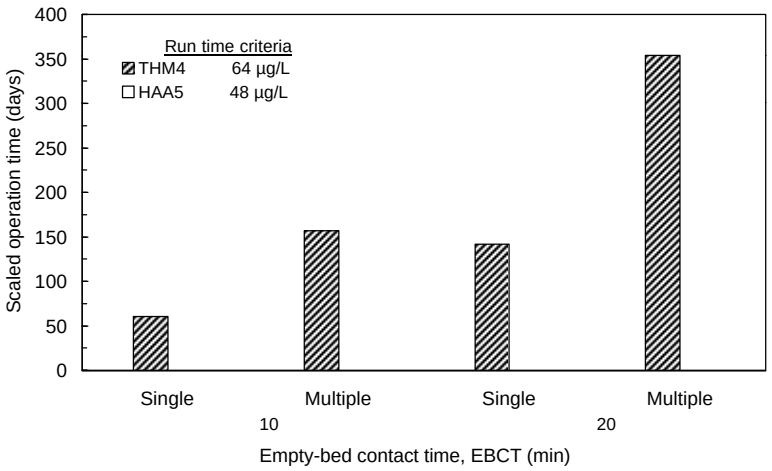


Figure 125 GAC run times based on single contactor breakthrough and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 1 (February)

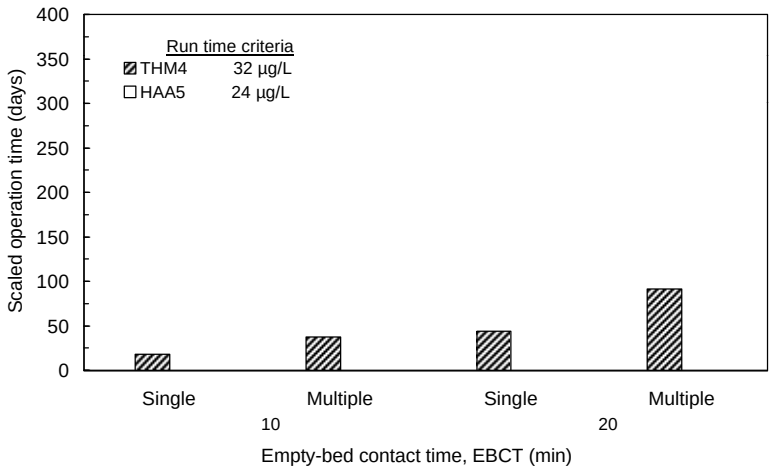


Figure 126 GAC run times based on single contactor breakthrough and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 1 (February)

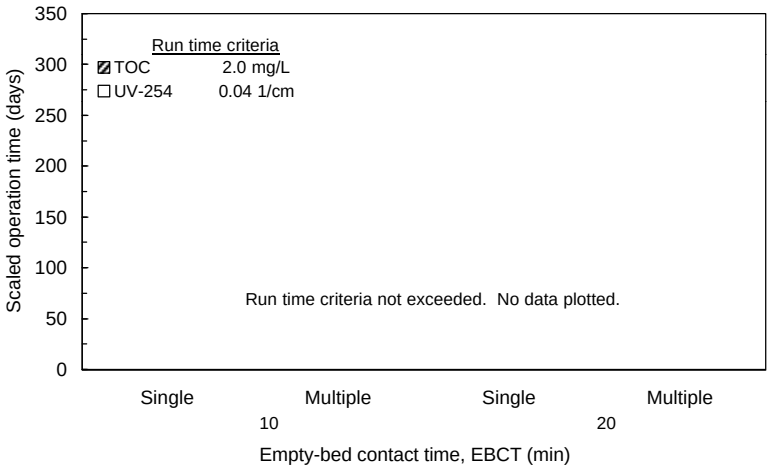


Figure 127 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 2 (May)

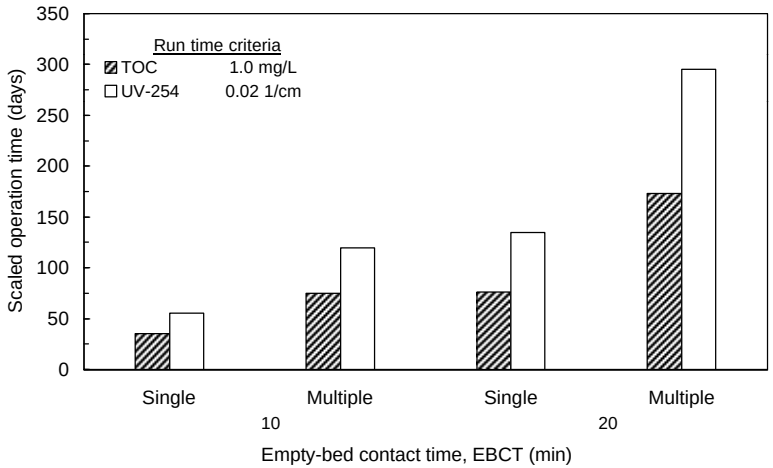


Figure 128 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 2 (May)

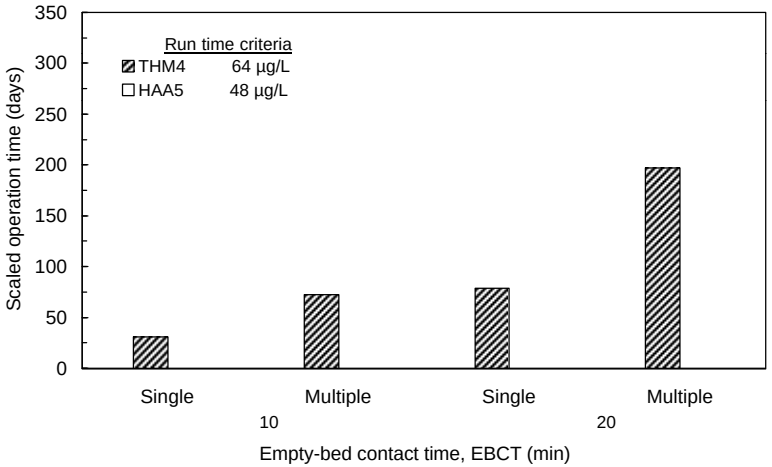


Figure 129 GAC run times based on single contactor breakthrough and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 2 (May)

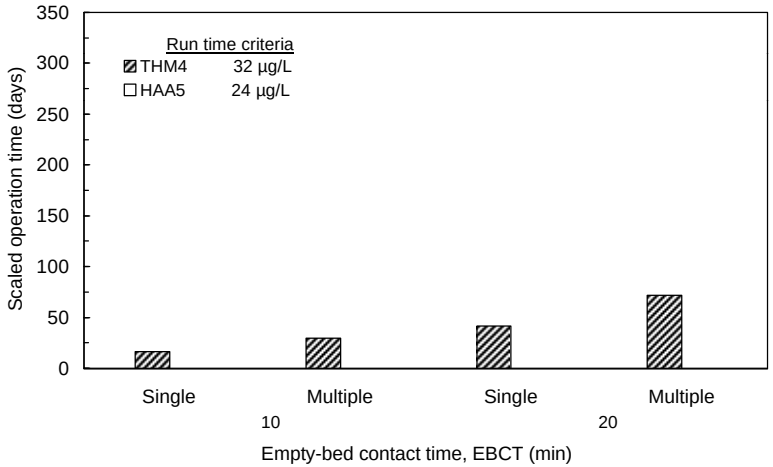


Figure 130 GAC run times based on single contactor breakthrough and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 2 (May)

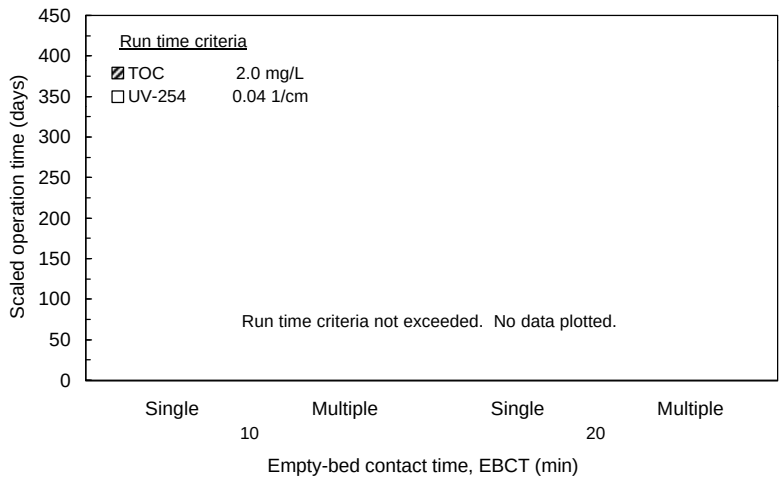


Figure 131 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 3 (September)

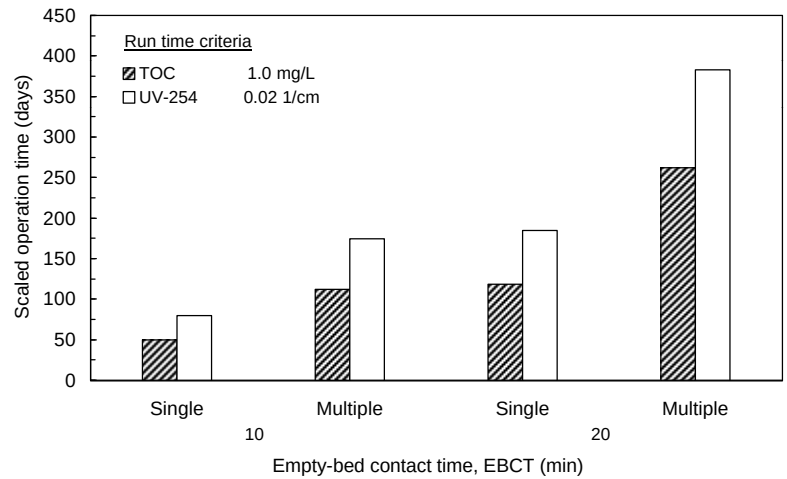


Figure 132 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 3 (September)

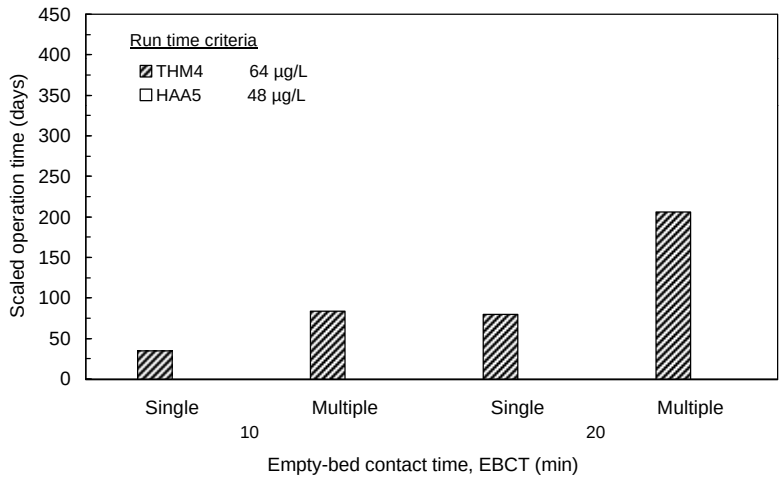


Figure 133 GAC run times based on single contactor breakthrough and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 3 (September)

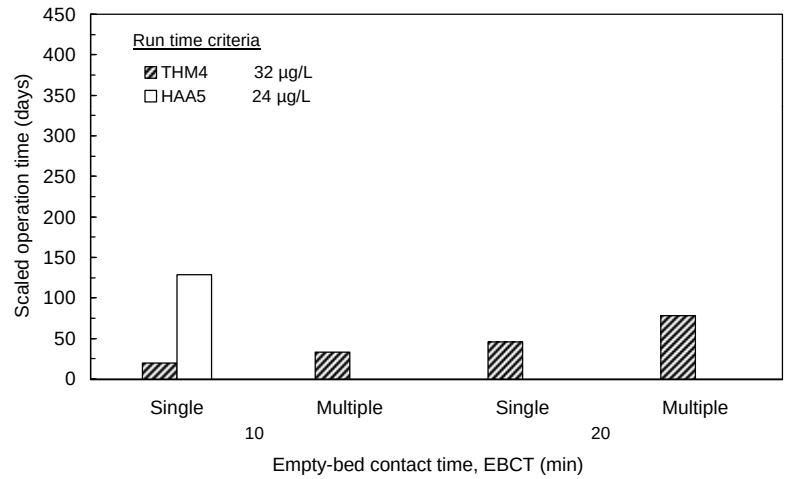


Figure 134 GAC run times based on single contactor breakthrough and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 3 (September)

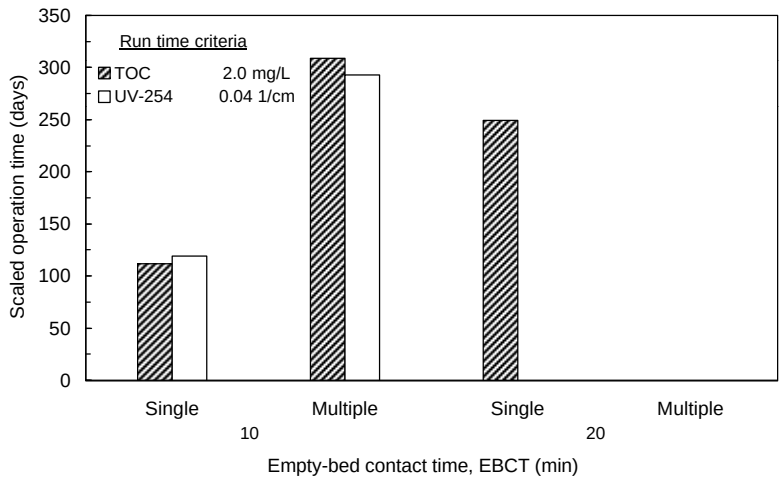


Figure 135 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (high) during session 4 (November)

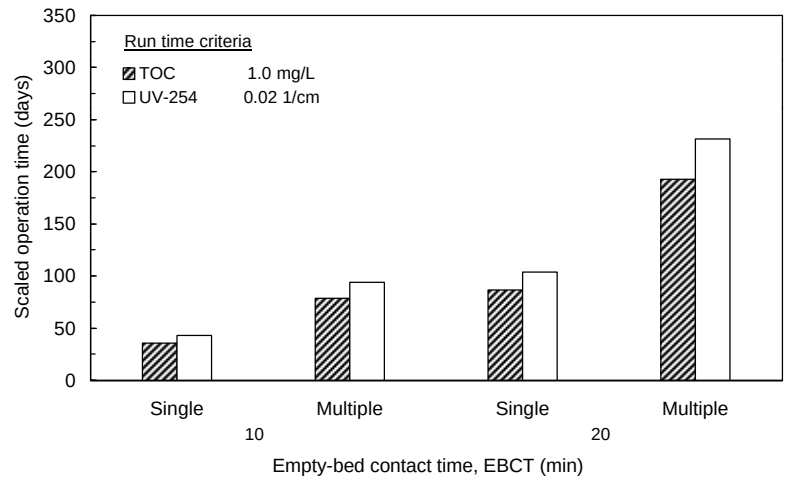


Figure 136 GAC run times based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria (low) during session 4 (November)

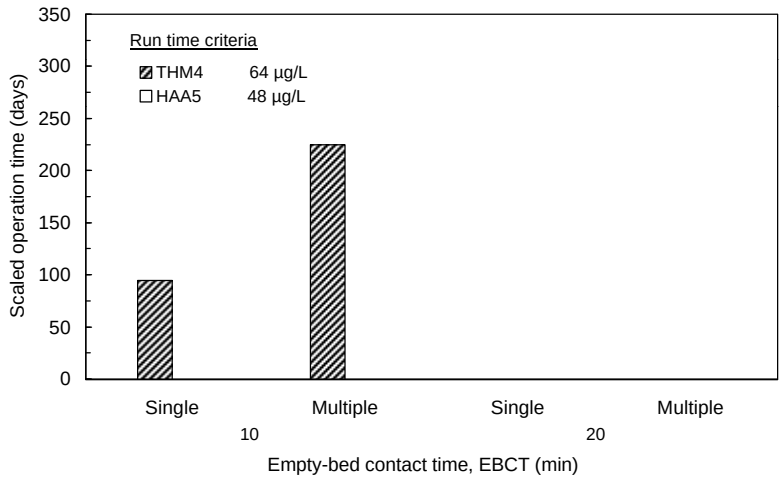


Figure 137 GAC run times based on single contactor breakthrough and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 4 (November)

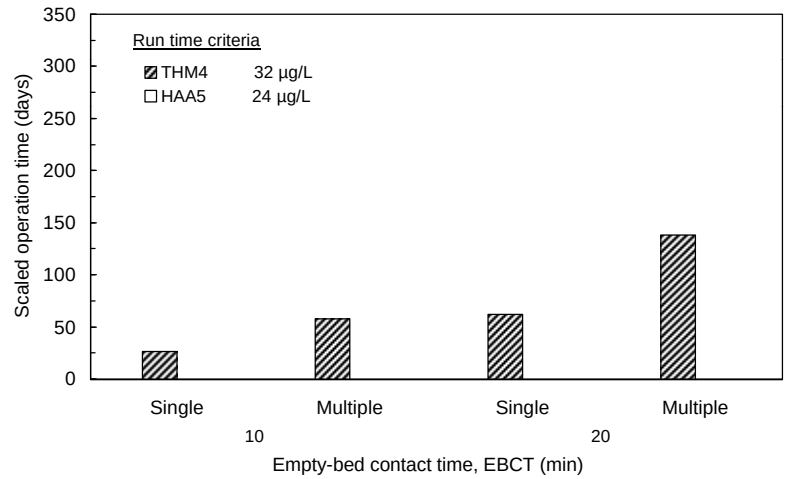


Figure 138 GAC run times based on single contactor breakthrough and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 4 (November)

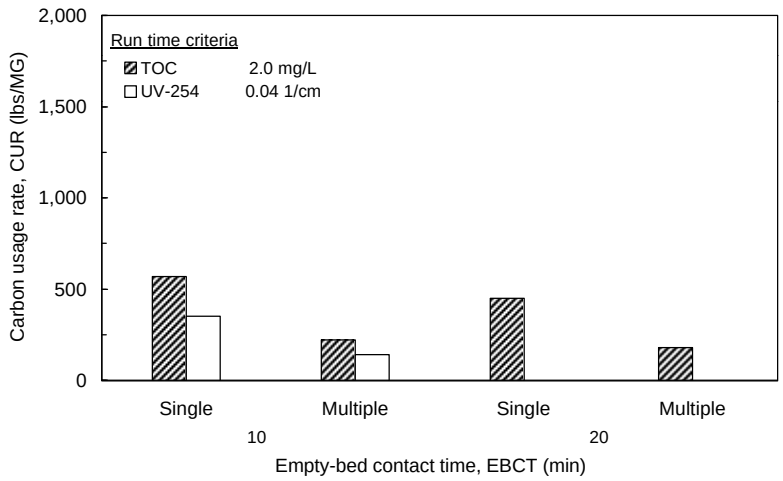


Figure 139 Carbon usage rates based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria during session 1 (February)

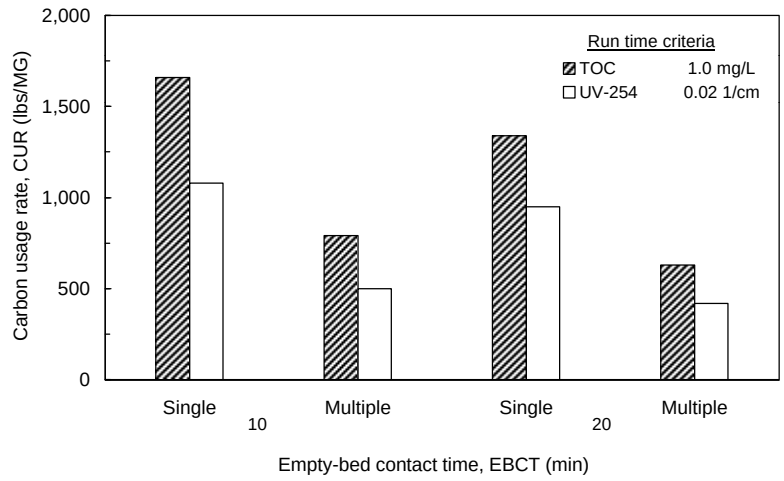


Figure 140 Carbon usage rates based on single contactor breakthrough and effluent blending for TOC and UV-254 effluent criteria during session 1 (February)

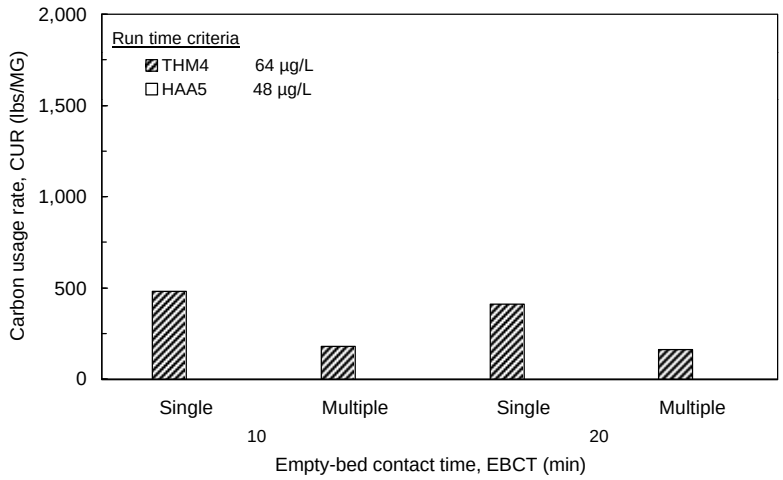


Figure 141 Carbon usage rates based on single contactor breakthrough and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 1 (February)

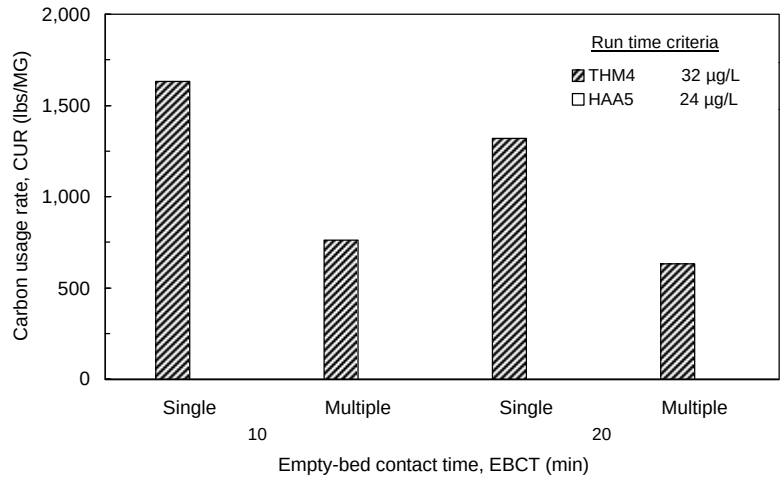


Figure 142 Carbon usage rates based on single contactor breakthrough and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 1 (February)

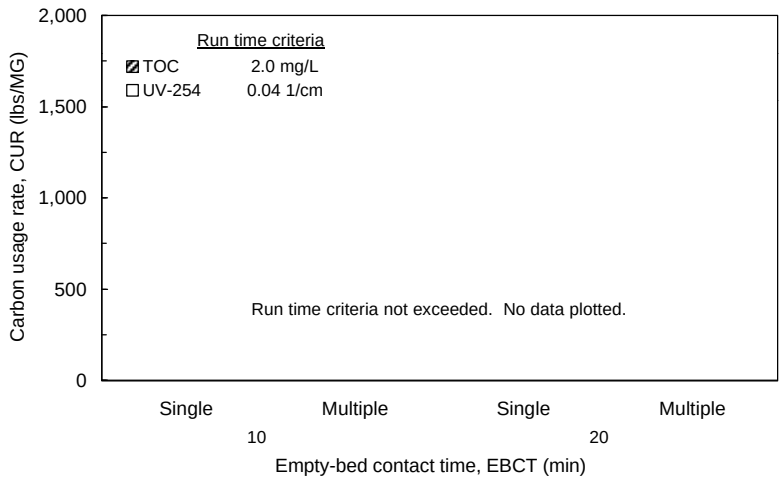


Figure 143 Carbon usage rates based on single contactors and effluent blending for TOC and UV-254 effluent criteria during session 2 (May)

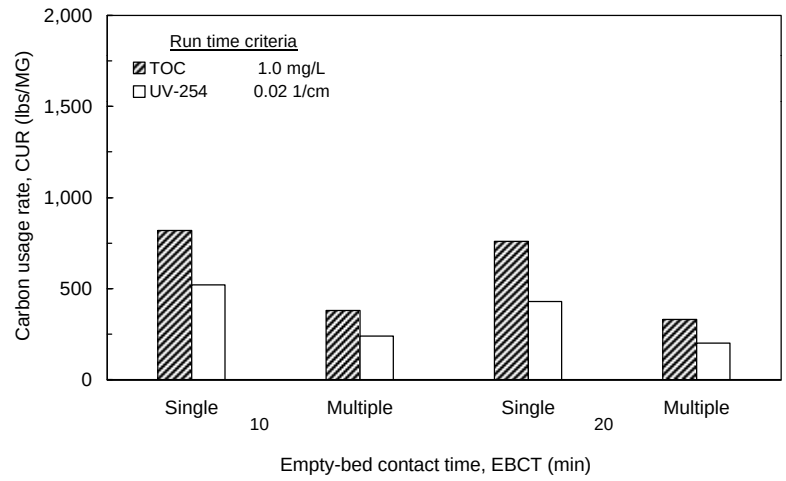


Figure 144 Carbon usage rates based on single contactors and effluent blending for TOC and UV-254 effluent criteria during session 2 (May)

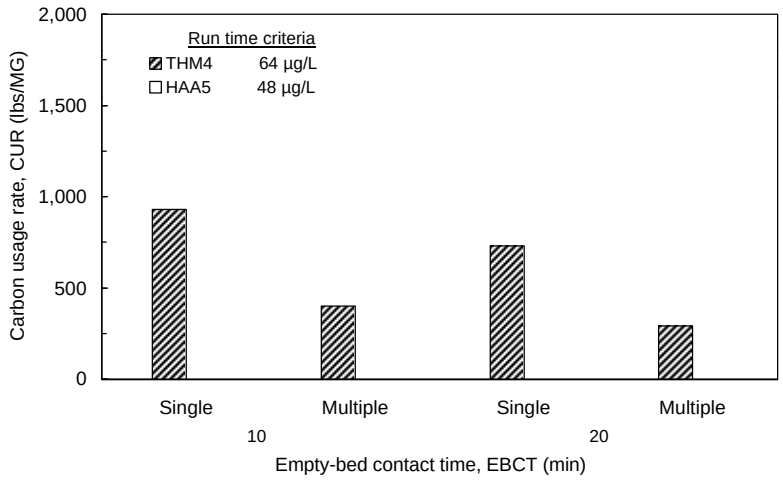


Figure 145 Carbon usage rates based on single contactors and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 2 (May)

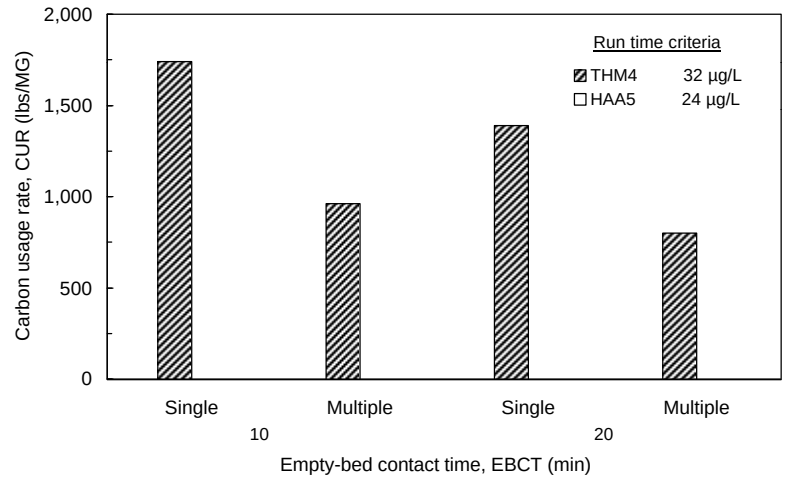


Figure 146 Carbon usage rates based on single contactors and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 2 (May)

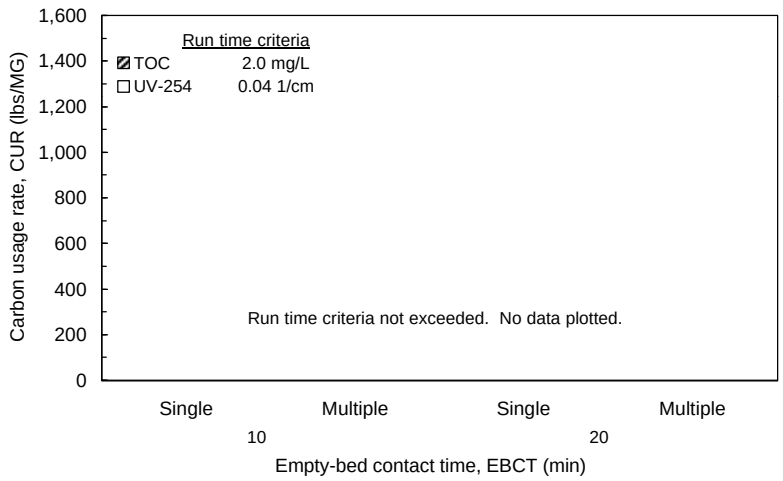


Figure 147 Carbon usage rates based on single contactors and effluent blending for TOC and UV-254 effluent criteria during session 3 (September)

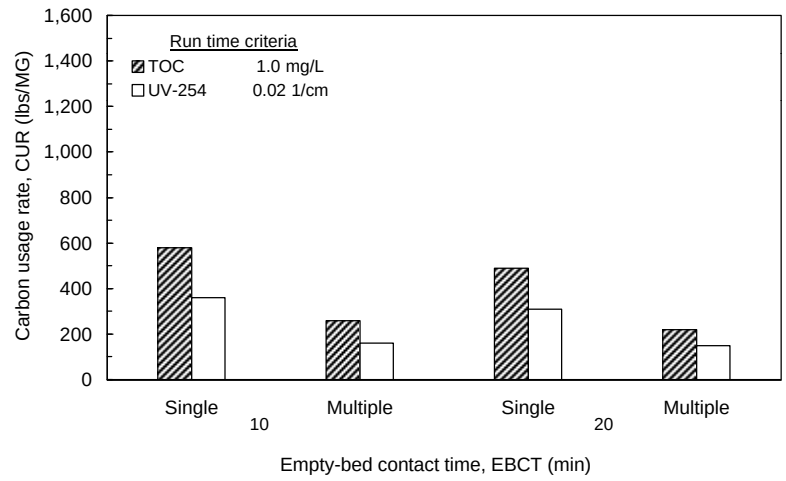


Figure 148 Carbon usage rates based on single contactors and effluent blending for TOC and UV-254 effluent criteria during session 3 (September)

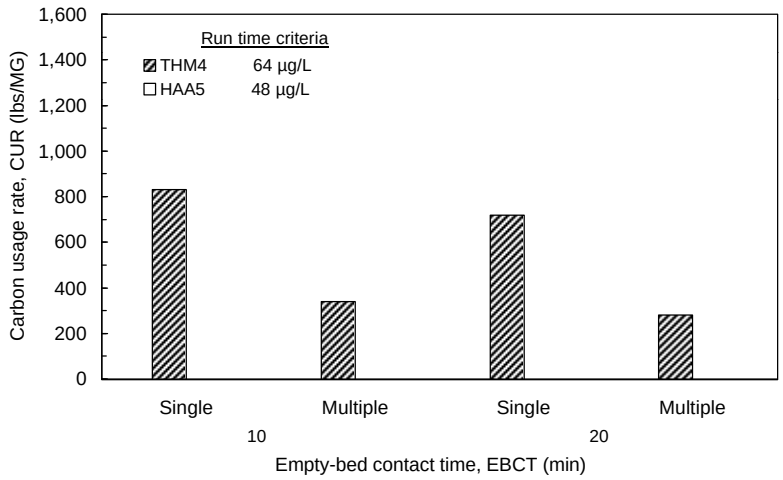


Figure 149 Carbon usage rates based on single contactors and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 3 (September)

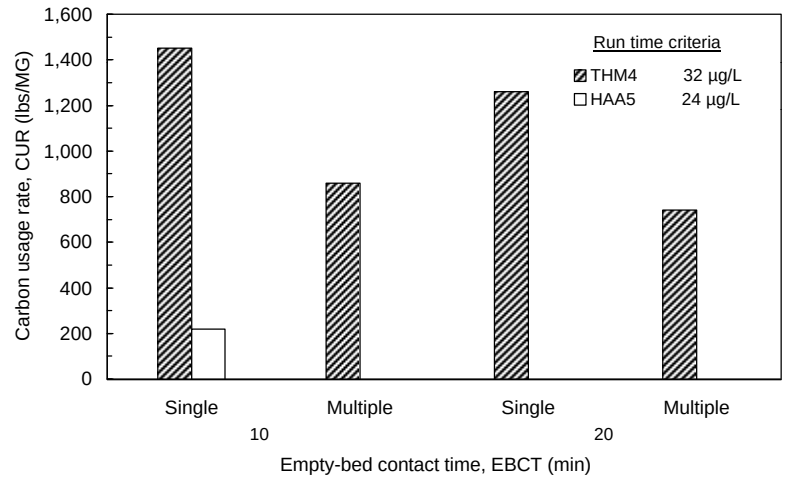


Figure 150 Carbon usage rates based on single contactors and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 3 (September)

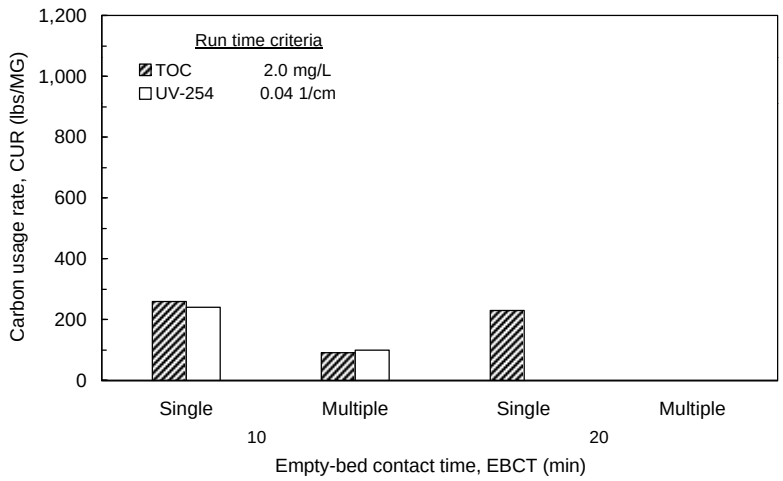


Figure 151 Carbon usage rates based on single contactors and effluent blending for TOC and UV-254 effluent criteria during session 4 (November)

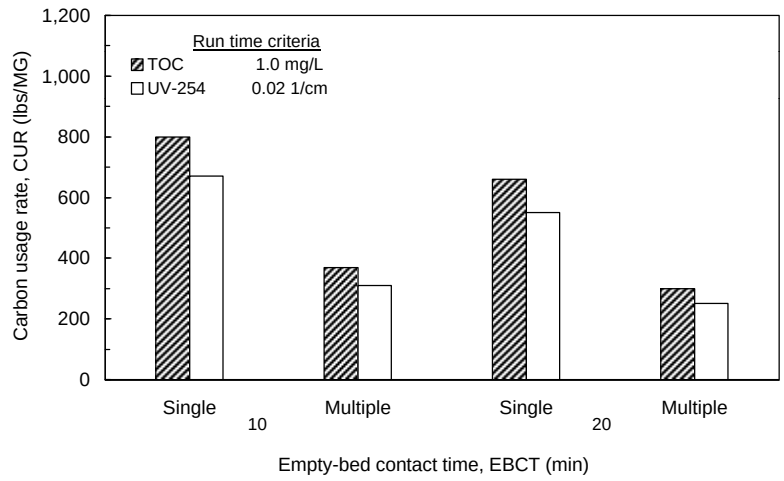


Figure 152 Carbon usage rates based on single contactors and effluent blending for TOC and UV-254 effluent criteria during session 4 (November)

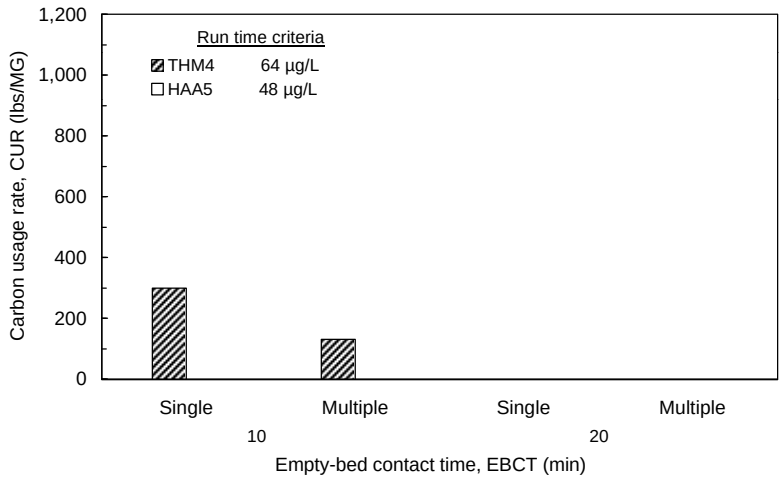


Figure 153 Carbon usage rates based on single contactors and effluent blending for Stage 1 THM4 and HAA5 effluent criteria during session 4 (November)

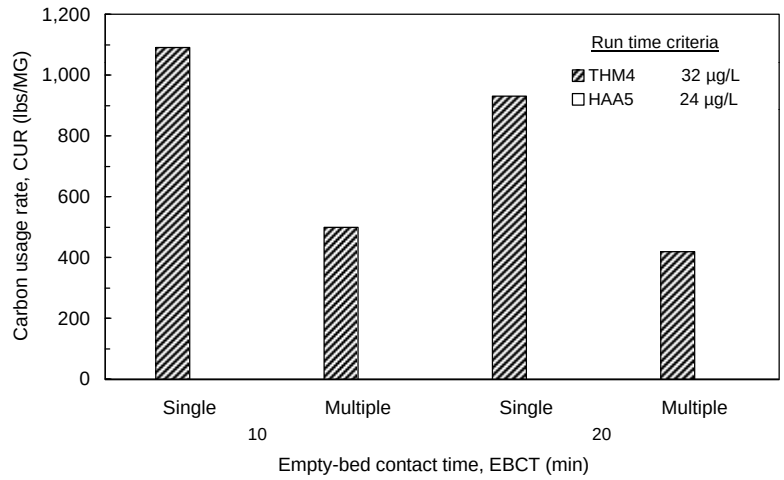


Figure 154 Carbon usage rates based on single contactors and effluent blending for Stage 2 THM4 and HAA5 effluent criteria during session 4 (November)

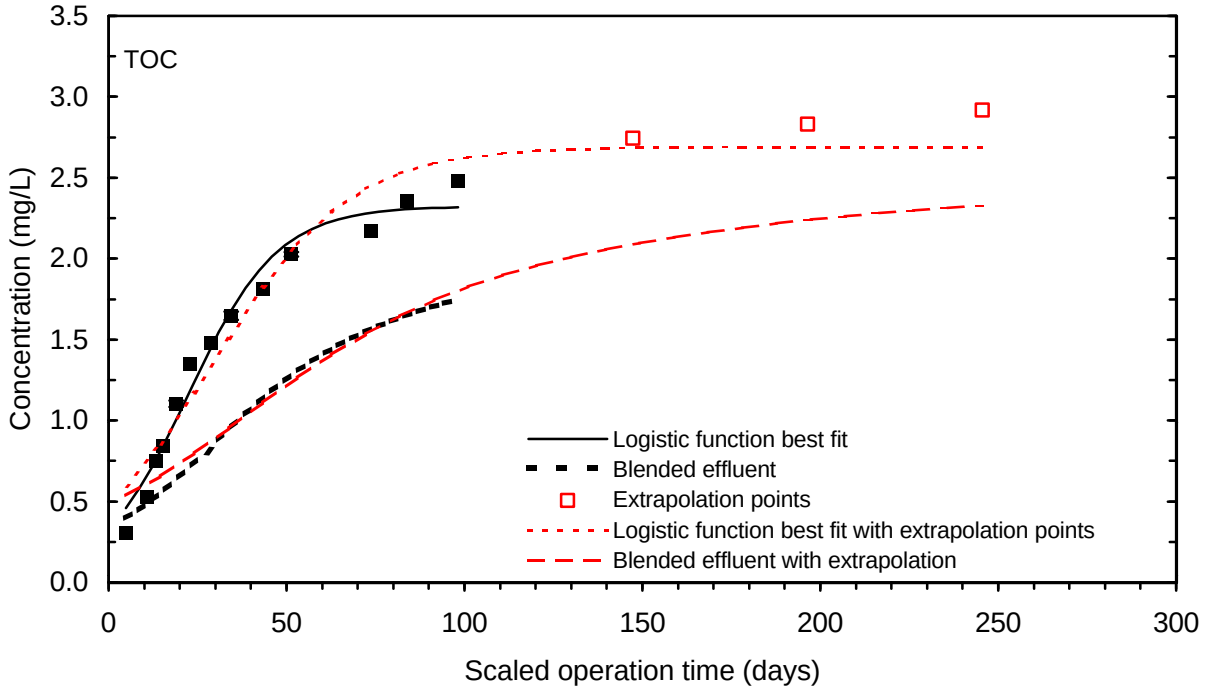


Figure 155 Single contactor and blended effluent extrapolated TOC breakthrough curve (10 minute EBCT) during session 1, February

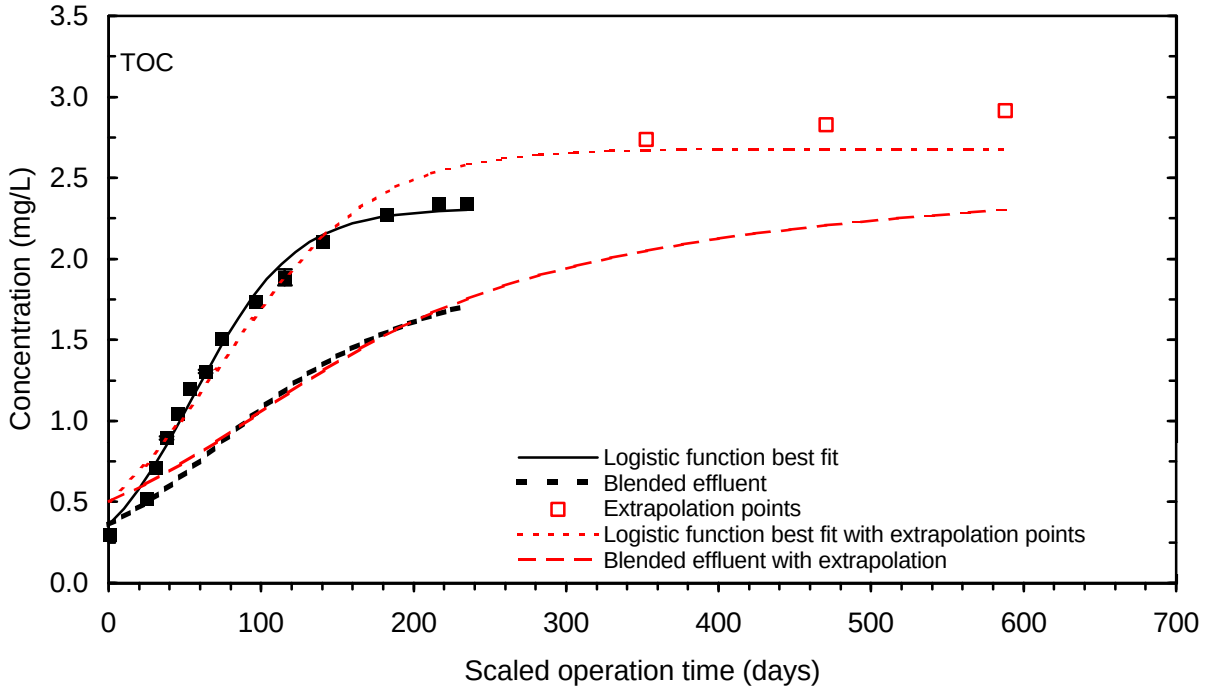


Figure 156 Single contactor and blended effluent extrapolated TOC breakthrough curve (20 minute EBCT) during session 1, February

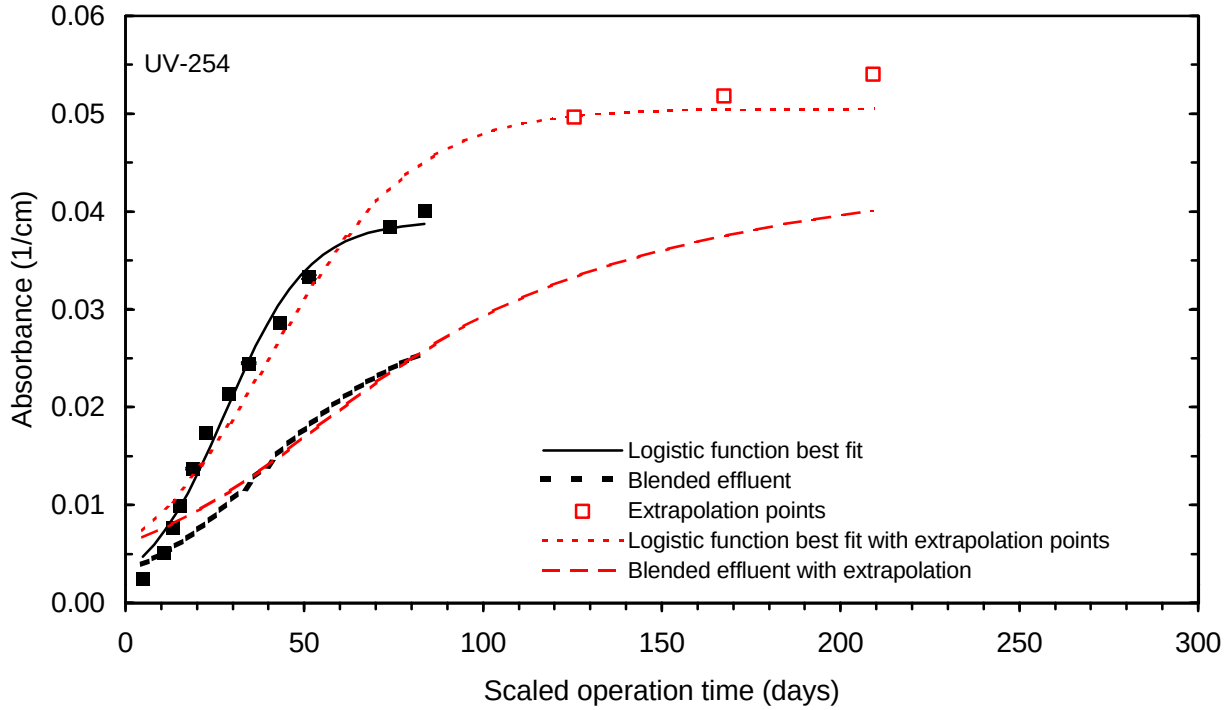


Figure 157 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (10 minute EBCT) during session 1, February

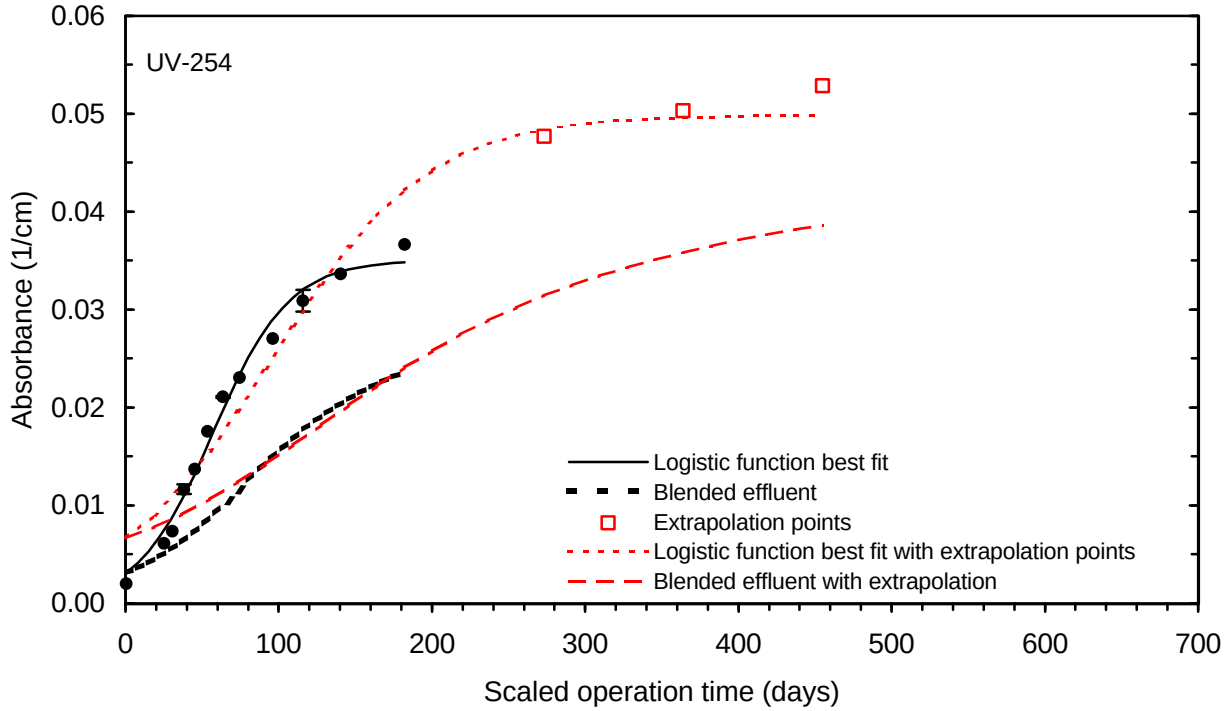


Figure 158 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (20 minute EBCT) during session 1, February

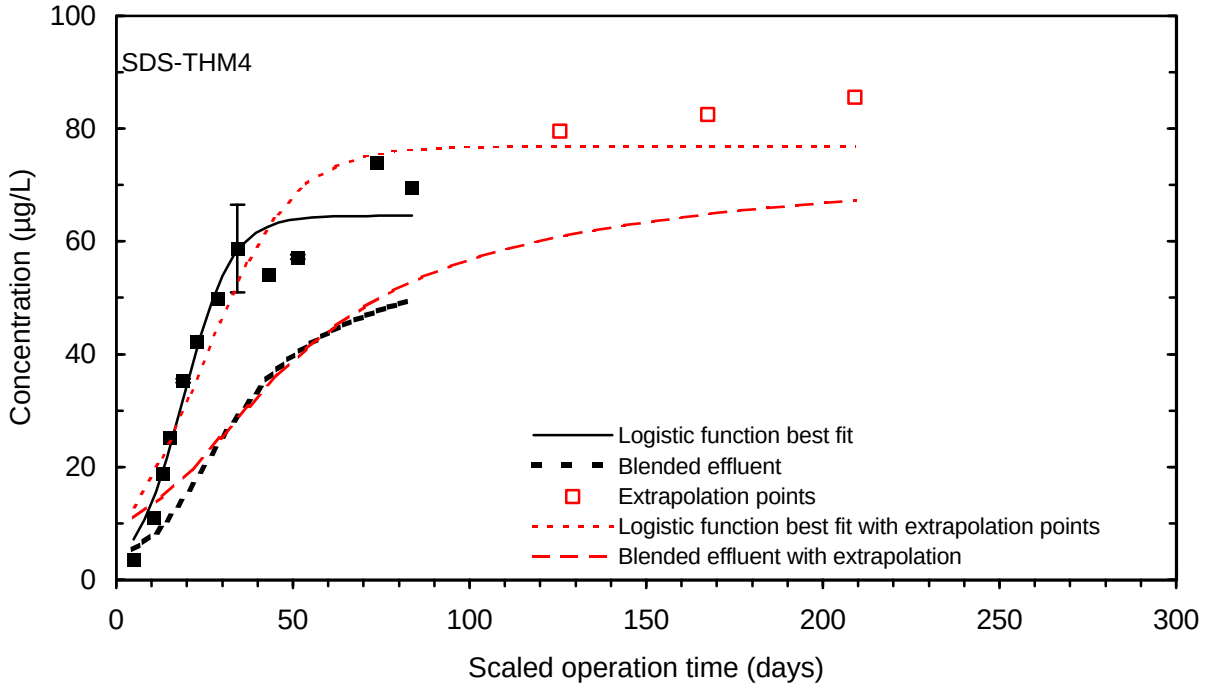


Figure 159 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (10 minute EBCT) during session 1, February

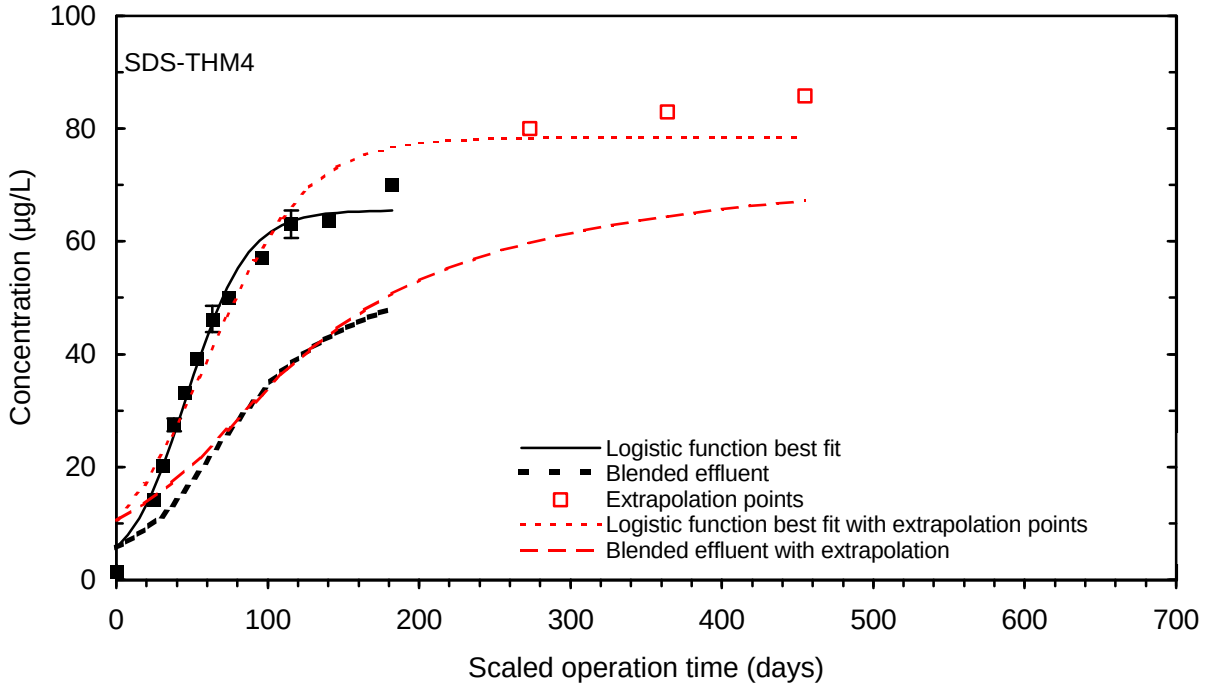


Figure 160 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (20 minute EBCT) during session 1, February

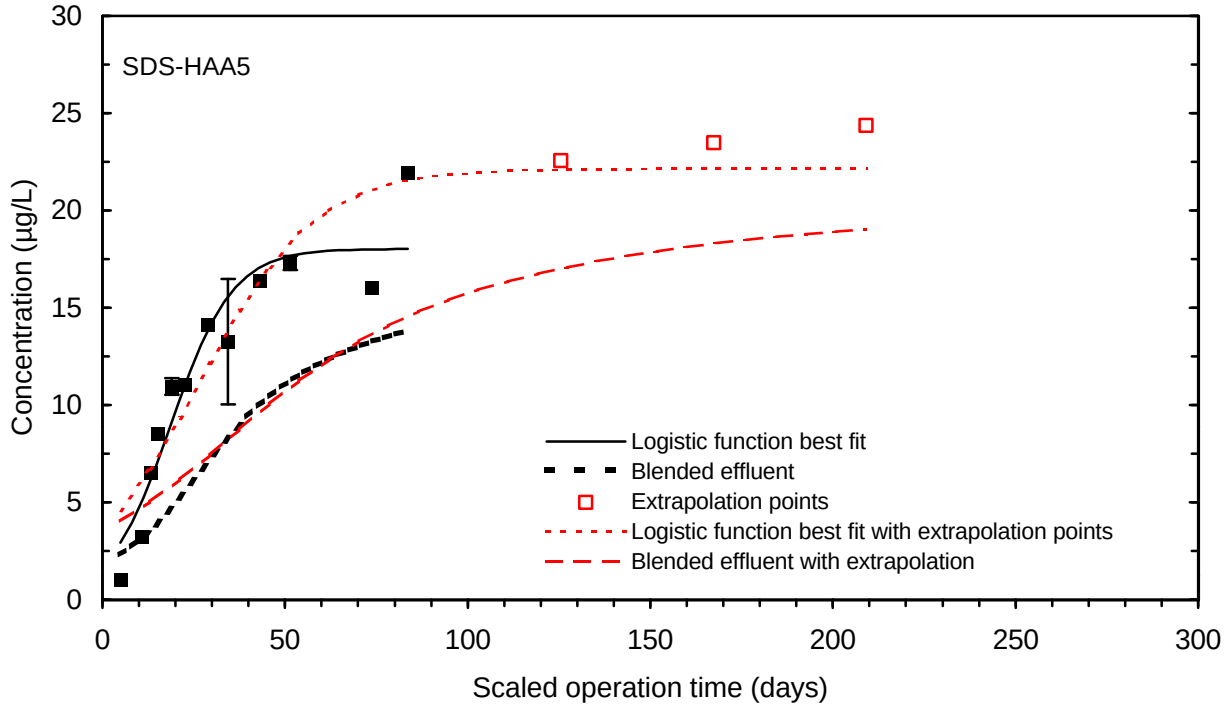


Figure 161 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (10 minute EBCT) during session 1, February

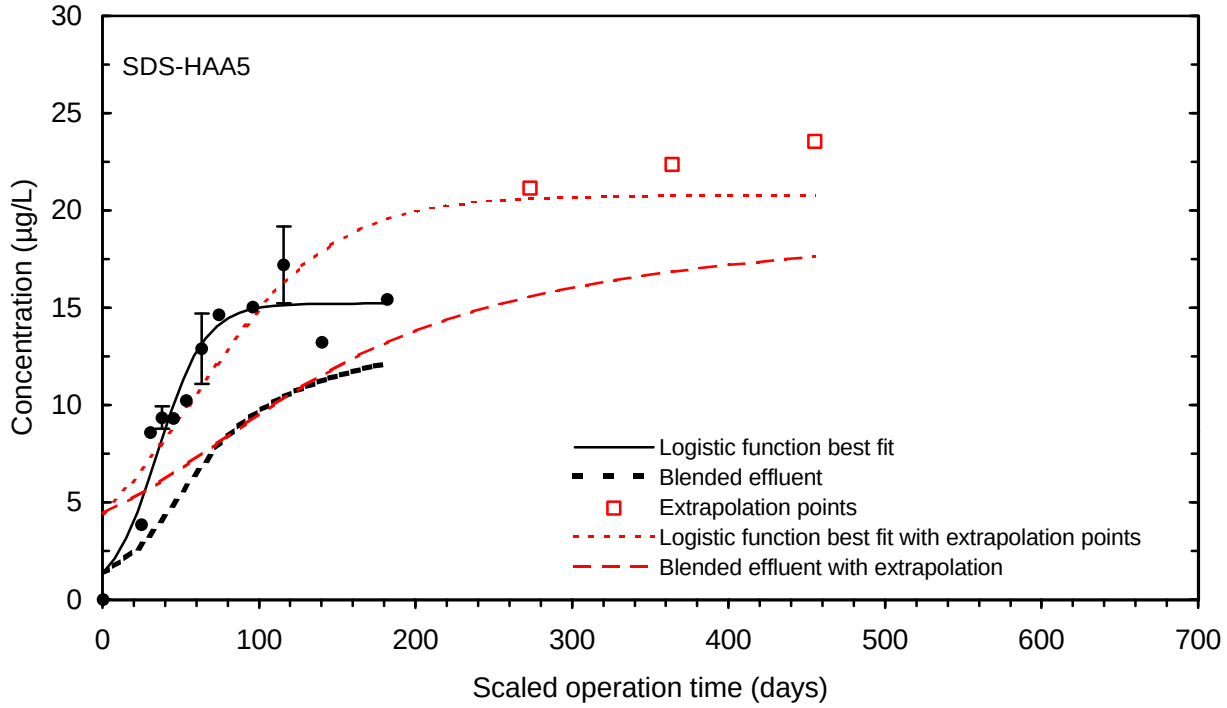


Figure 162 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (20 minute EBCT) during session 1, February

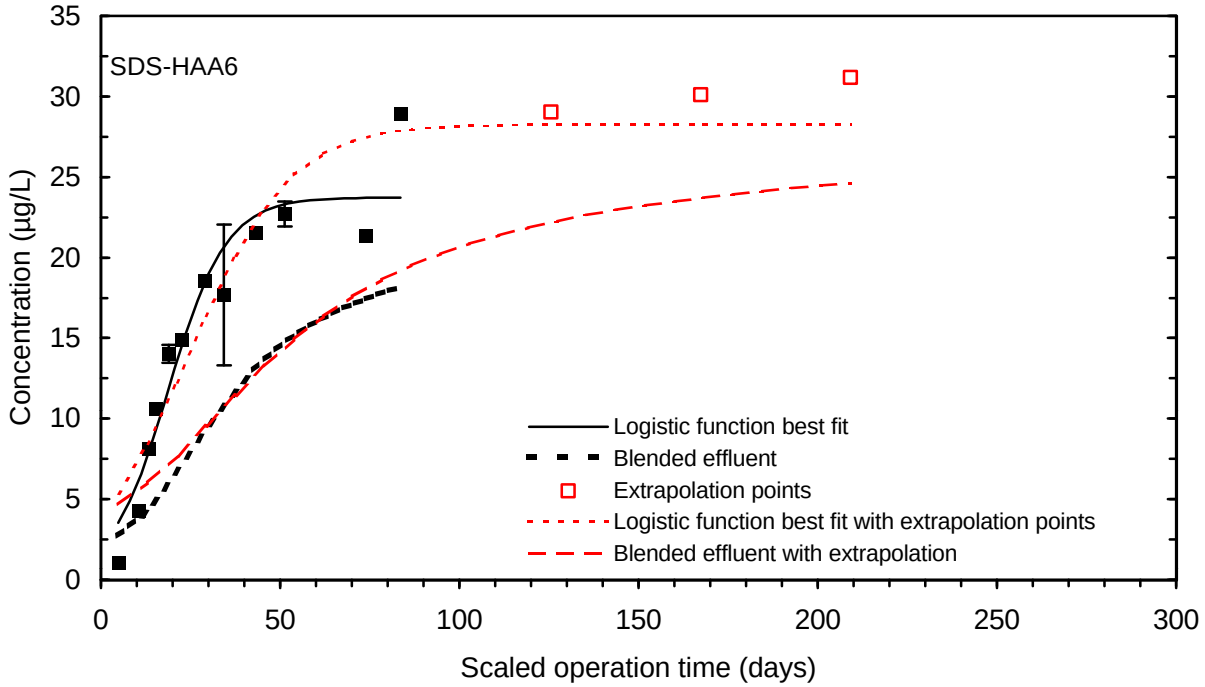


Figure 163 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (10 minute EBCT) during session 1, February

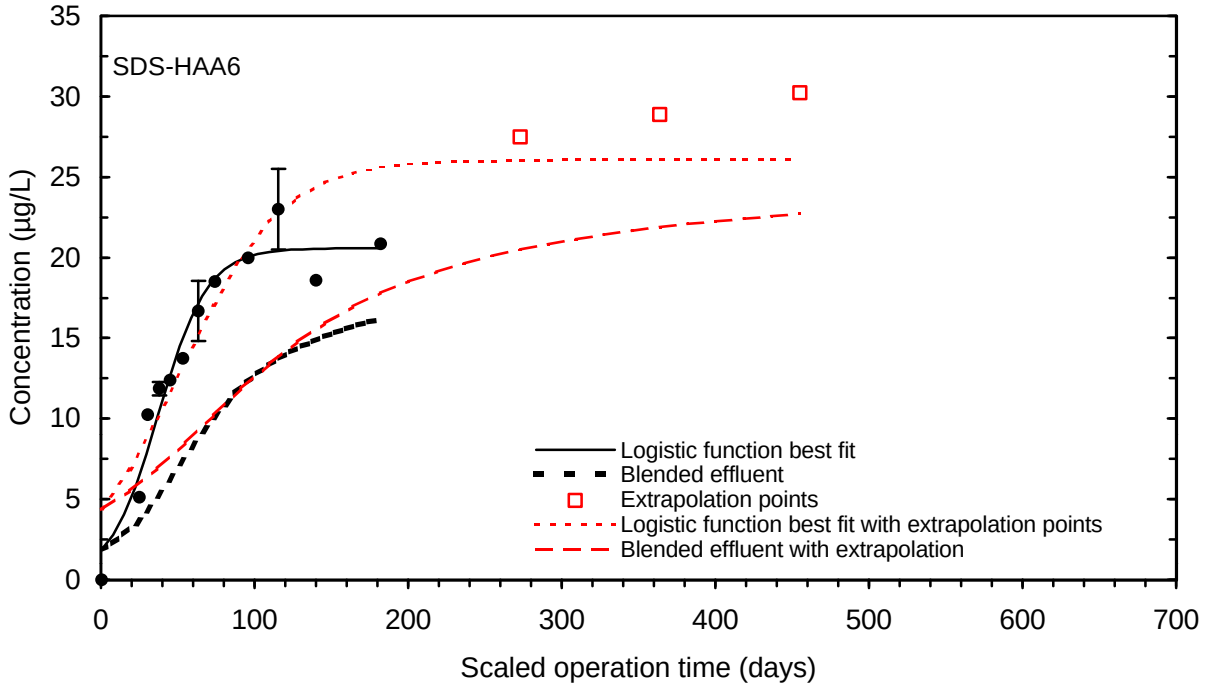


Figure 164 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (20 minute EBCT) during session 1, February

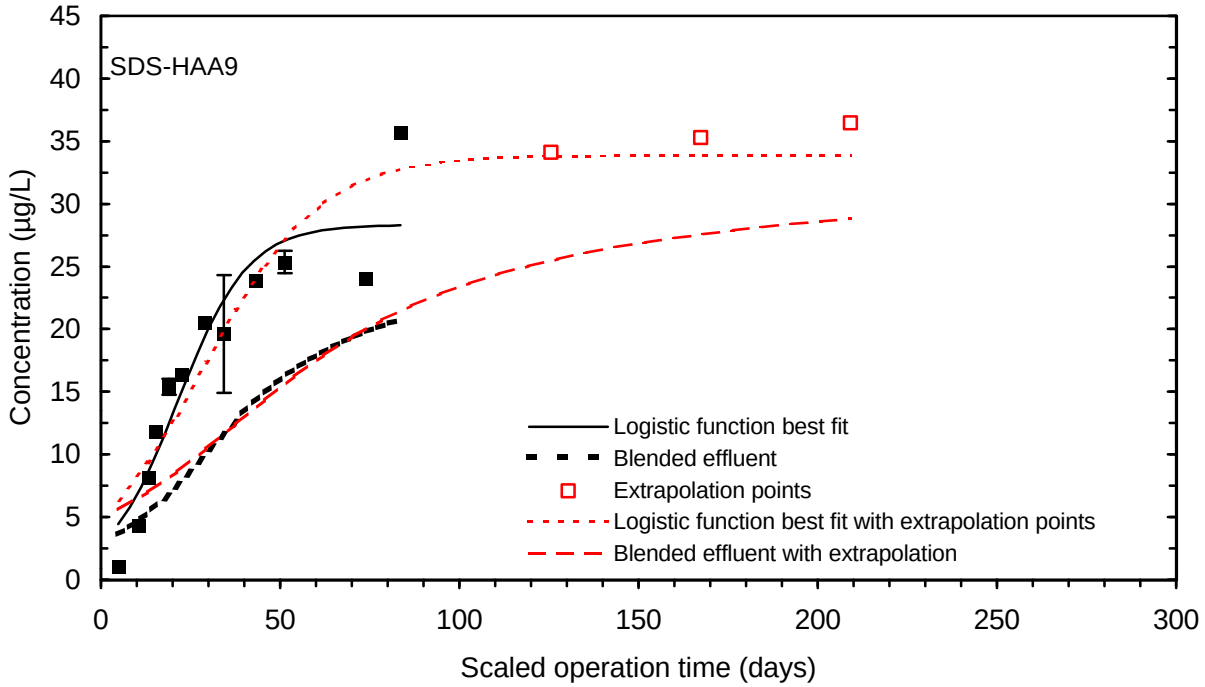


Figure 165 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (10 minute EBCT) during session 1, February

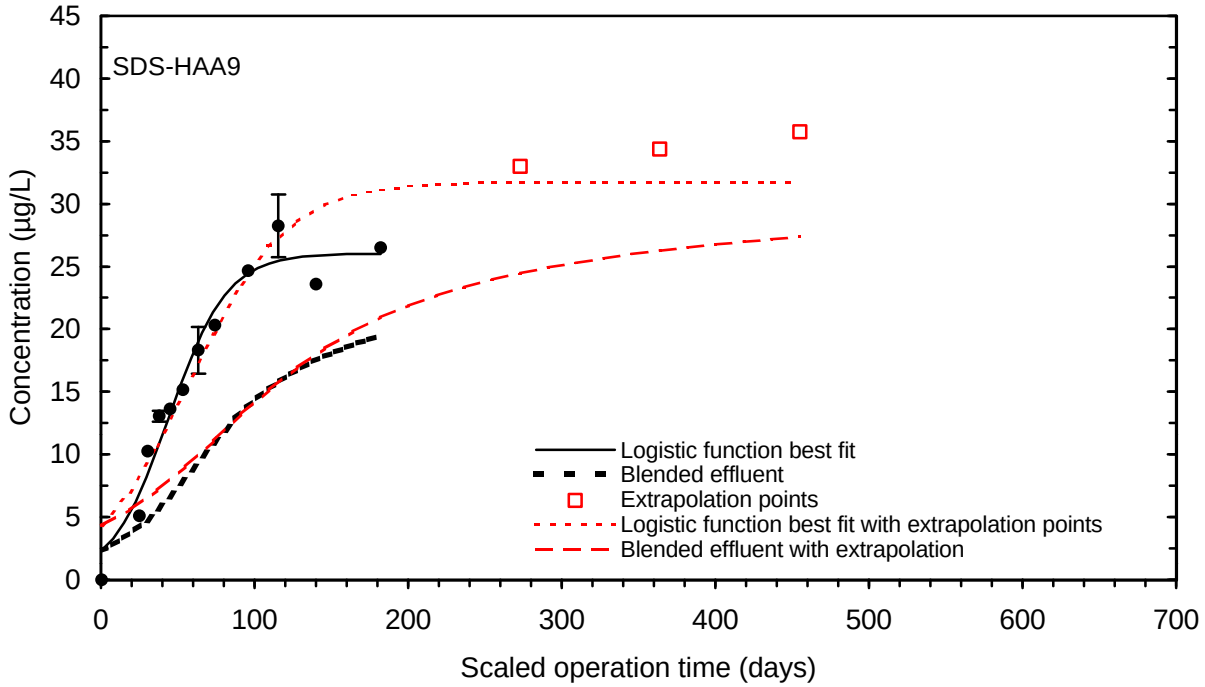


Figure 166 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (20 minute EBCT) during session 1, February

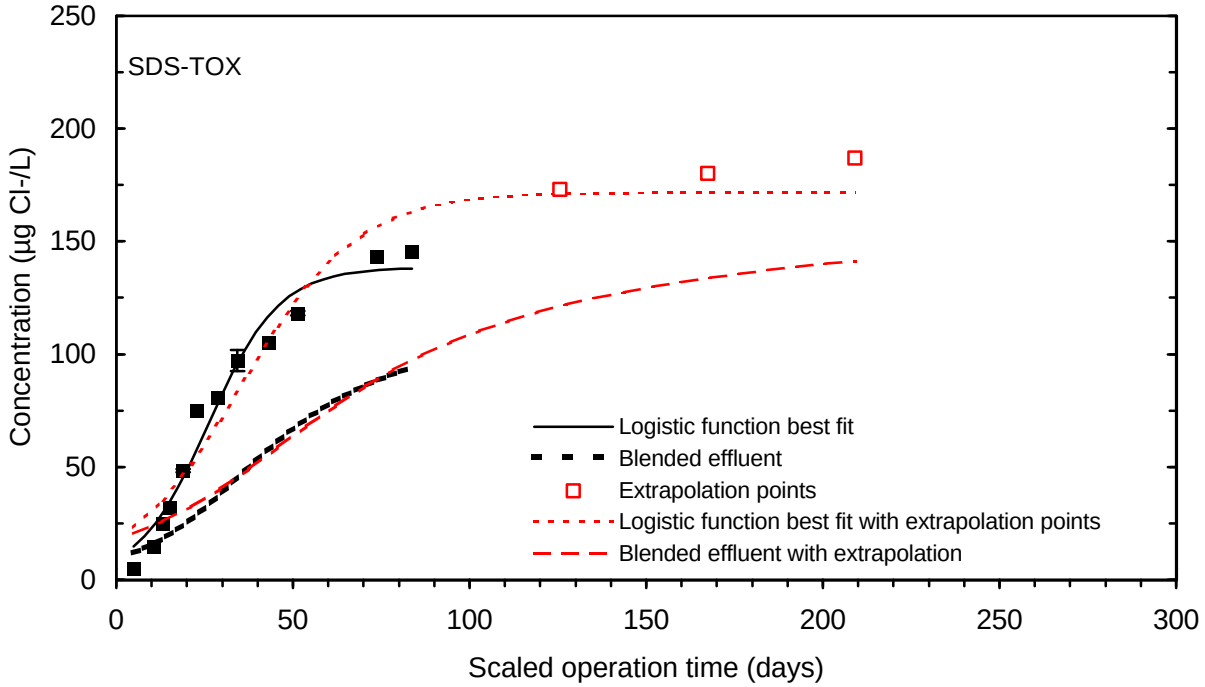


Figure 167 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (10 minute EBCT) during session 1, February

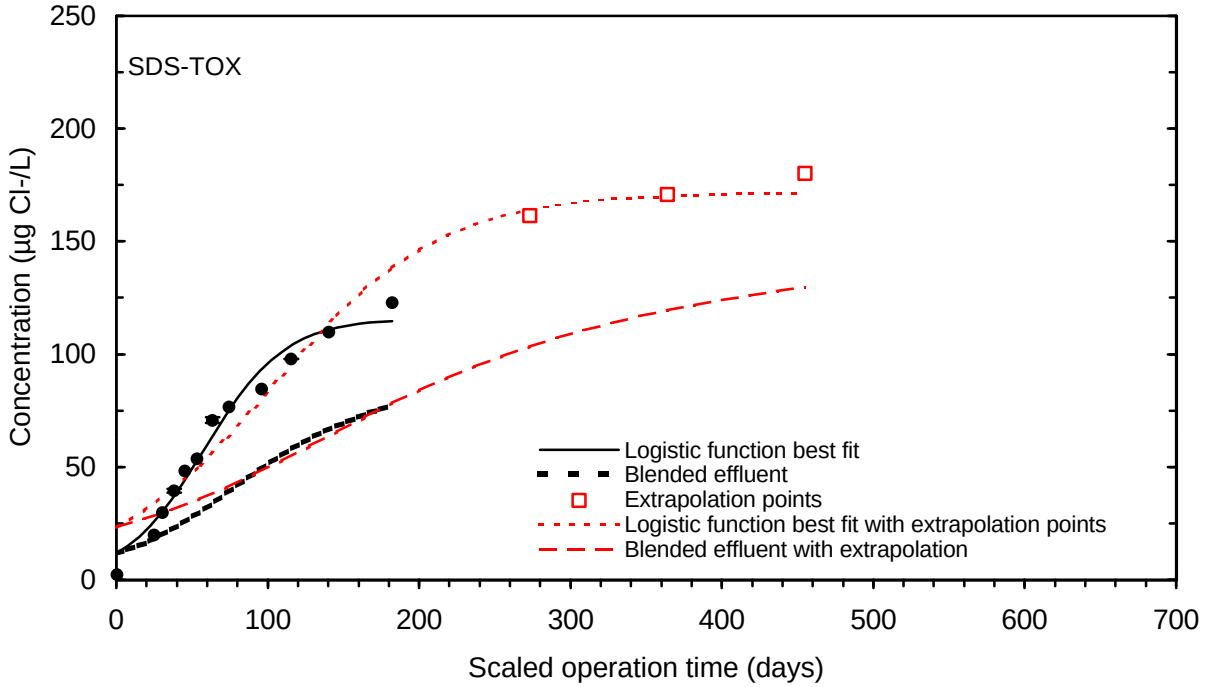


Figure 168 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (20 minute EBCT) during session 1, February

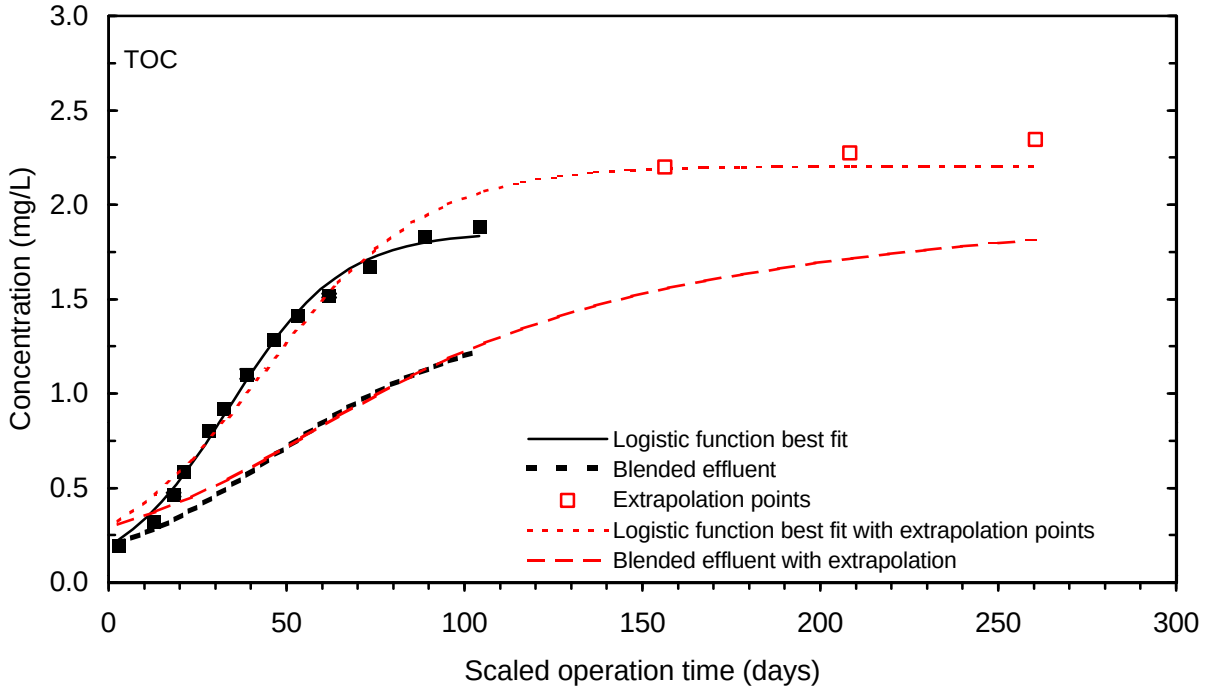


Figure 169 Single contactor and blended effluent extrapolated TOC breakthrough curve (10 minute EBCT) during session 2, May

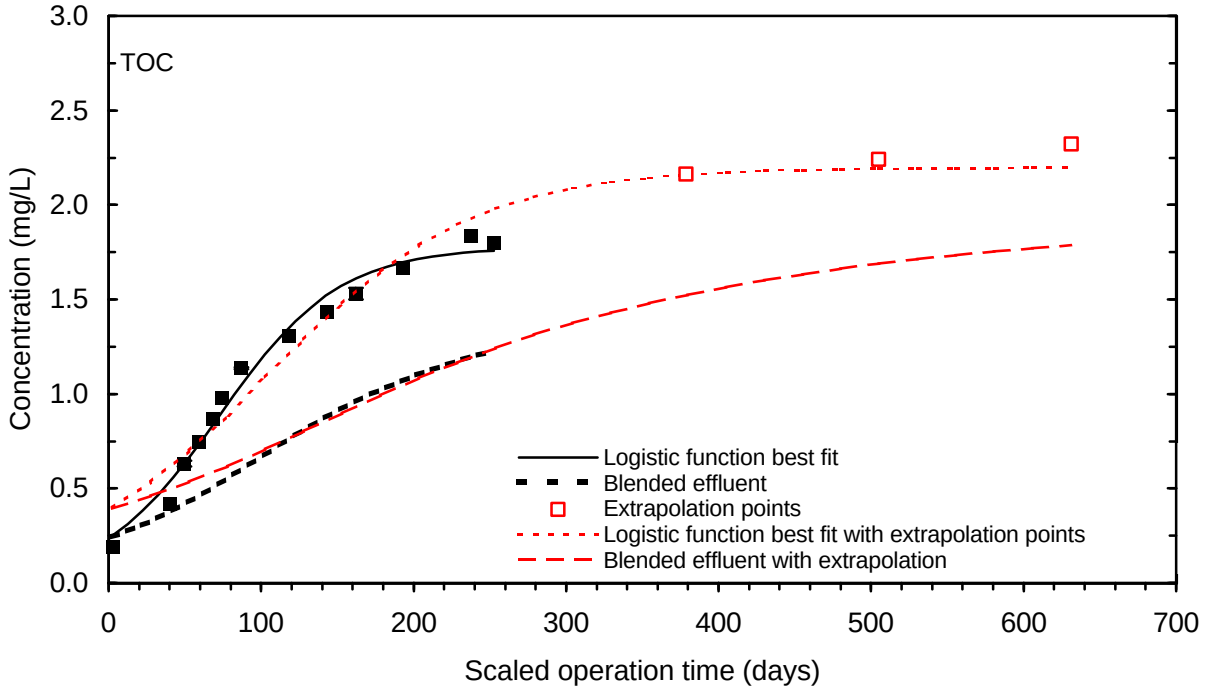


Figure 170 Single contactor and blended effluent extrapolated TOC breakthrough curve (20 minute EBCT) during session 2, May

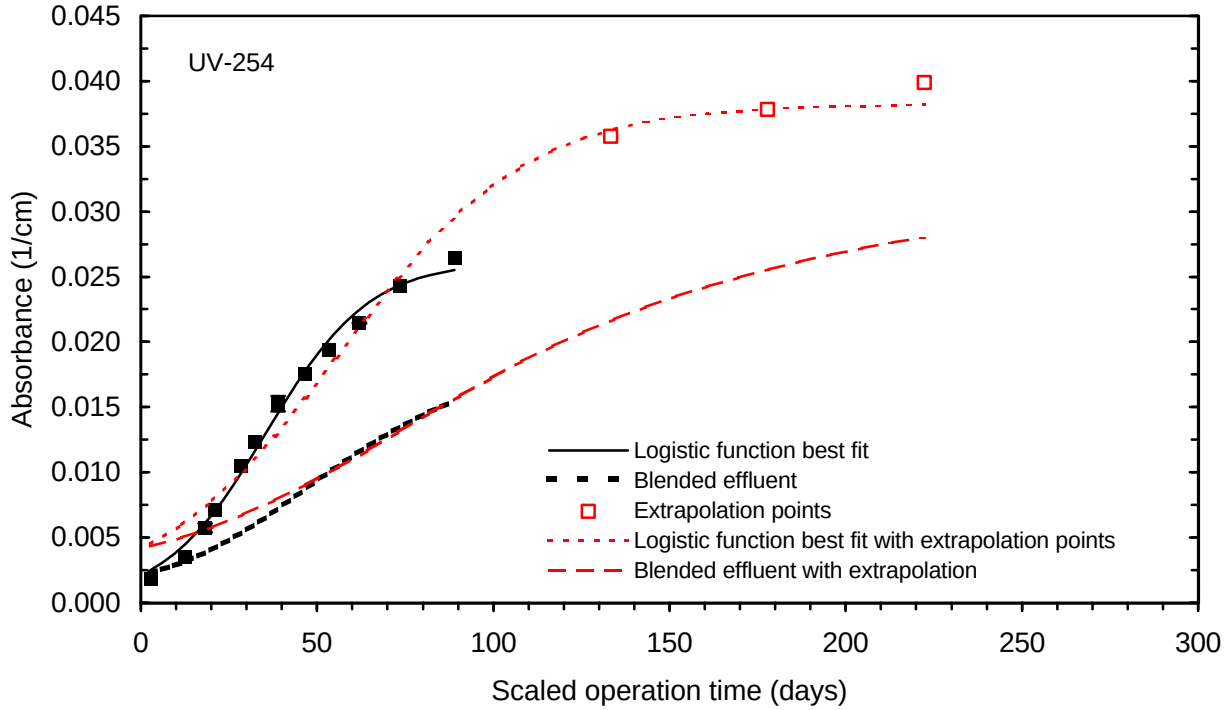


Figure 171 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (10 minute EBCT) during session 2, May

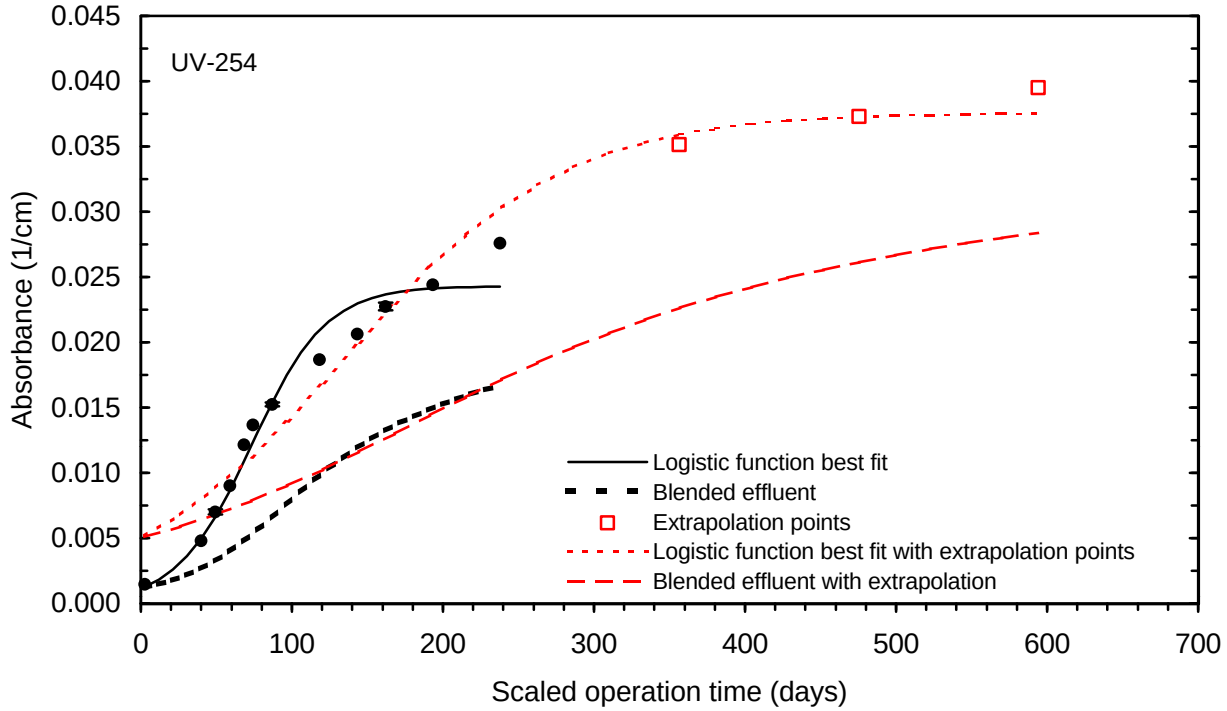


Figure 172 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (20 minute EBCT) during session 2, May

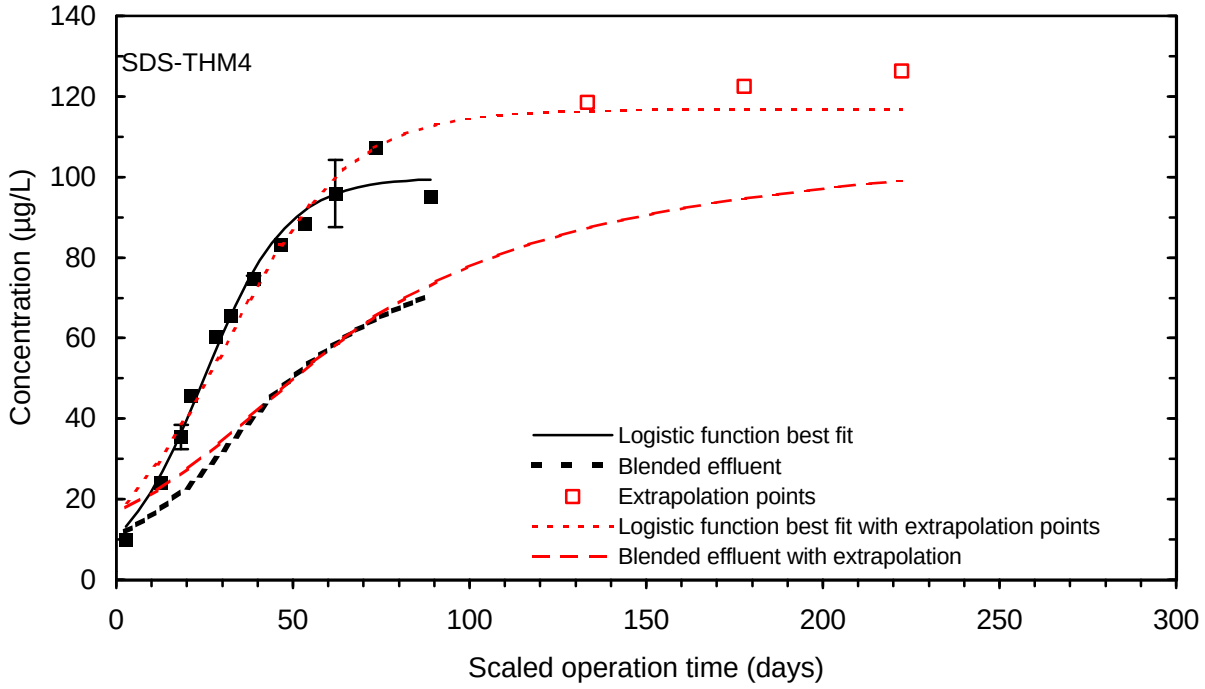


Figure 173 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (10 minute EBCT) during session 2, May

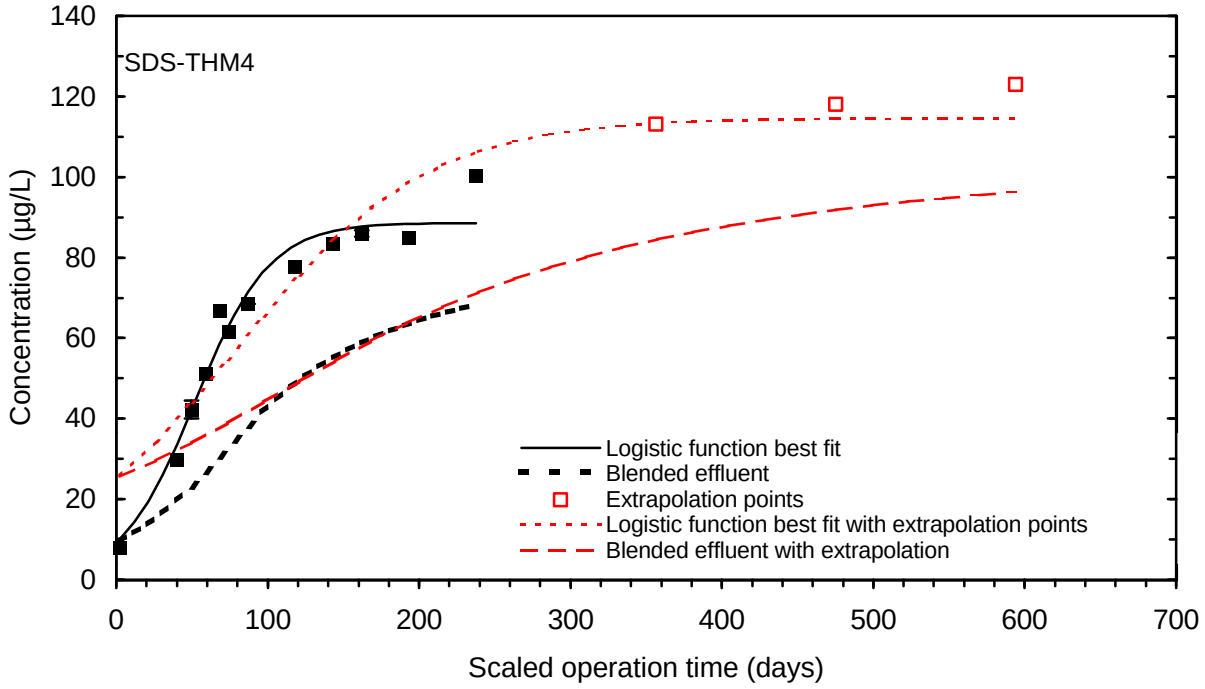


Figure 174 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (20 minute EBCT) during session 2, May

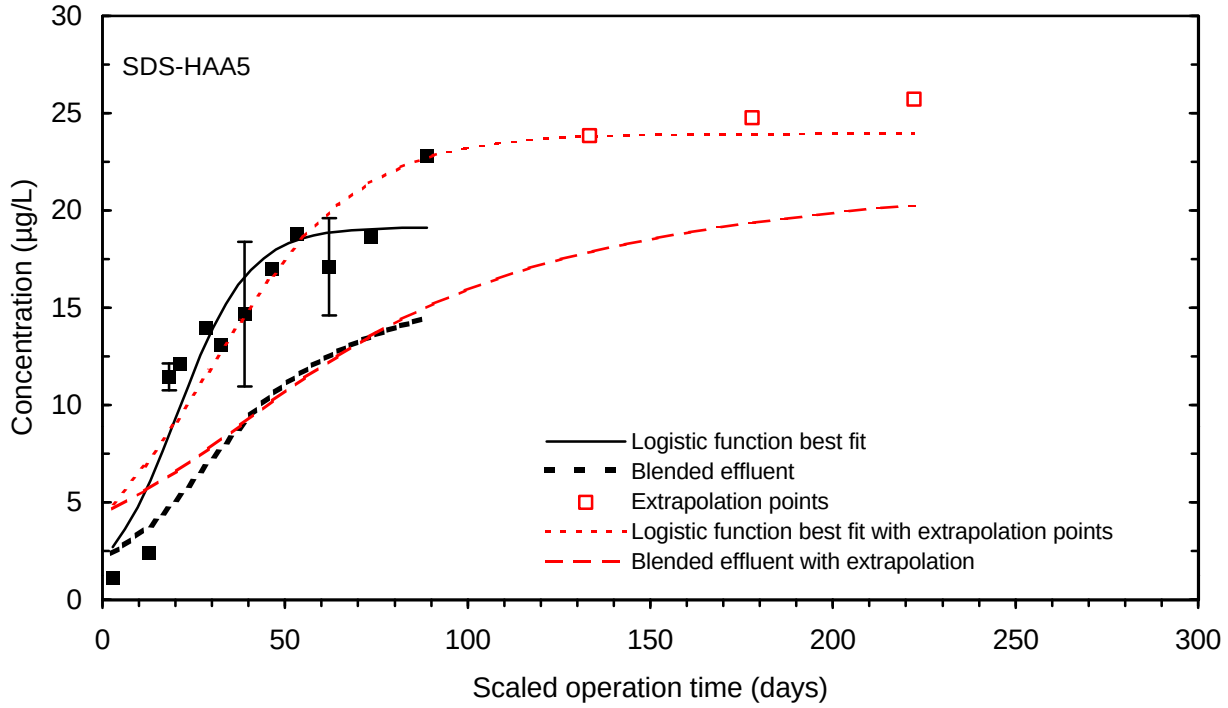


Figure 175 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (10 minute EBCT) during session 2, May

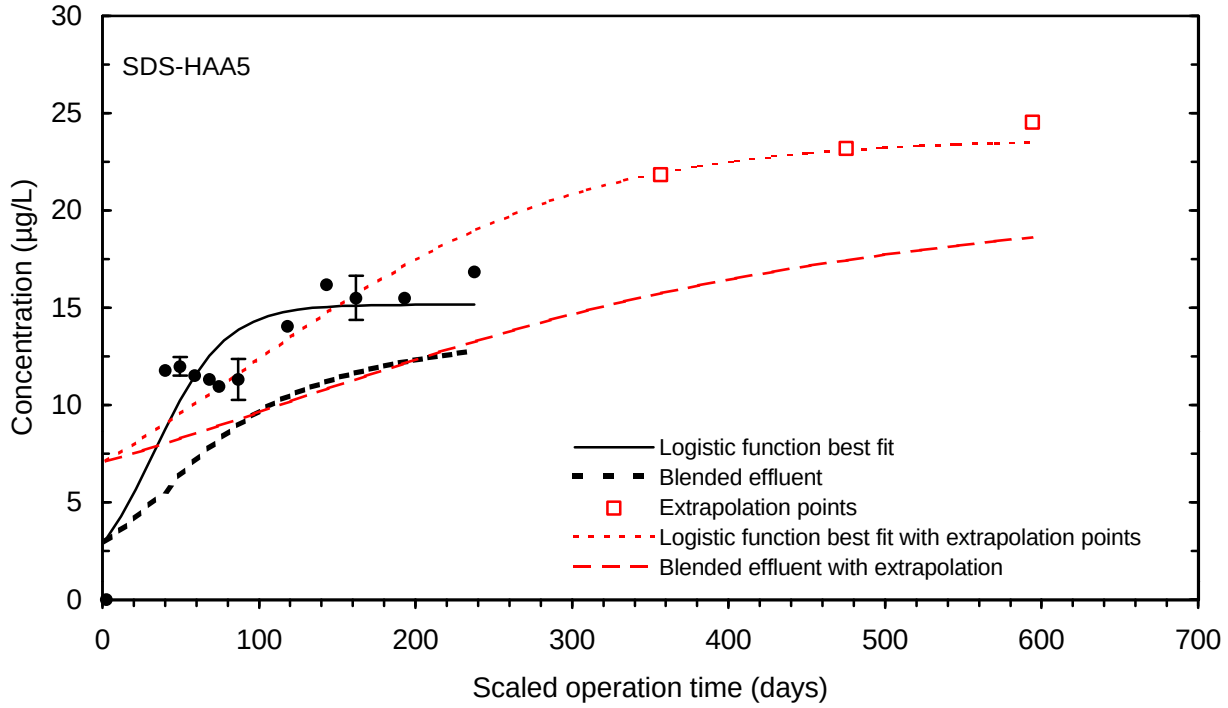


Figure 176 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (20 minute EBCT) during session 2, May

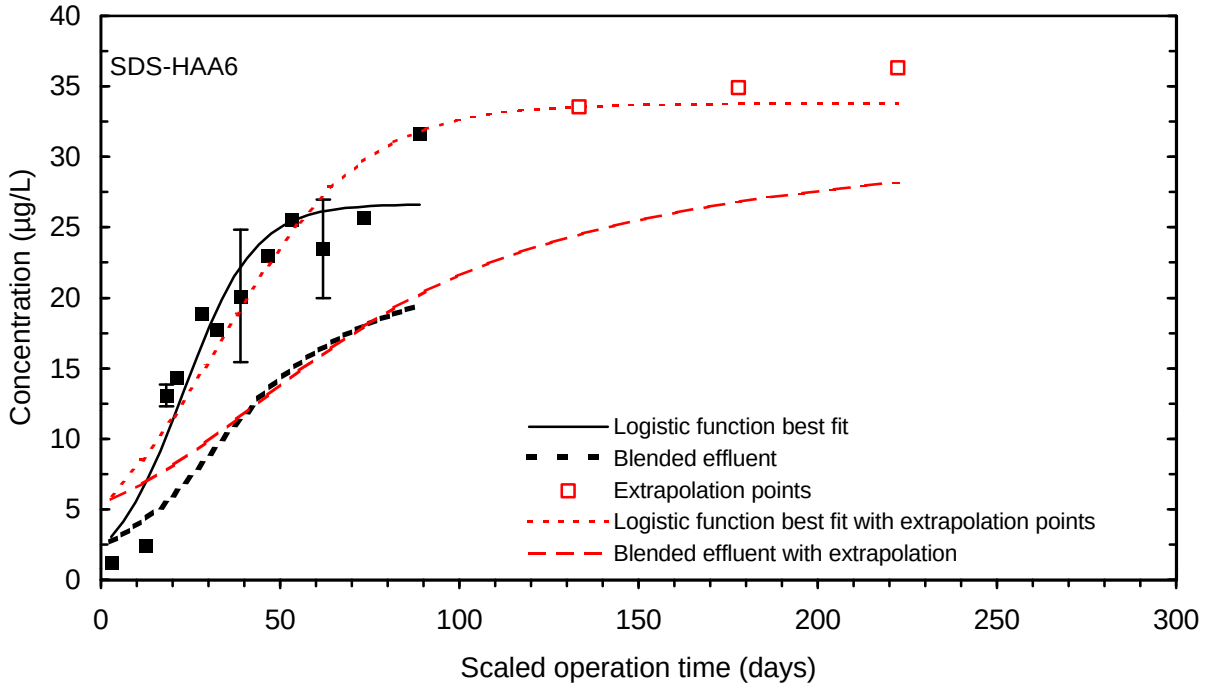


Figure 177 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (10 minute EBCT) during session 2, May

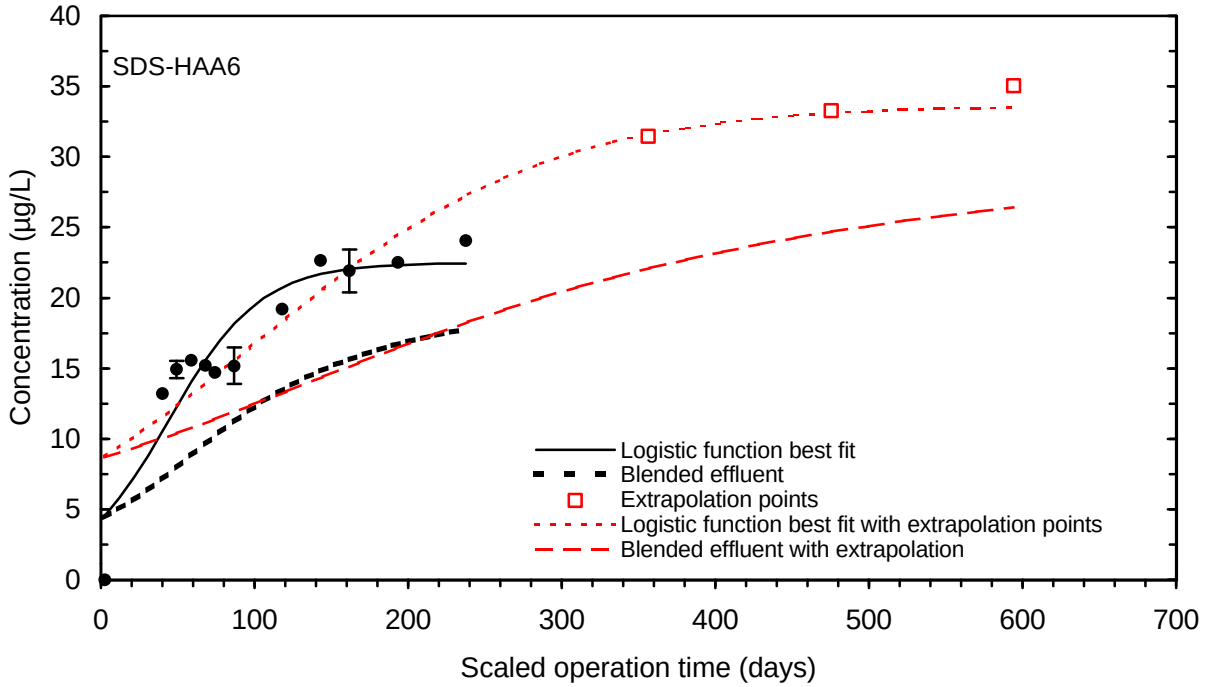


Figure 178 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (20 minute EBCT) during session 2, May

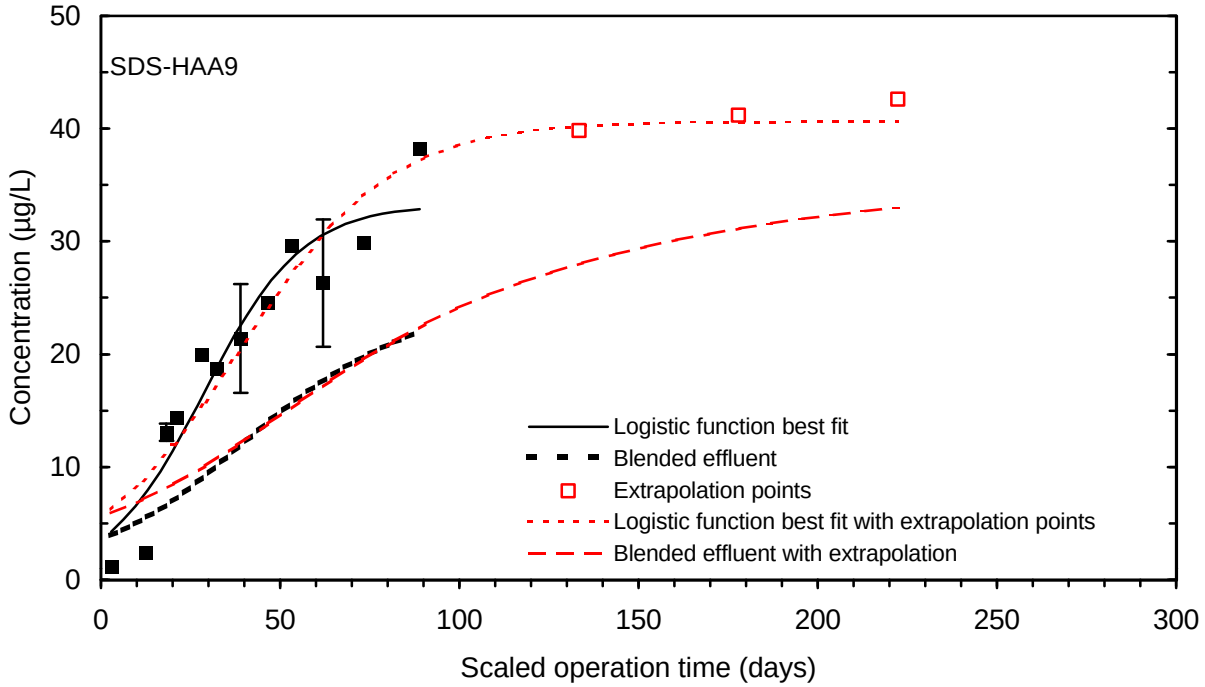


Figure 179 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (10 minute EBCT) during session 2, May

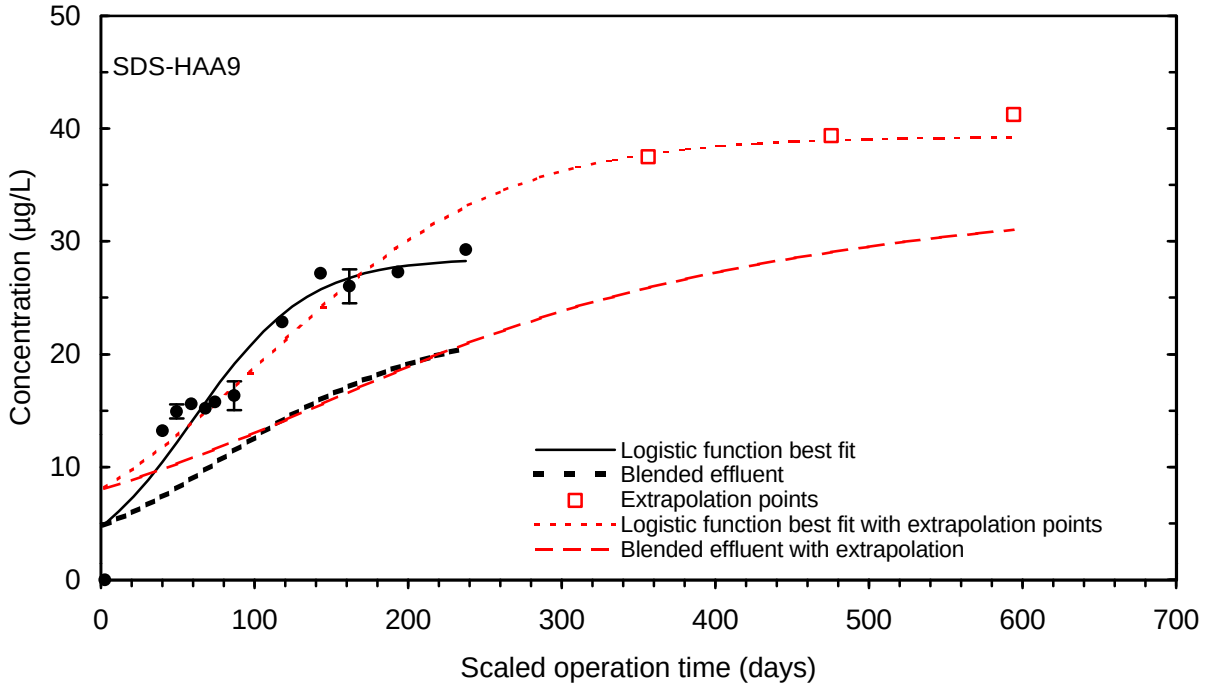


Figure 180 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (20 minute EBCT) during session 2, May

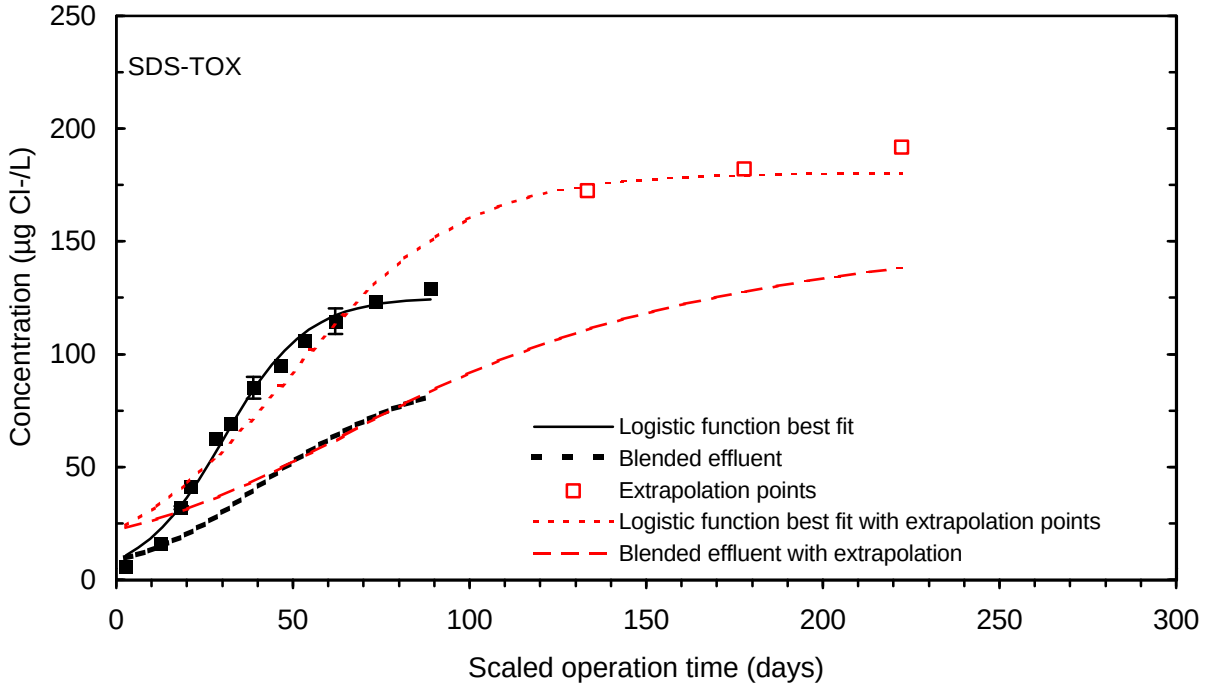


Figure 181 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (10 minute EBCT) during session 2, May

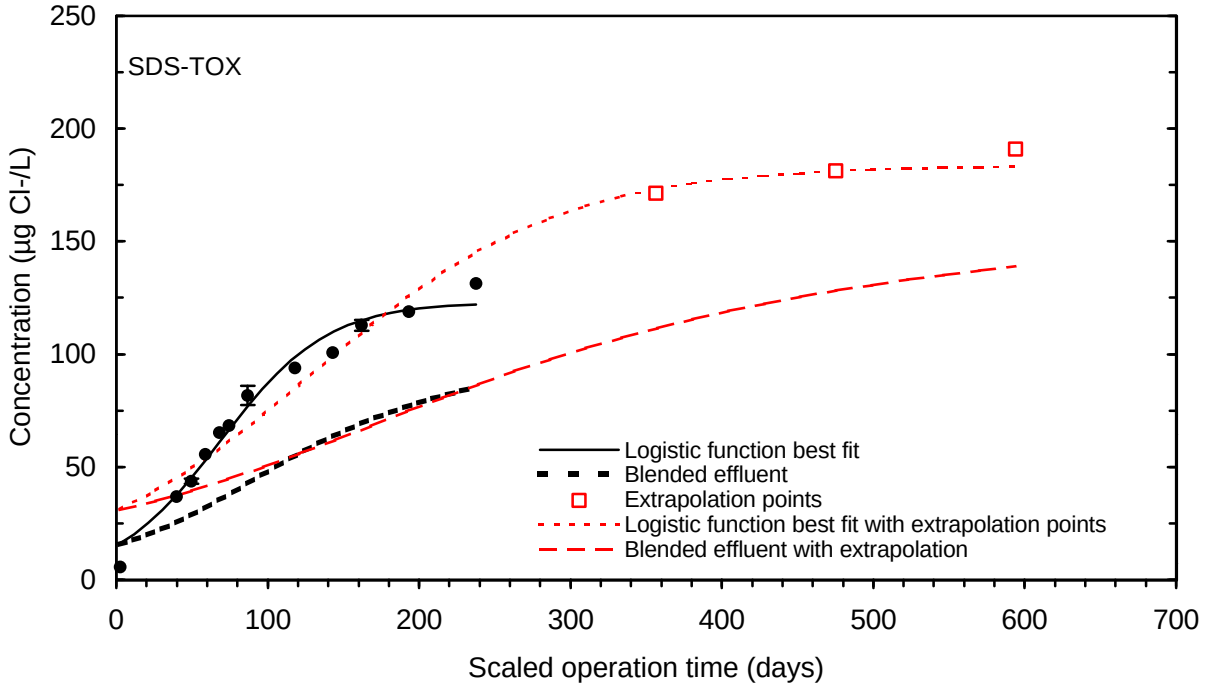


Figure 182 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (20 minute EBCT) during session 2, May

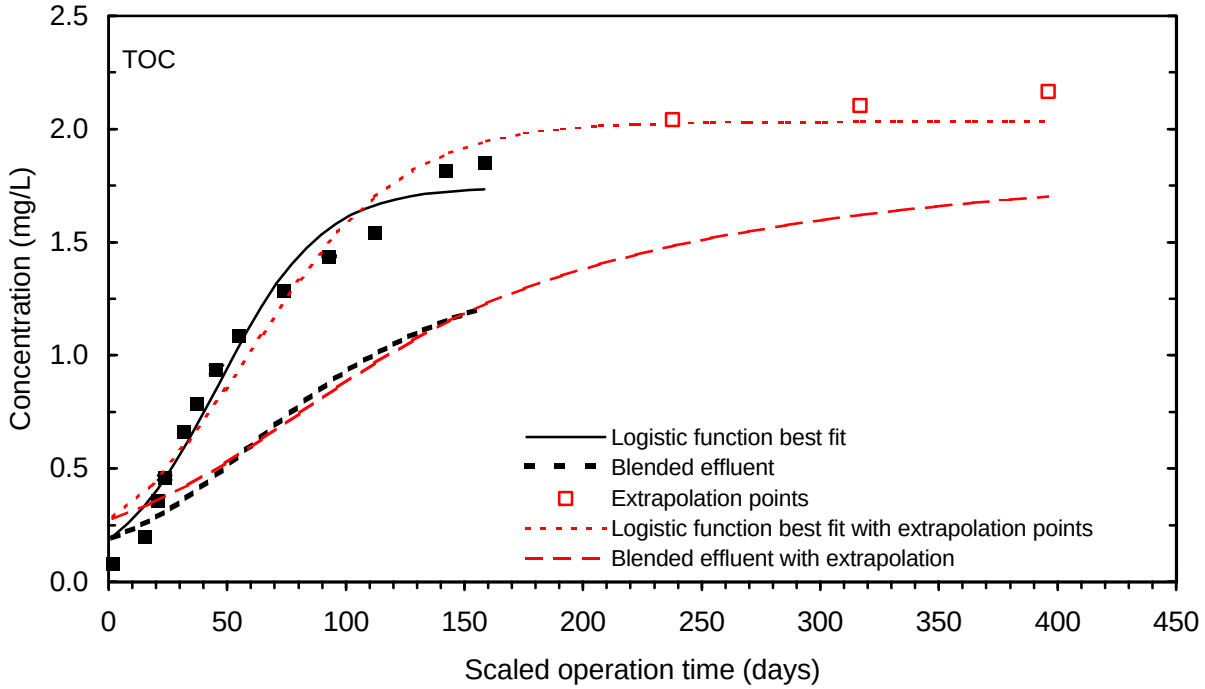


Figure 183 Single contactor and blended effluent extrapolated TOC breakthrough curve (10 minute EBCT) during session 3, September

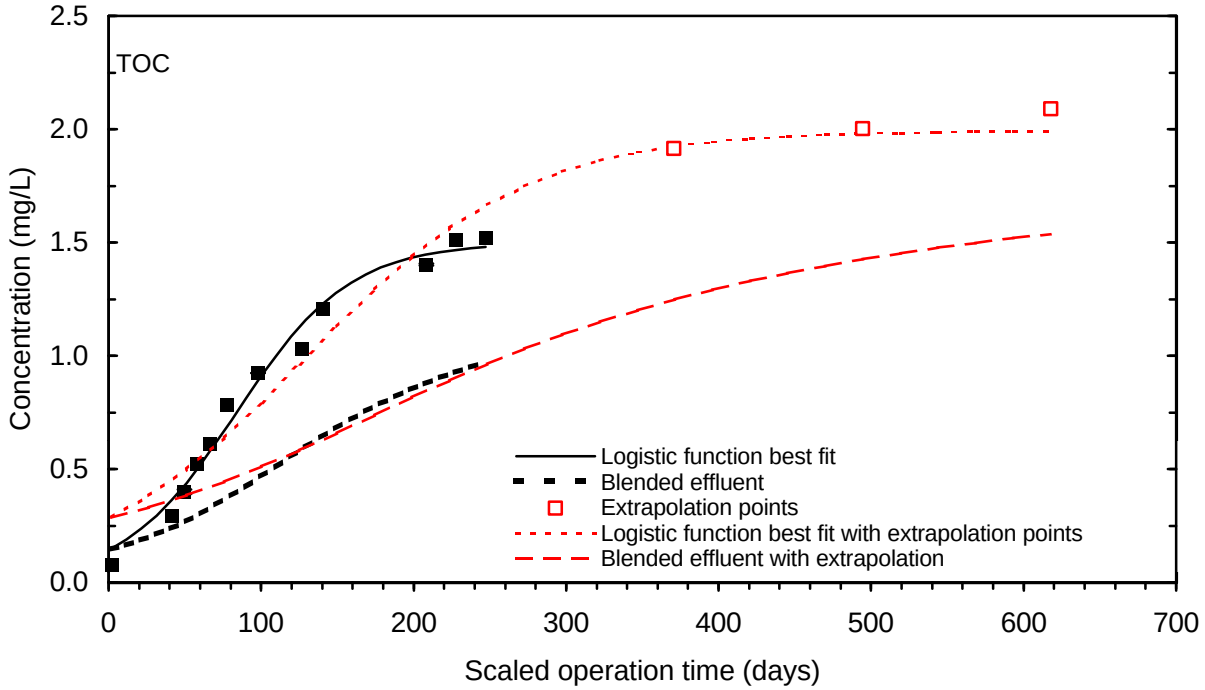


Figure 184 Single contactor and blended effluent extrapolated TOC breakthrough curve (20 minute EBCT) during session 3, September

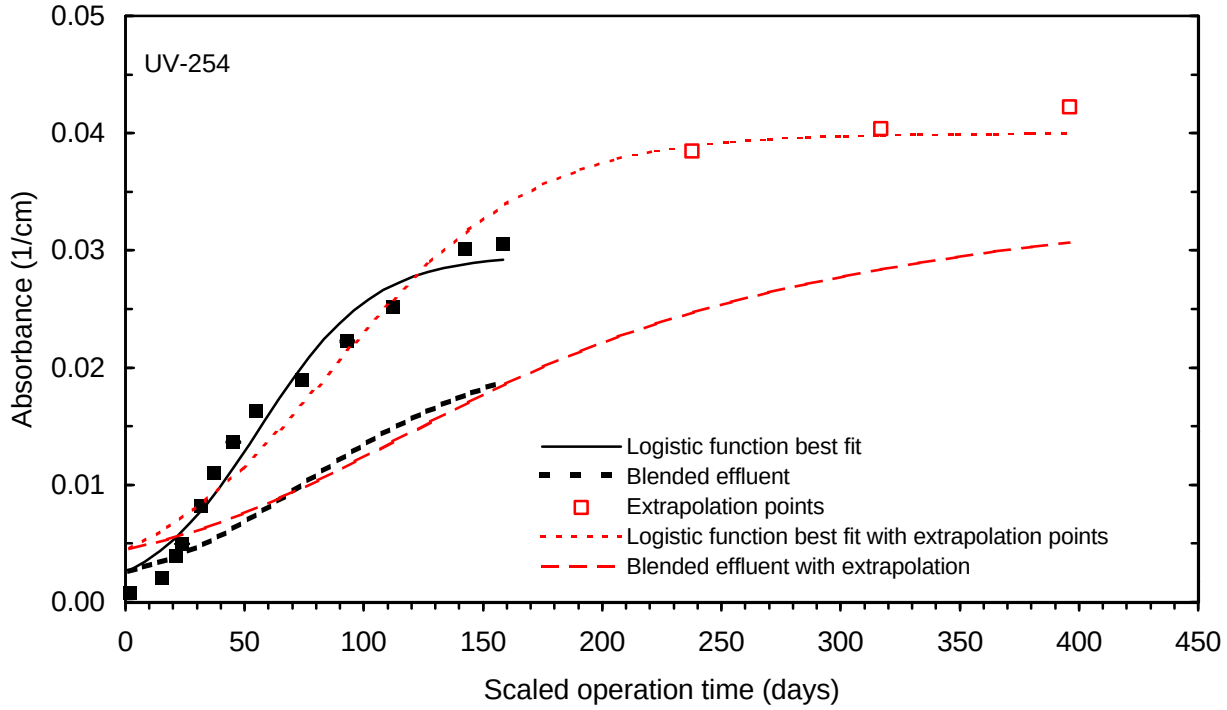


Figure 185 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (10 minute EBCT) during session 3, September

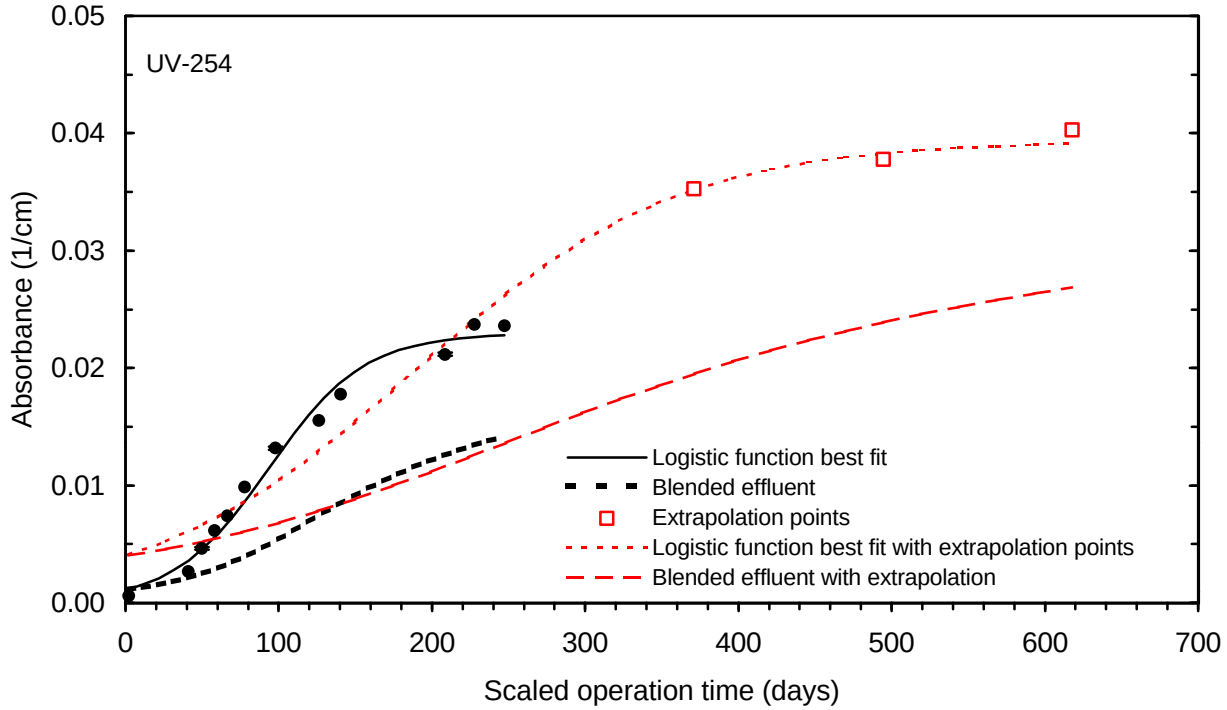


Figure 186 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (20 minute EBCT) during session 3, September

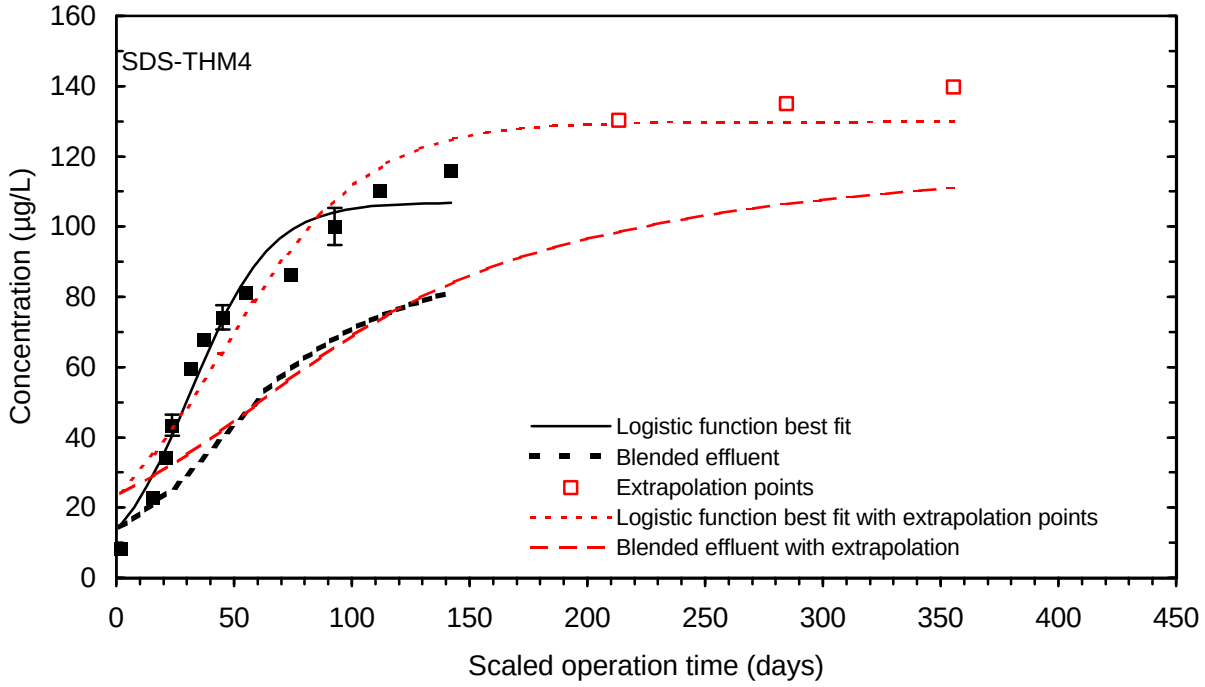


Figure 187 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (10 minute EBCT) during session 3, September

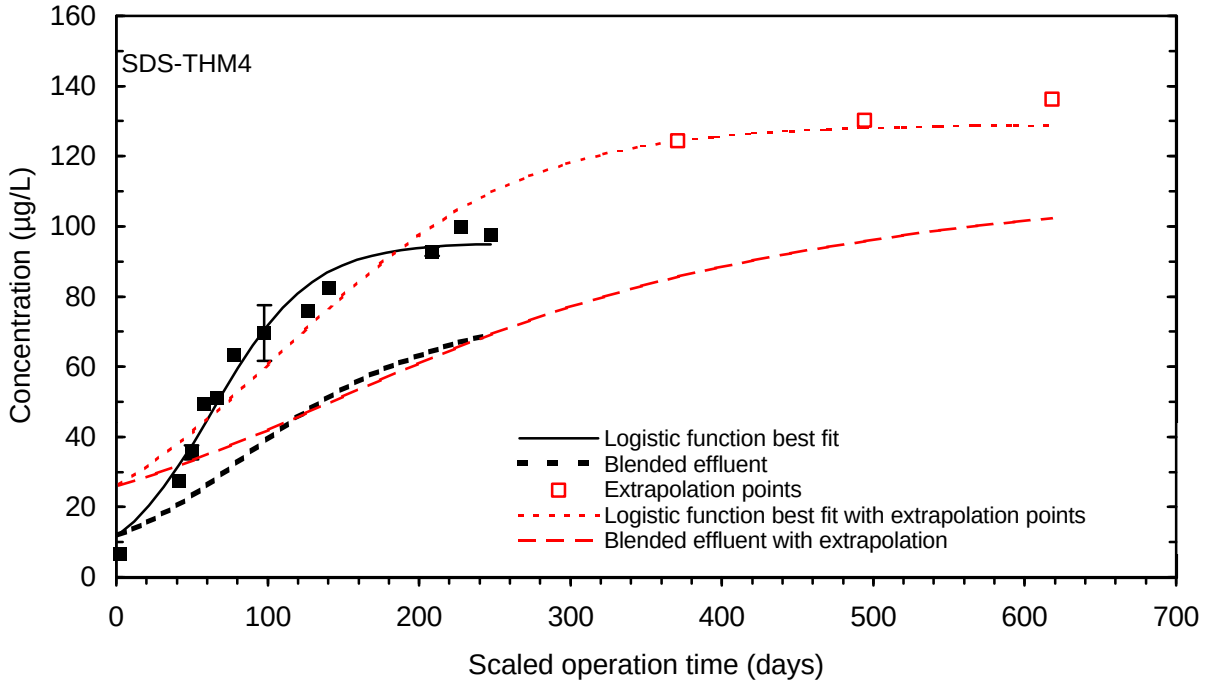


Figure 188 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (20 minute EBCT) during session 3, September

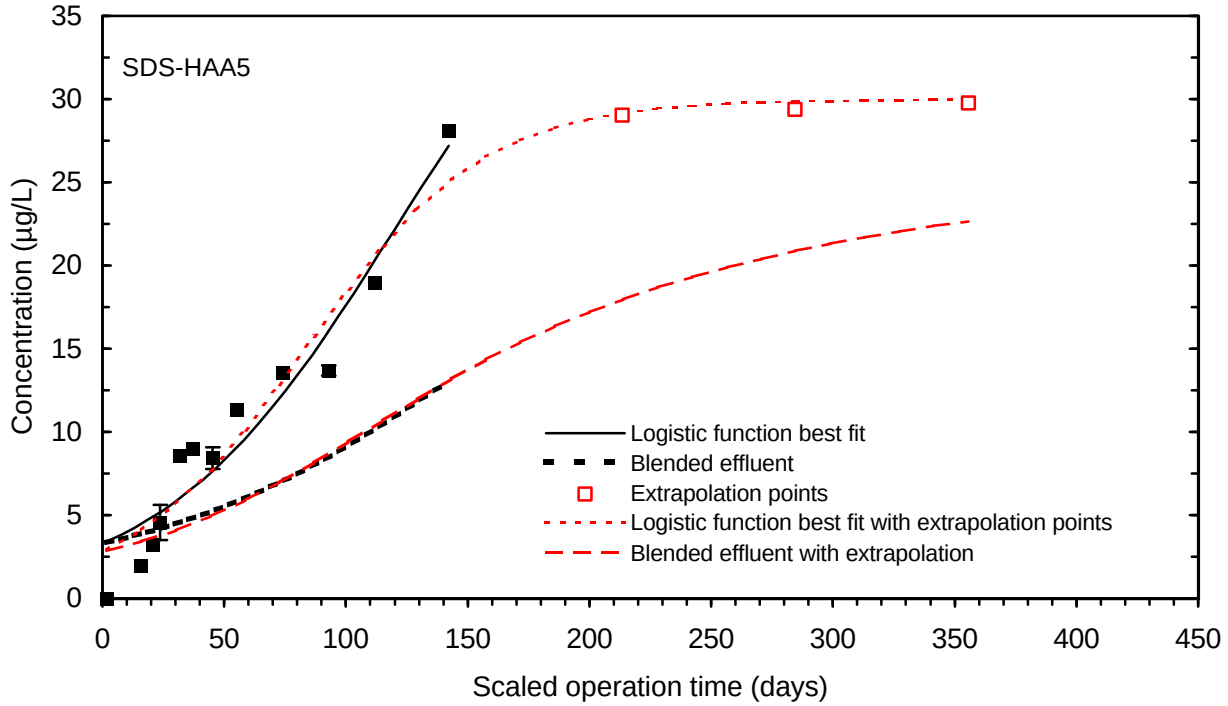


Figure 189 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (10 minute EBCT) during session 3, September

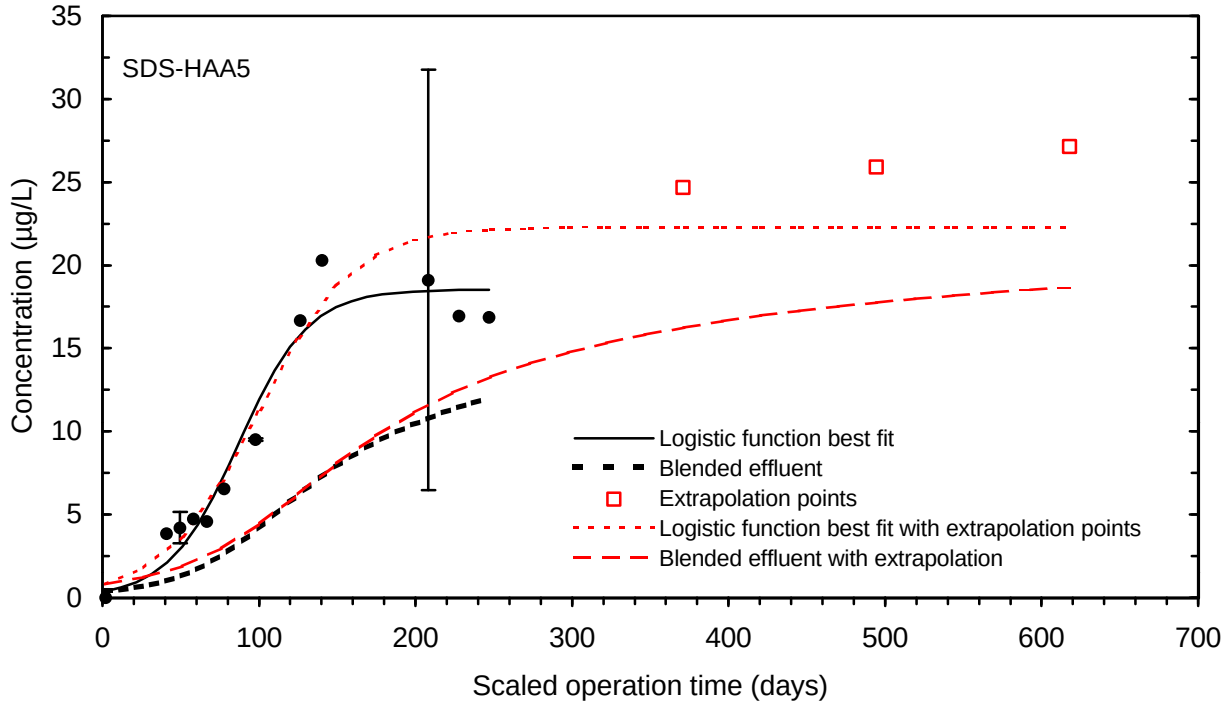


Figure 190 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (20 minute EBCT) during session 3, September

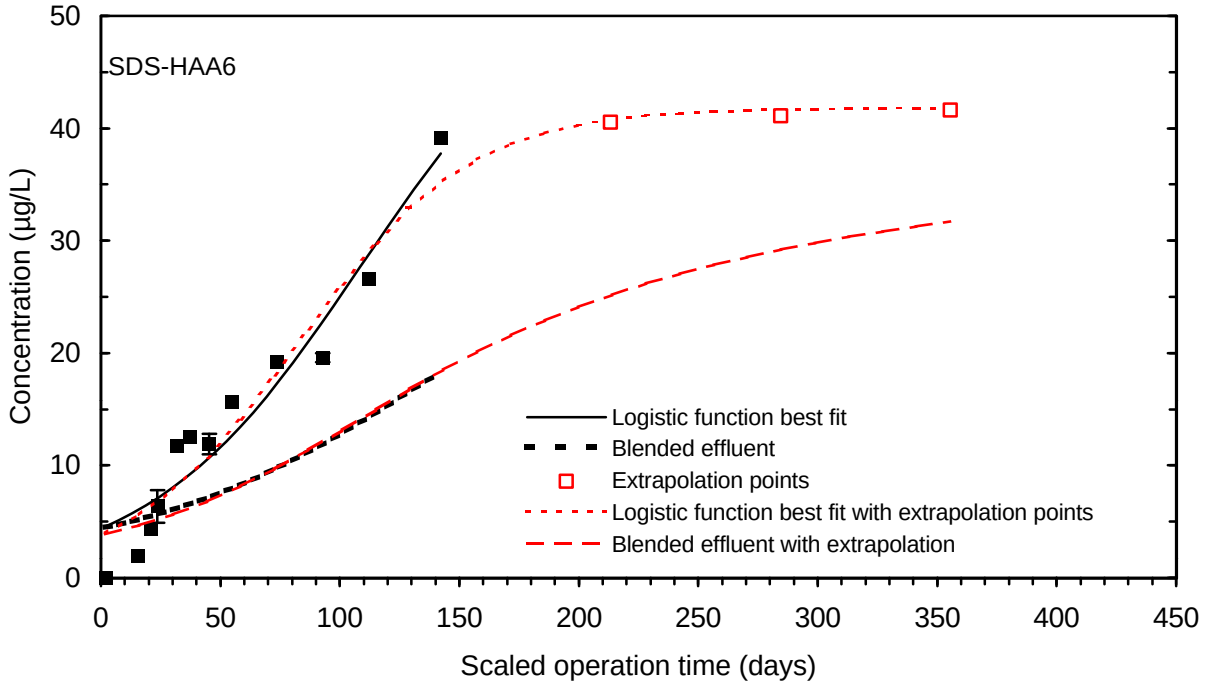


Figure 191 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (10 minute EBCT) during session 3, September

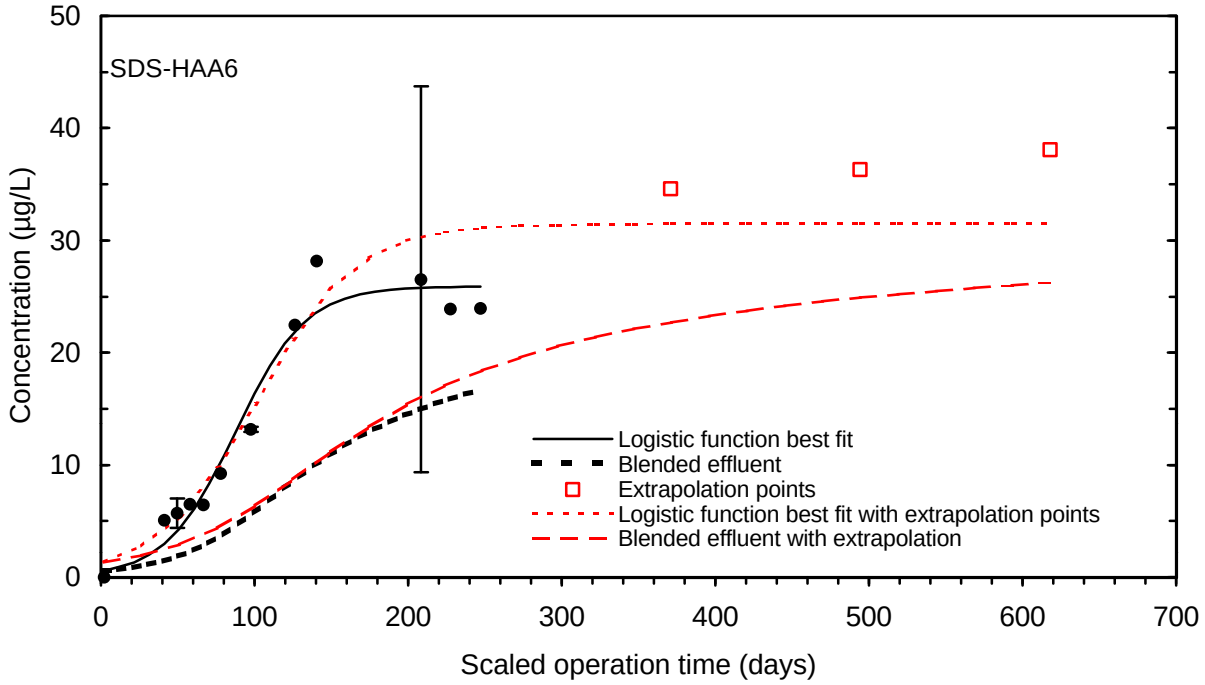


Figure 192 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (20 minute EBCT) during session 3, September

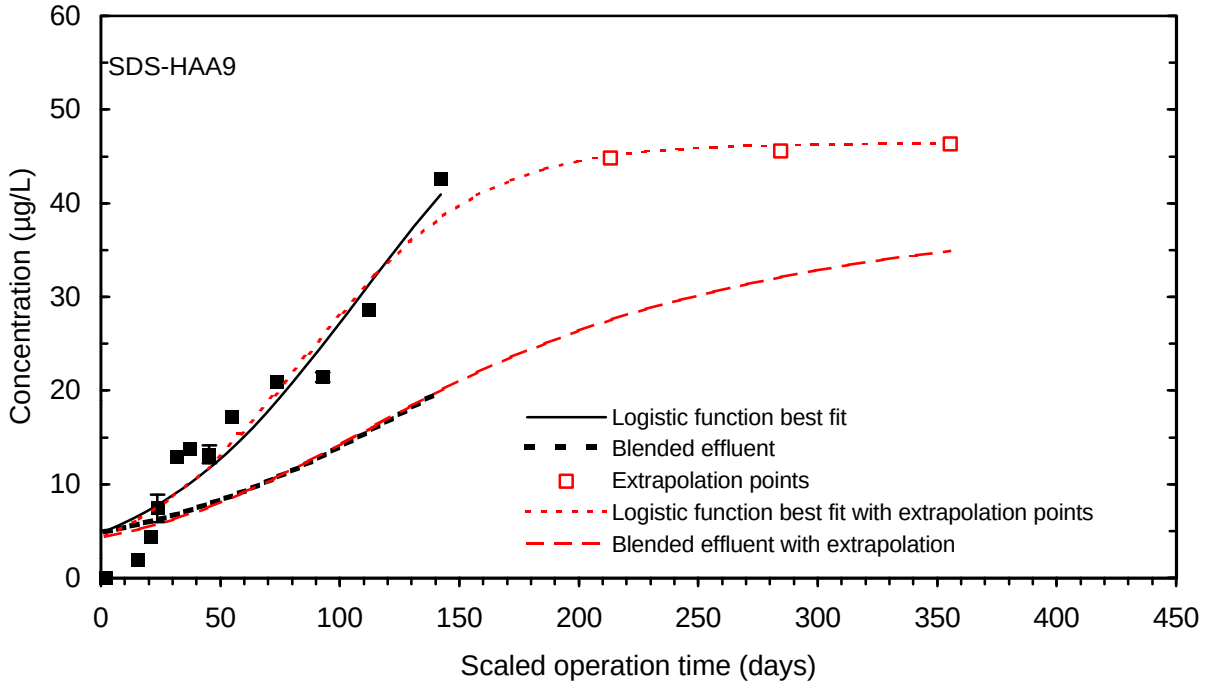


Figure 193 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (10 minute EBCT) during session 3, September

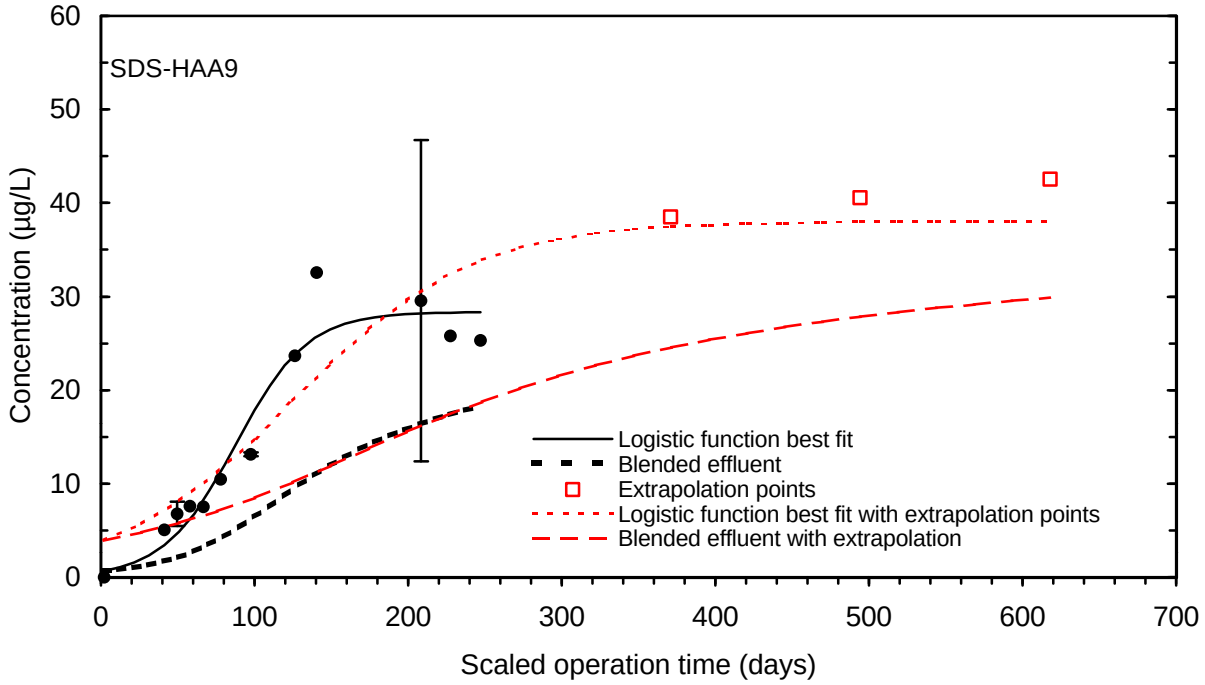


Figure 194 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (20 minute EBCT) during session 3, September

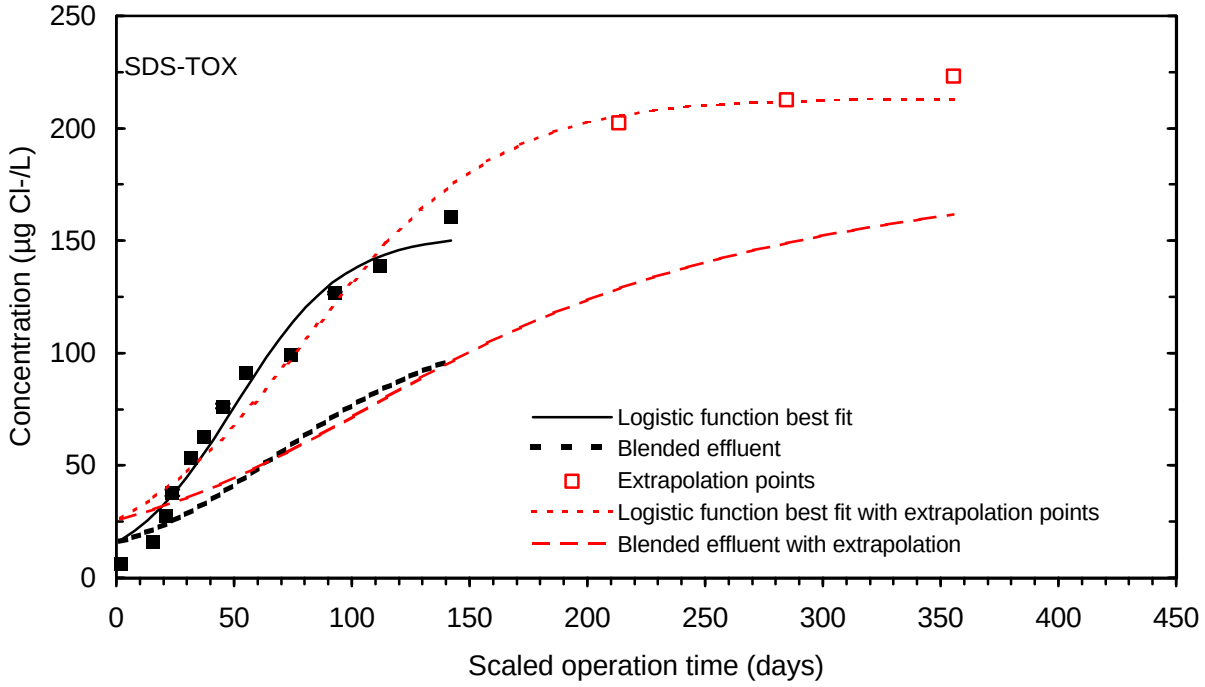


Figure 195 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (10 minute EBCT) during session 3, September

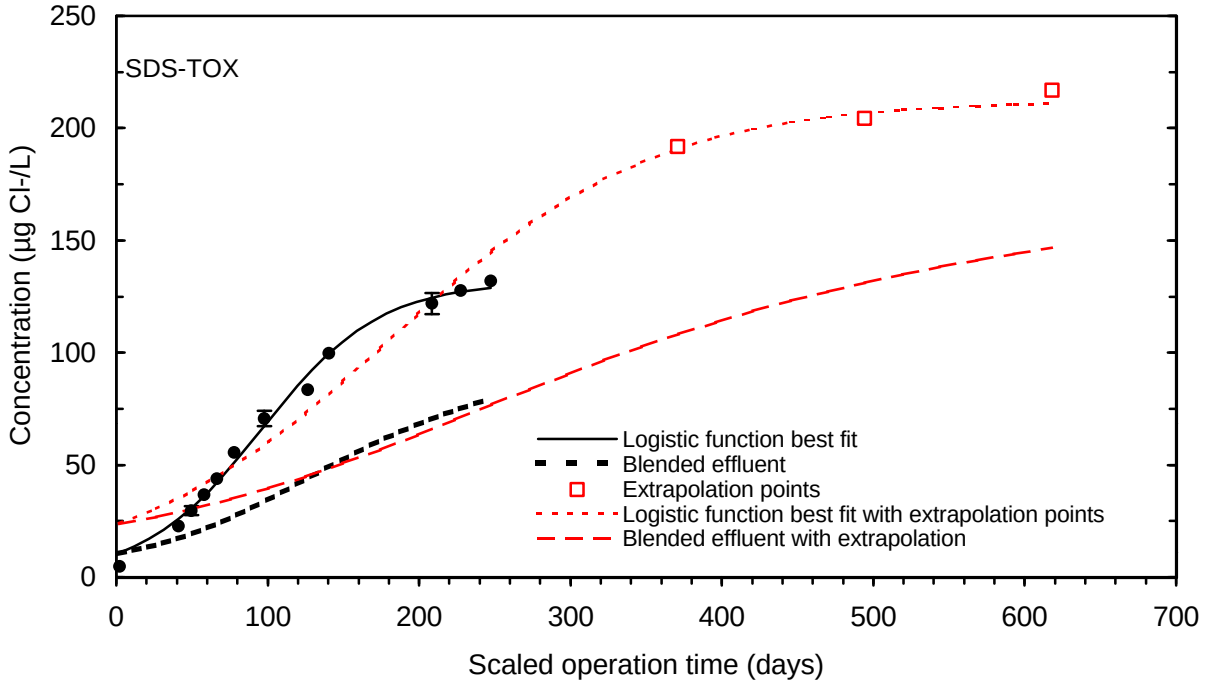


Figure 196 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (20 minute EBCT) during session 3, September

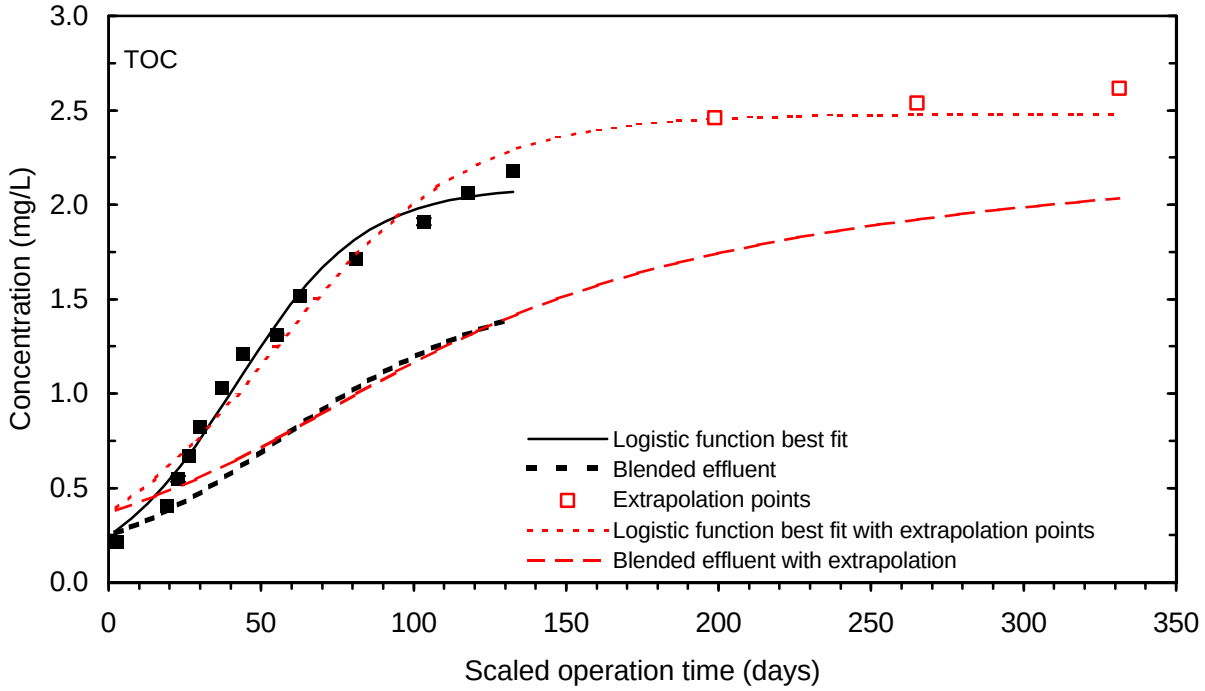


Figure 197 Single contactor and blended effluent extrapolated TOC breakthrough curve (10 minute EBCT) during session 4, November

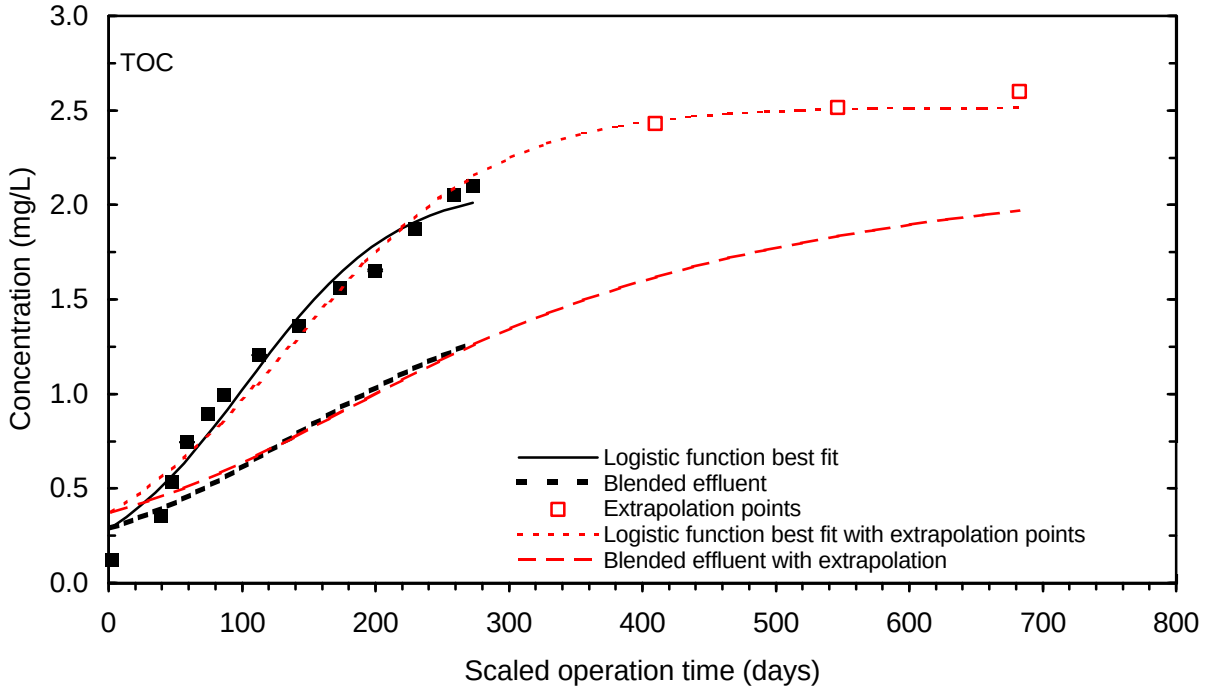


Figure 198 Single contactor and blended effluent extrapolated TOC breakthrough curve (20 minute EBCT) during session 4, November

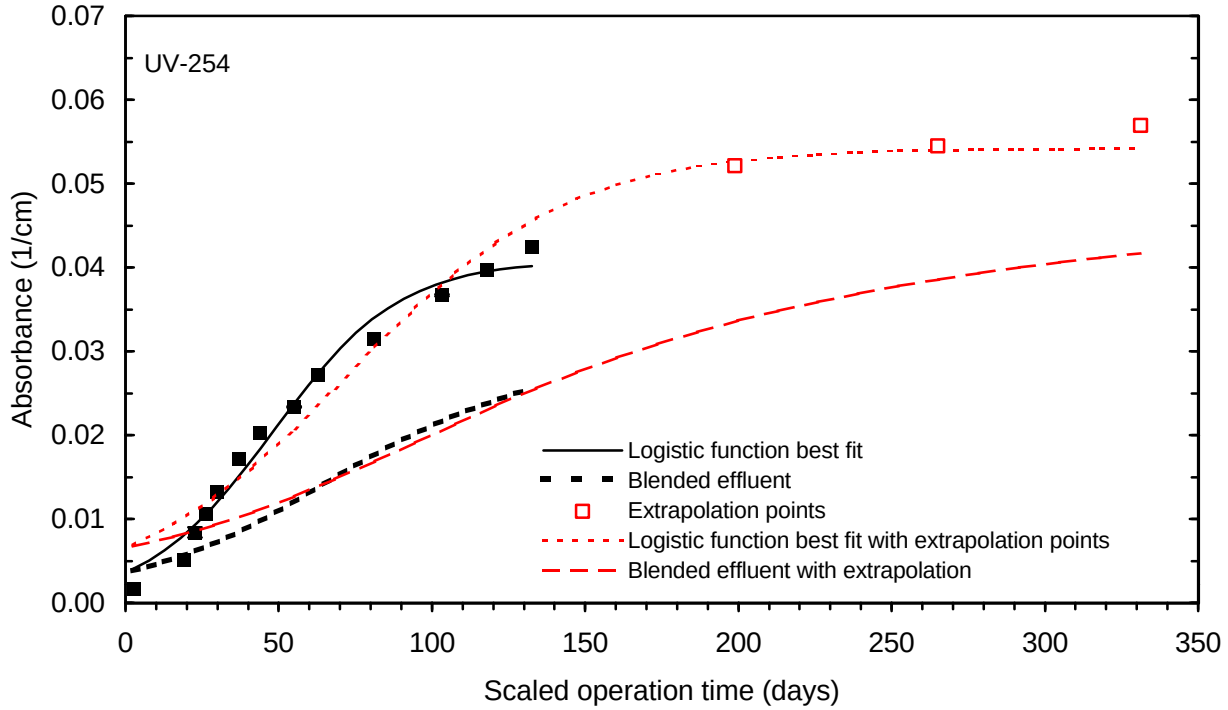


Figure 199 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (10 minute EBCT) during session 4, November

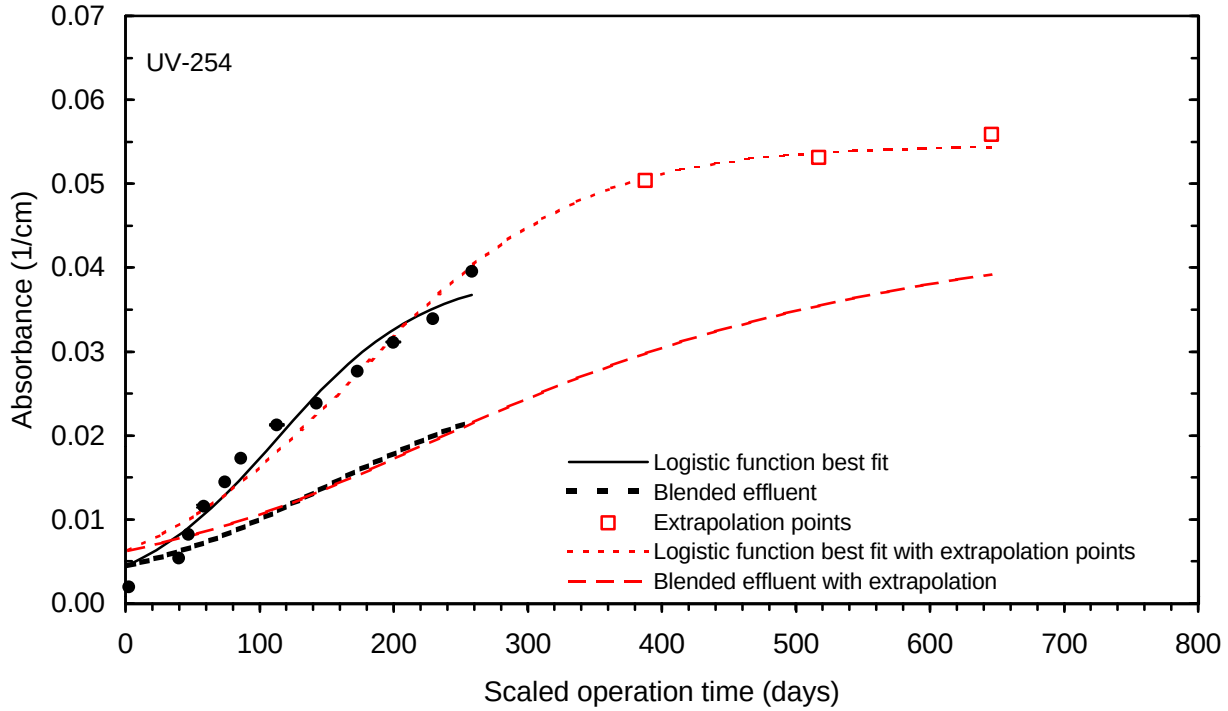


Figure 200 Single contactor and blended effluent extrapolated UV-254 breakthrough curve (20 minute EBCT) during session 4, November

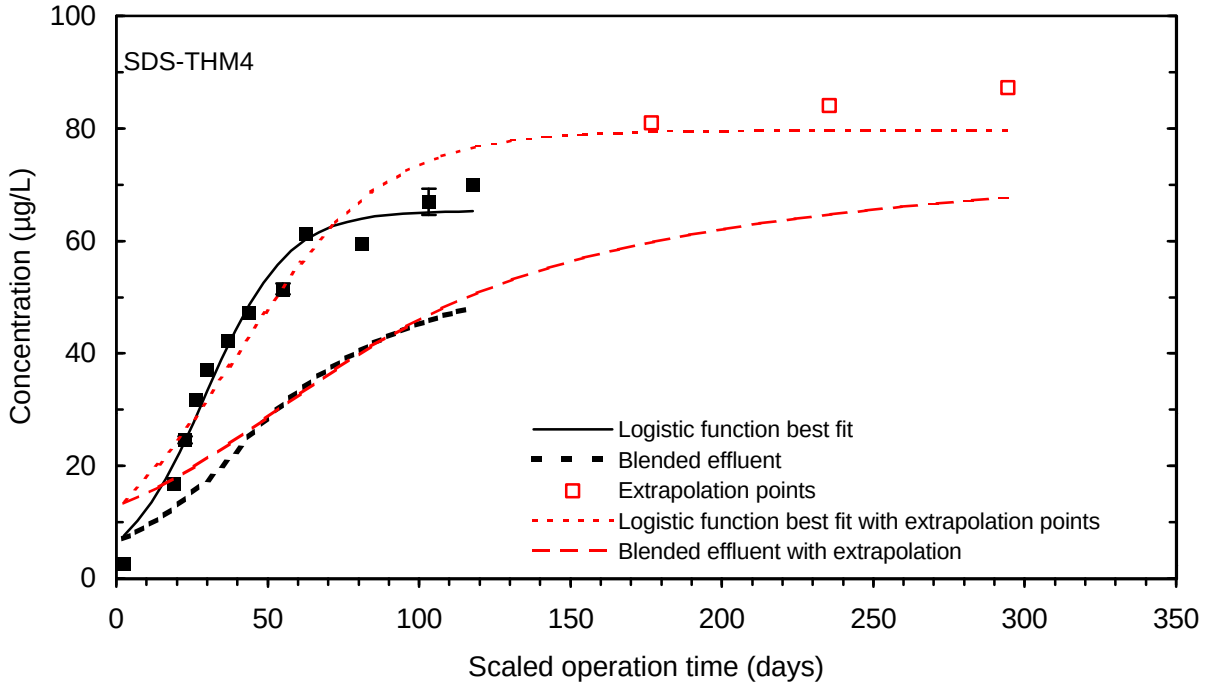


Figure 201 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (10 minute EBCT) during session 4, November

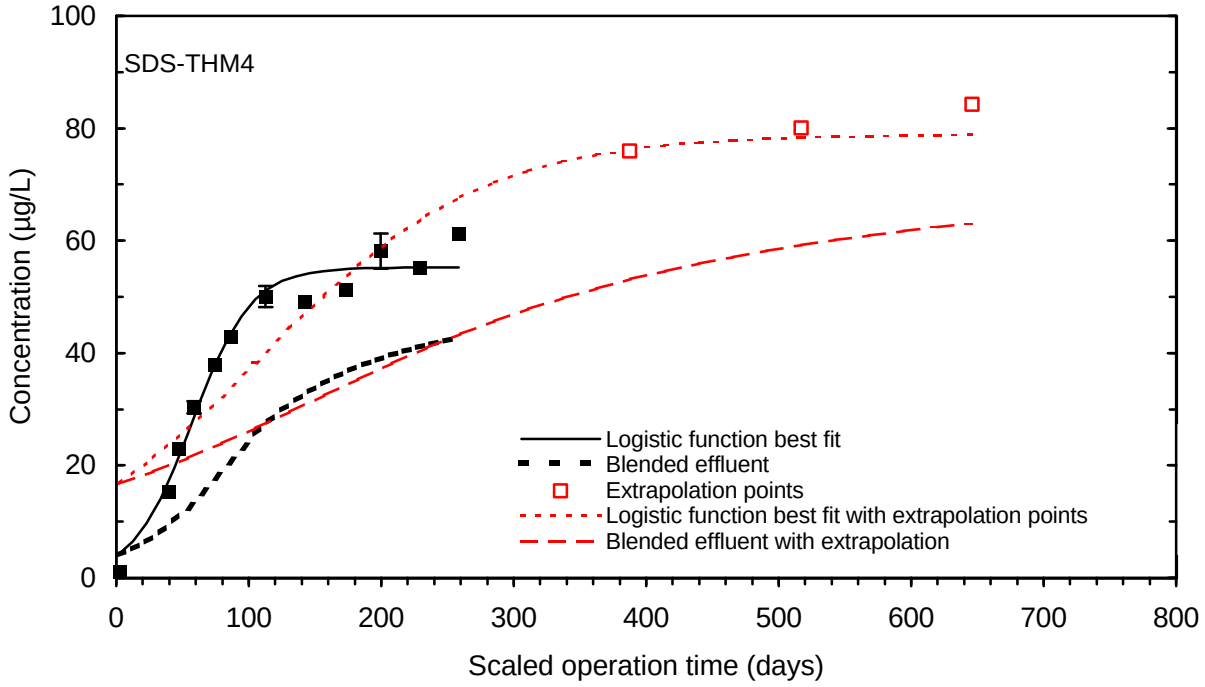


Figure 202 Single contactor and blended effluent extrapolated SDS-THM4 breakthrough curve (20 minute EBCT) during session 4, November

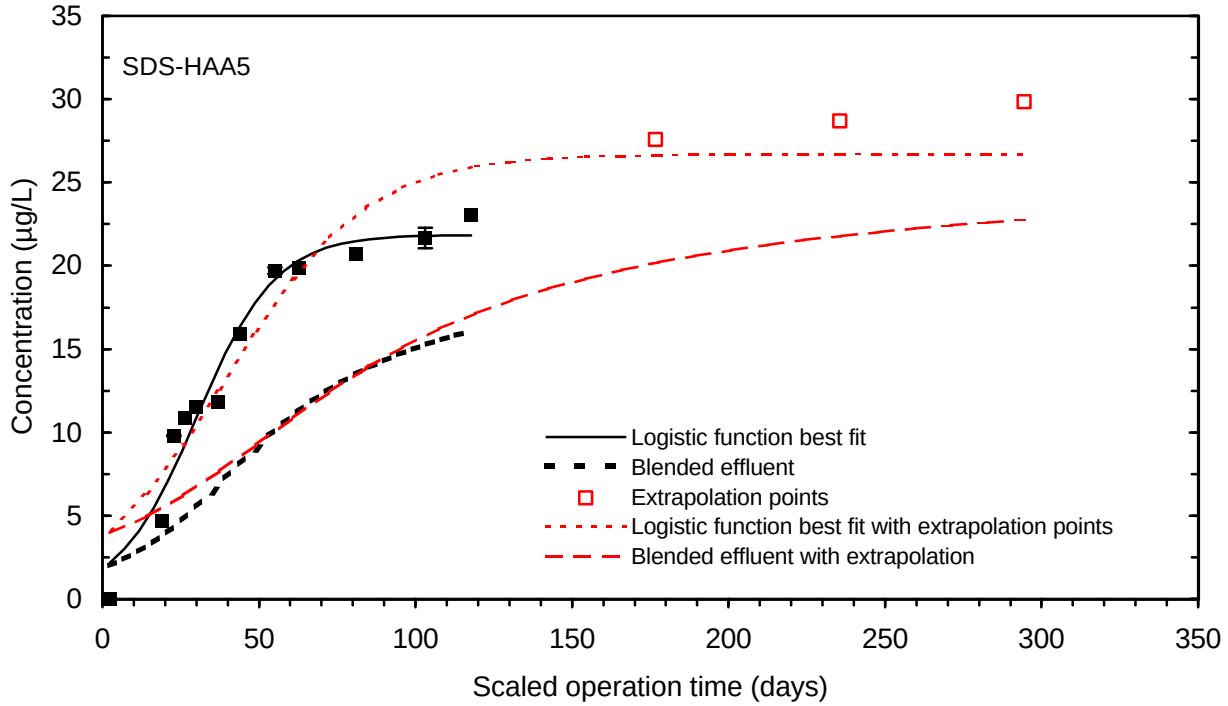


Figure 203 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (10 minute EBCT) during session 4, November

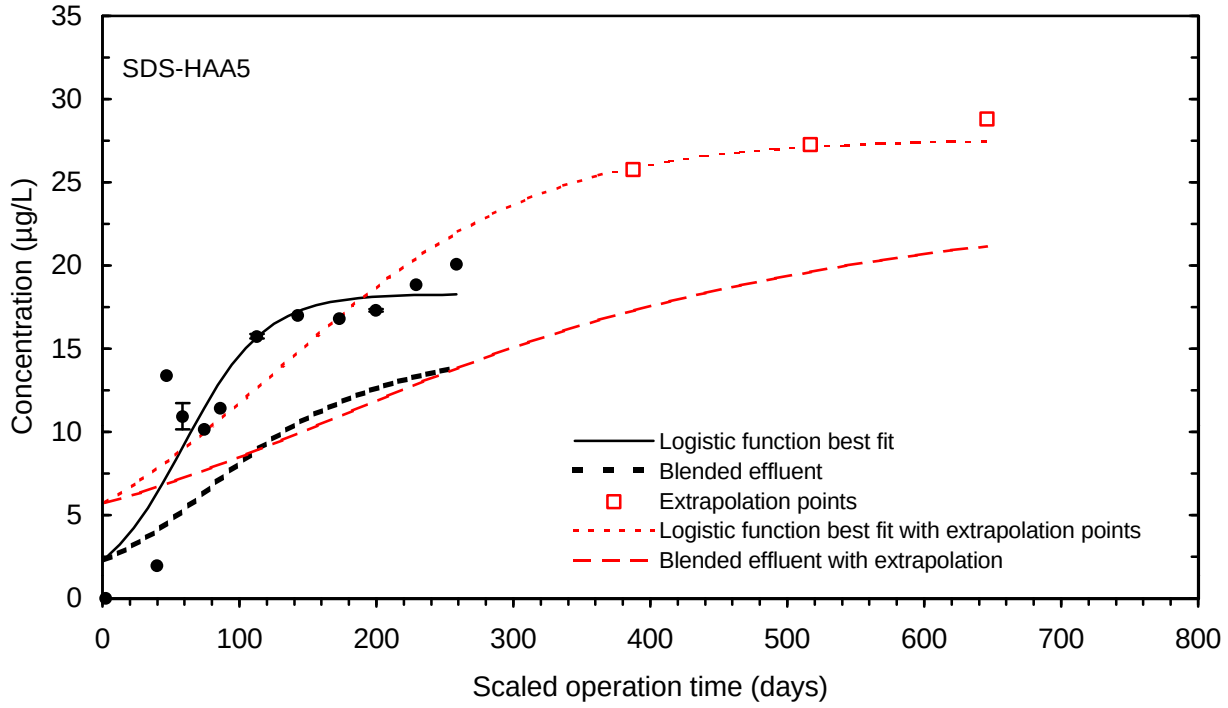


Figure 204 Single contactor and blended effluent extrapolated SDS-HAA5 breakthrough curve (20 minute EBCT) during session 4, November

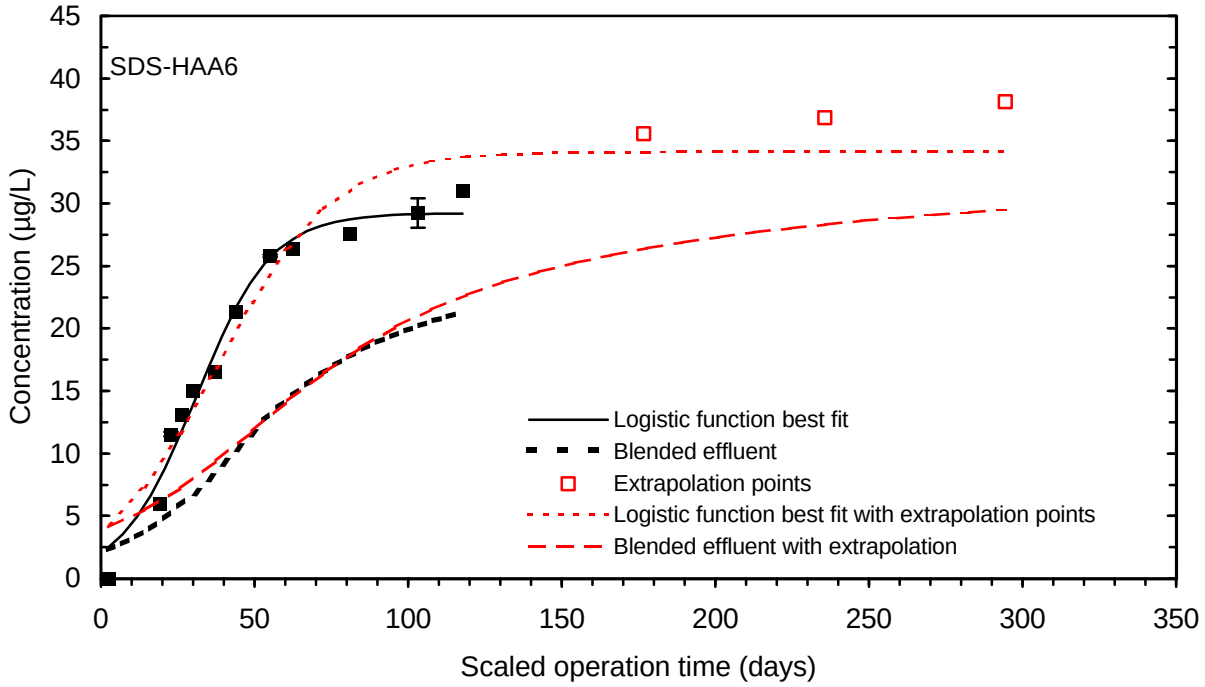


Figure 205 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (10 minute EBCT) during session 4, November

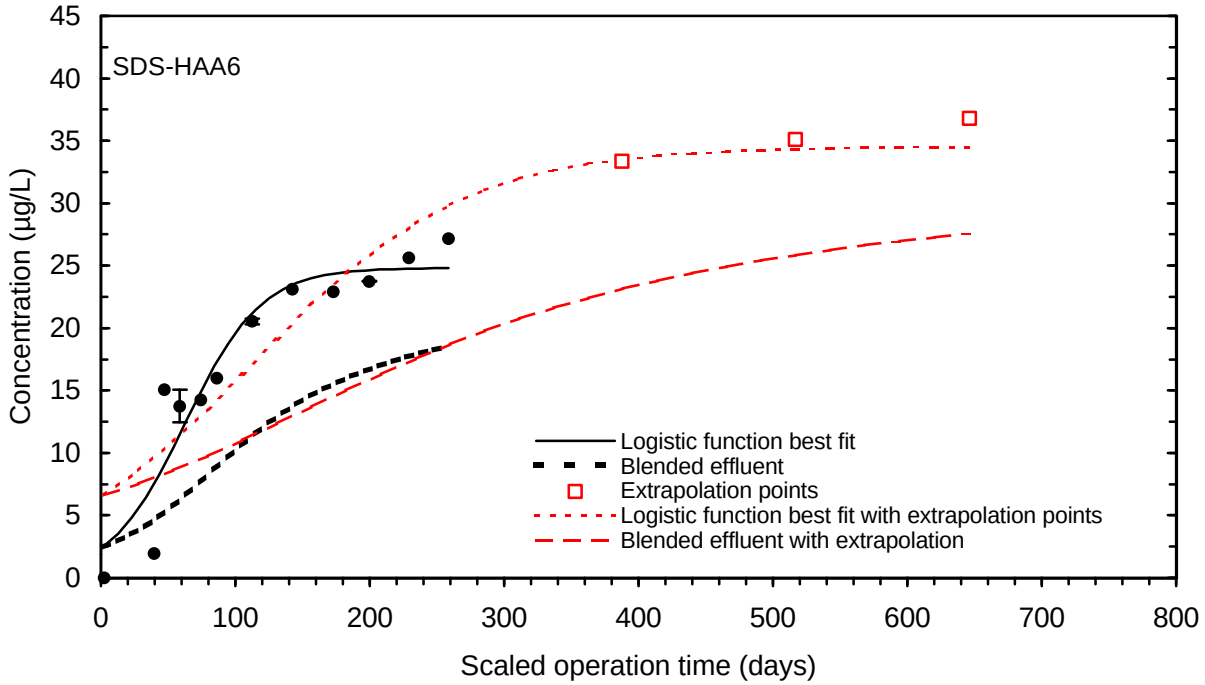


Figure 206 Single contactor and blended effluent extrapolated SDS-HAA6 breakthrough curve (20 minute EBCT) during session 4, November

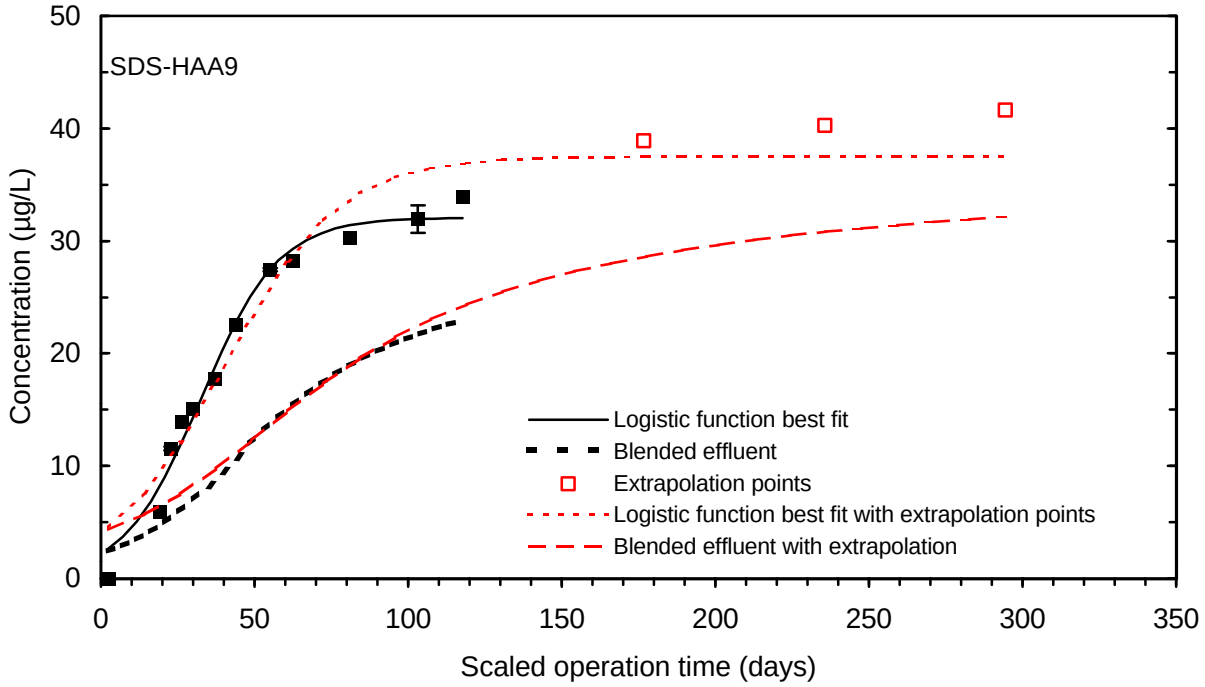


Figure 207 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (10 minute EBCT) during session 4, November

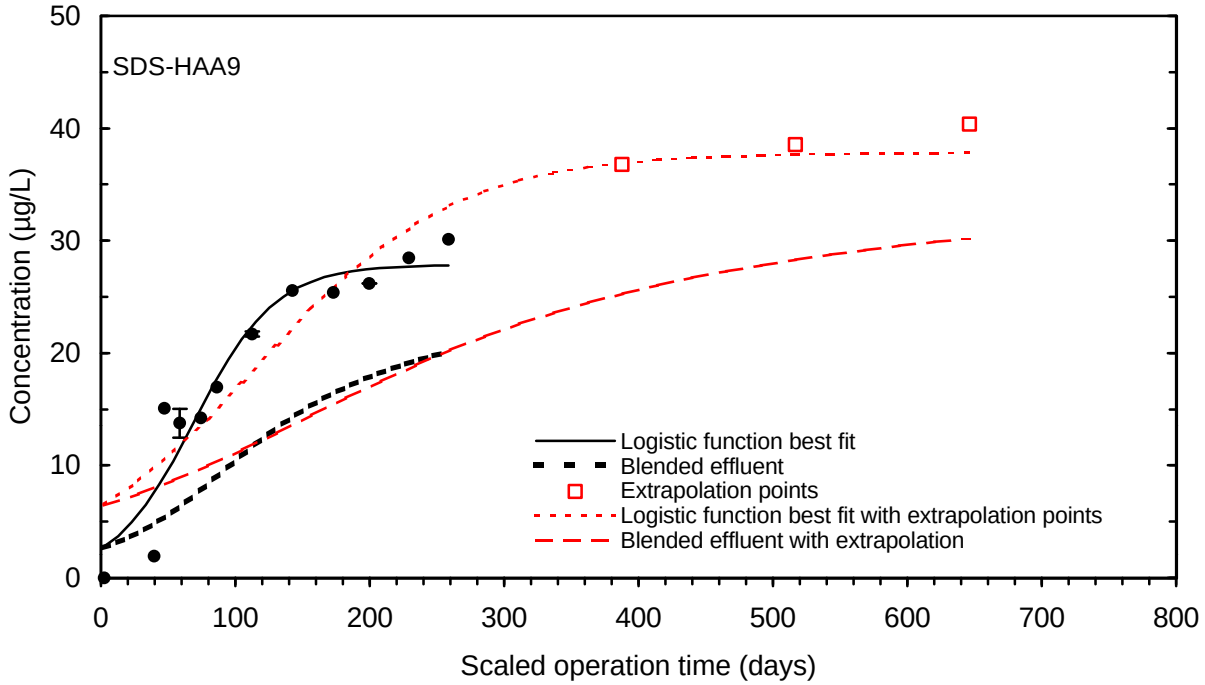


Figure 208 Single contactor and blended effluent extrapolated SDS-HAA9 breakthrough curve (20 minute EBCT) during session 4, November

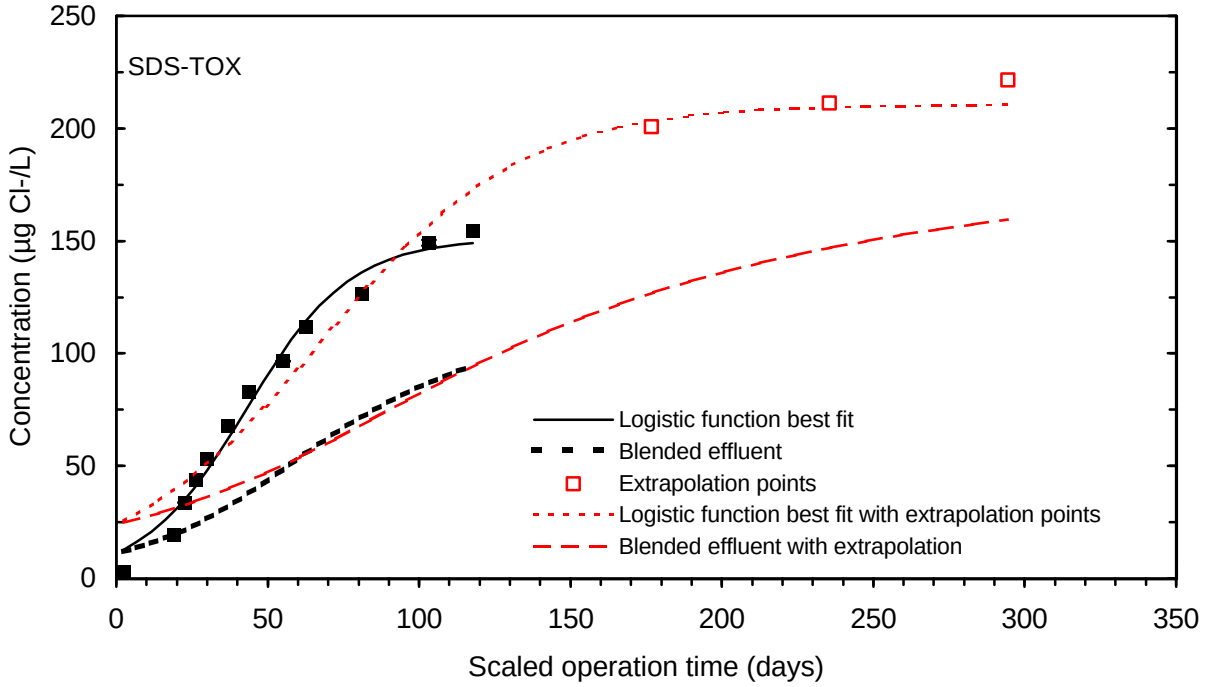


Figure 209 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (10 minute EBCT) during session 4, November

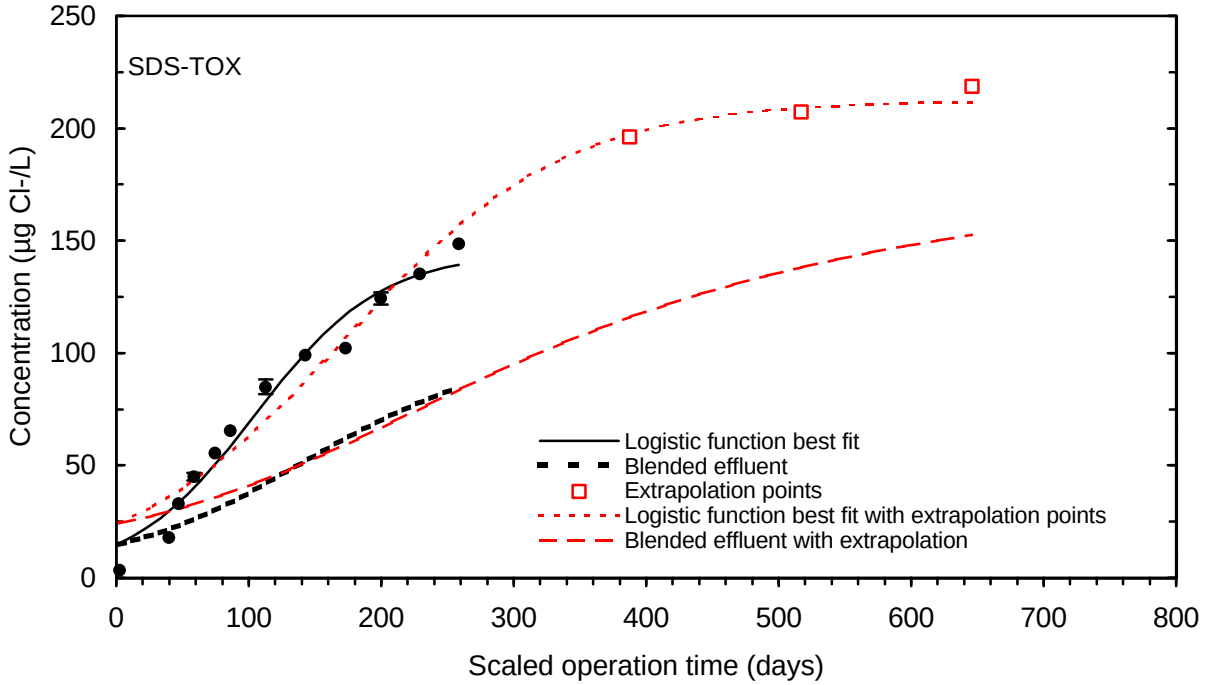


Figure 210 Single contactor and blended effluent extrapolated SDS-TOX breakthrough curve (20 minute EBCT) during session 4, November

11 *Normalized DBP Precursor Breakthrough*

11 Normalized DBP Precursor Breakthrough

An additional method of analyzing GAC breakthrough data is to divide the GAC effluent concentrations of each parameter by their respective GAC influent concentrations. The relative breakthrough patterns of each parameter can then be compared on a fraction breakthrough level. This type of analysis helps determine whether surrogates for DBP precursor breakthrough, such as TOC and UV_{254}, are reliable indicators of DBP precursor breakthrough. An analysis of the extent to which the surrogates can be classified as conservative indicators of specific DBP precursor breakthrough is also useful.

The normalized breakthrough patterns for all parameters (DBP surrogates and SDS-DBPs) for the 10 minute contactor run during the February session are shown in Figure 211. Relatively high initial relative levels of chlorine demand were present, due to inorganic chlorine demand. The normalized breakthrough SDS-THM and SDS-HAA matched that of TOC during most of the run. Therefore, TOC served as an indicator, but not a conservative indicator, for SDS-THM4 and SDS-HAA breakthrough. Normalized SDS-TOX breakthrough was followed by normalized UV_{254} later in the run. In general, similar patterns were observed for the February session 20 minute EBCT contactor (Figure 212) except that normalized SDS-TOX breakthrough followed normalized UV_{254} breakthrough.

During the May session, Figure 213, the normalized breakthrough SDS-THM and SDS-HAA occurred earlier than that of TOC and remained at higher relative levels throughout most of the run. Therefore, TOC was again not a conservative indicator for SDS-THM4 or SDS-HAA breakthrough. Normalized TOC breakthrough was followed by normalized SDS-TOX and UV_{254}. In general, similar patterns were observed for the May session 20 minute EBCT contactor, shown in Figure 214. Normalized SDS-THM4 and SDS-HAA breakthrough levels were higher than TOC, although by the end of the run normalized TOC breakthrough exceeded normalized SDS-HAA breakthrough and matched normalized SDS-THM4 breakthrough.

During the September session, only normalized SDS-THM4 exceeded that for TOC, especially at the beginning of each EBCT run (Figures 215 and 216). Although TOC did not serve as a conservative indicator of SDS-THM4 breakthrough, TOC did serve throughout most of the two runs as a conservative indicator of SDS-HAA breakthrough. During most of the two EBCT runs, normalized UV_{254}, SDS-HAA, and SDS-TOX breakthrough patterns were very similar.

During most of the November session runs, shown in Figures 217 and 218, TOC did not serve as a conservative indicator for either SDS-THM4 or SDS-HAA breakthrough. Normalized SDS-TOX and UV_{254} showed very similar breakthrough patterns.

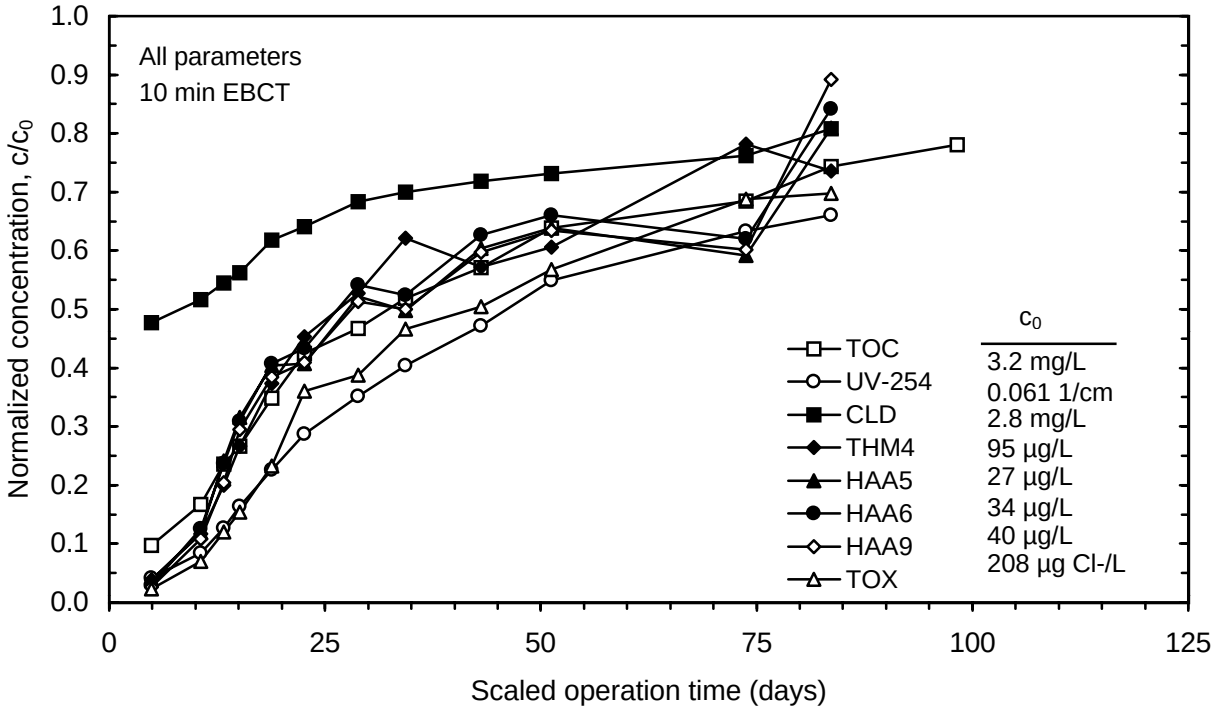


Figure 211 Normalized breakthrough patterns (10 minute EBCT) during session 1, February

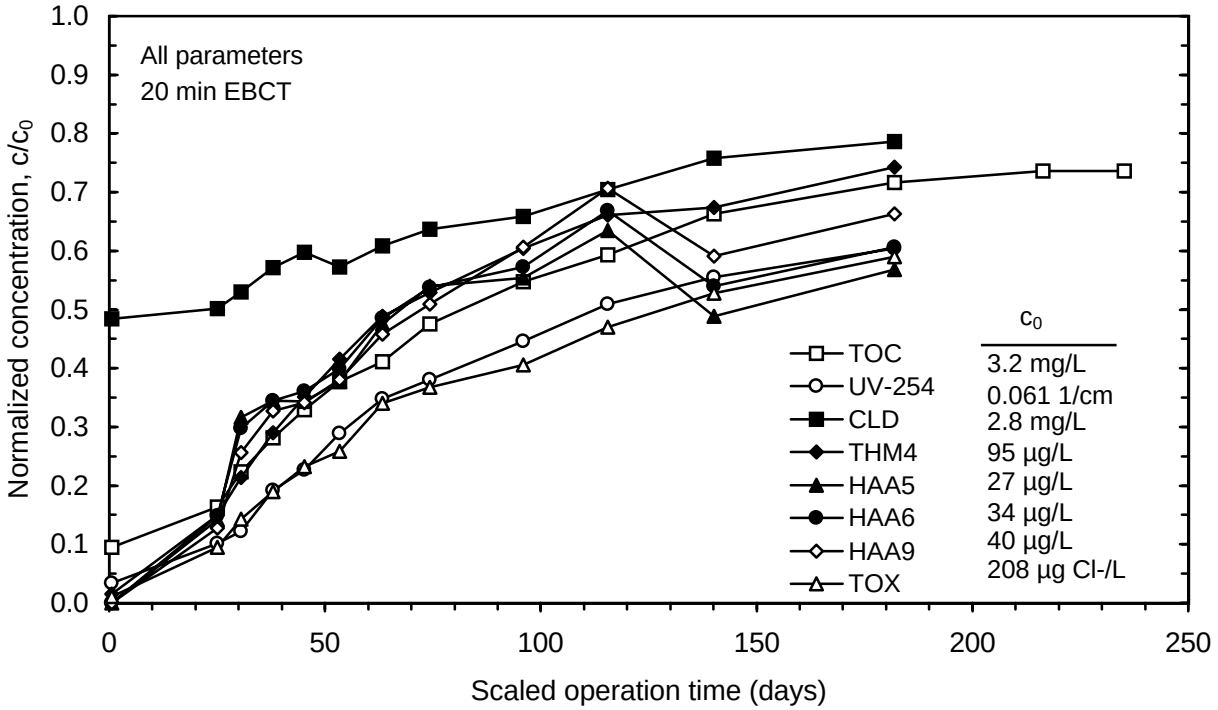


Figure 212 Normalized breakthrough patterns (20 minute EBCT) during session 1, February

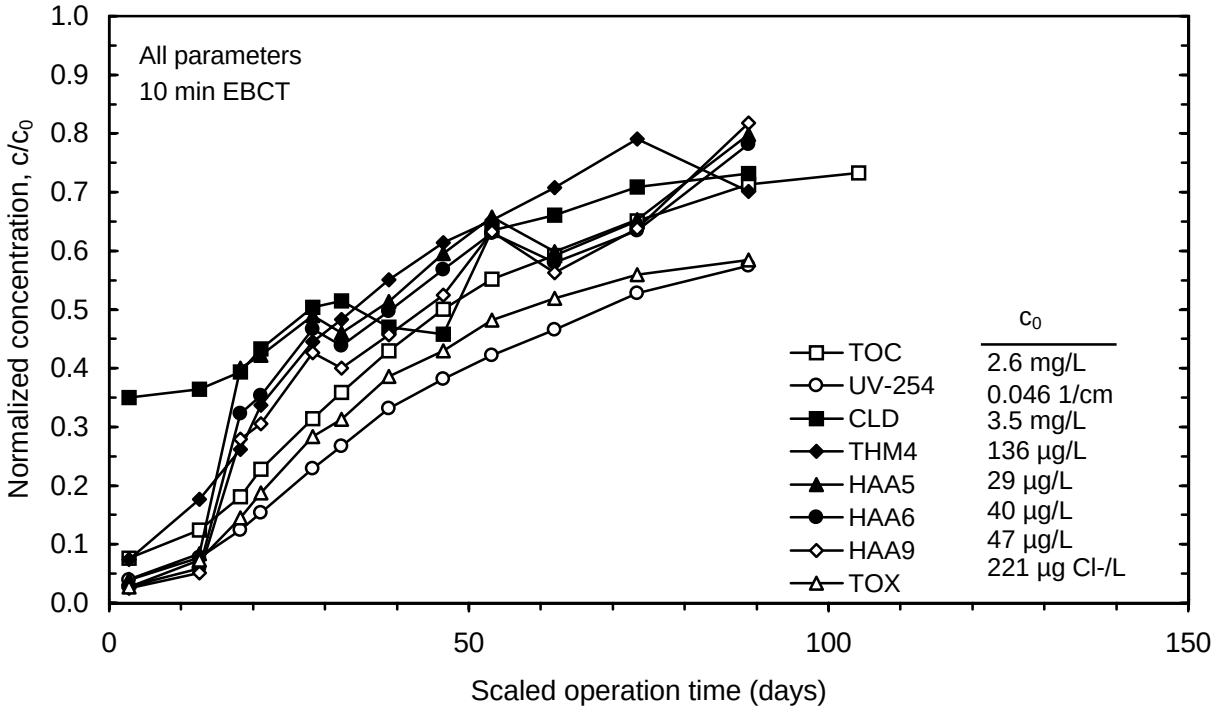


Figure 213 Normalized breakthrough patterns (10 minute EBCT) during session 2, May

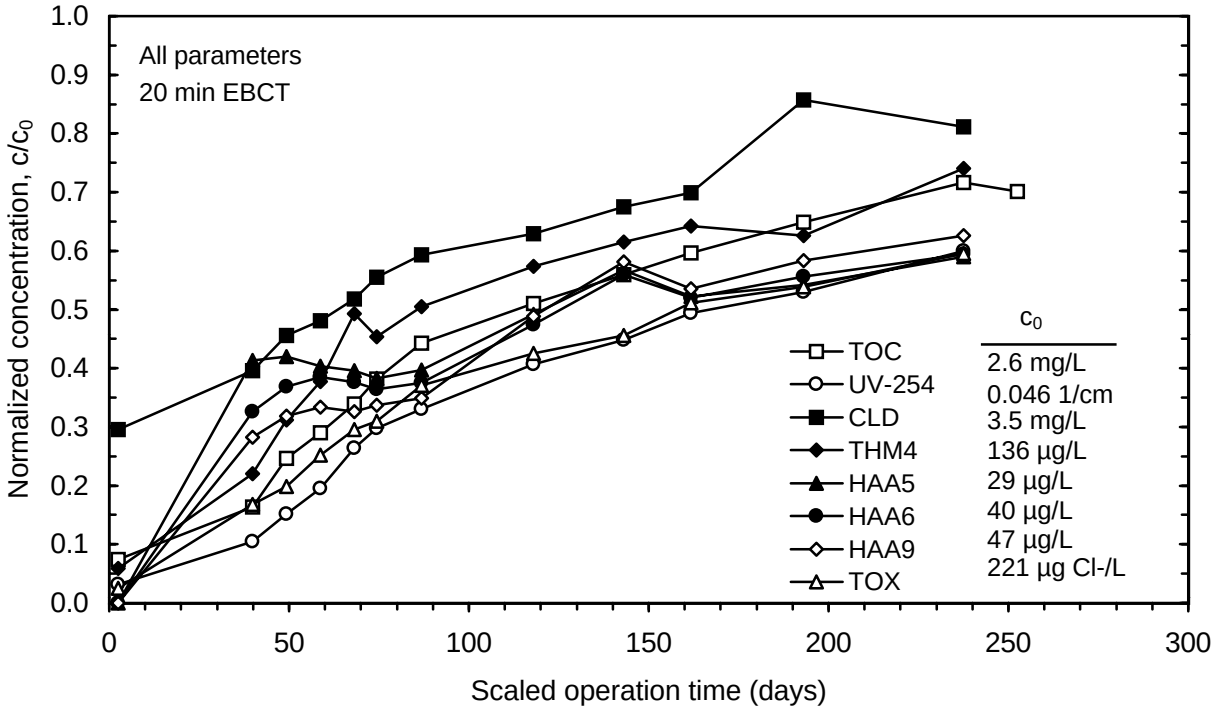


Figure 214 Normalized breakthrough patterns (20 minute EBCT) during session 2, May

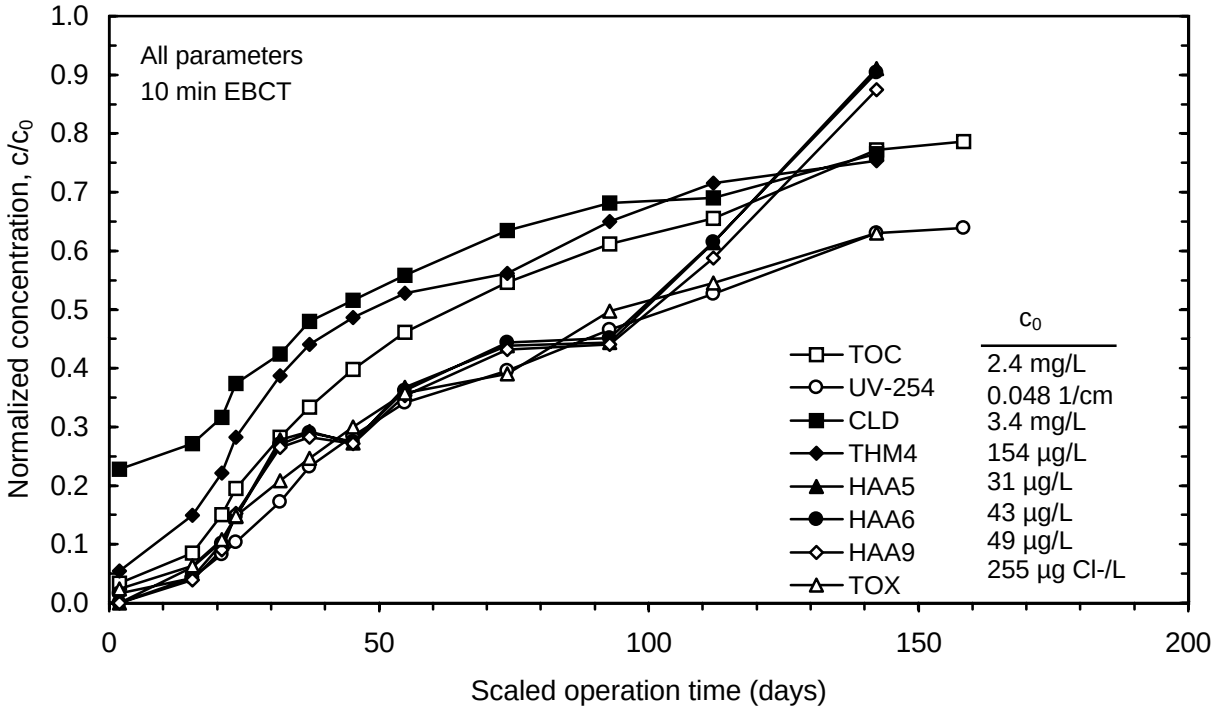


Figure 215 Normalized breakthrough patterns (10 minute EBCT) during session 3, September

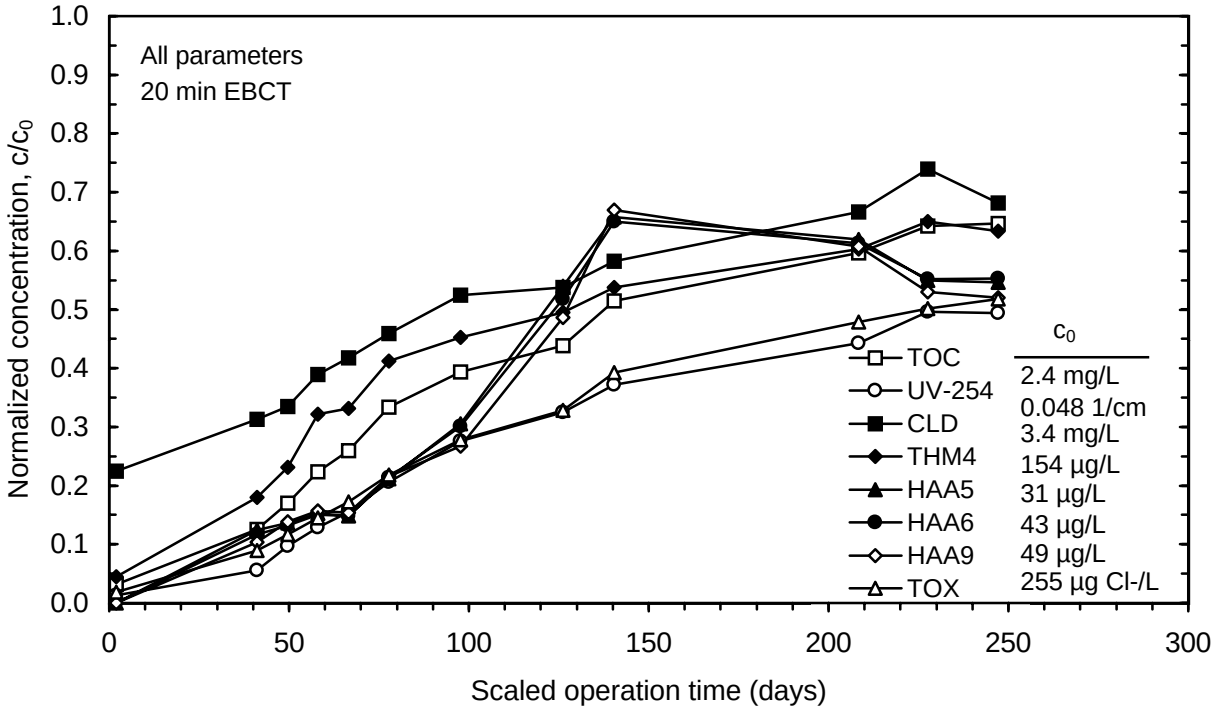


Figure 216 Normalized breakthrough patterns (20 minute EBCT) during session 3, September

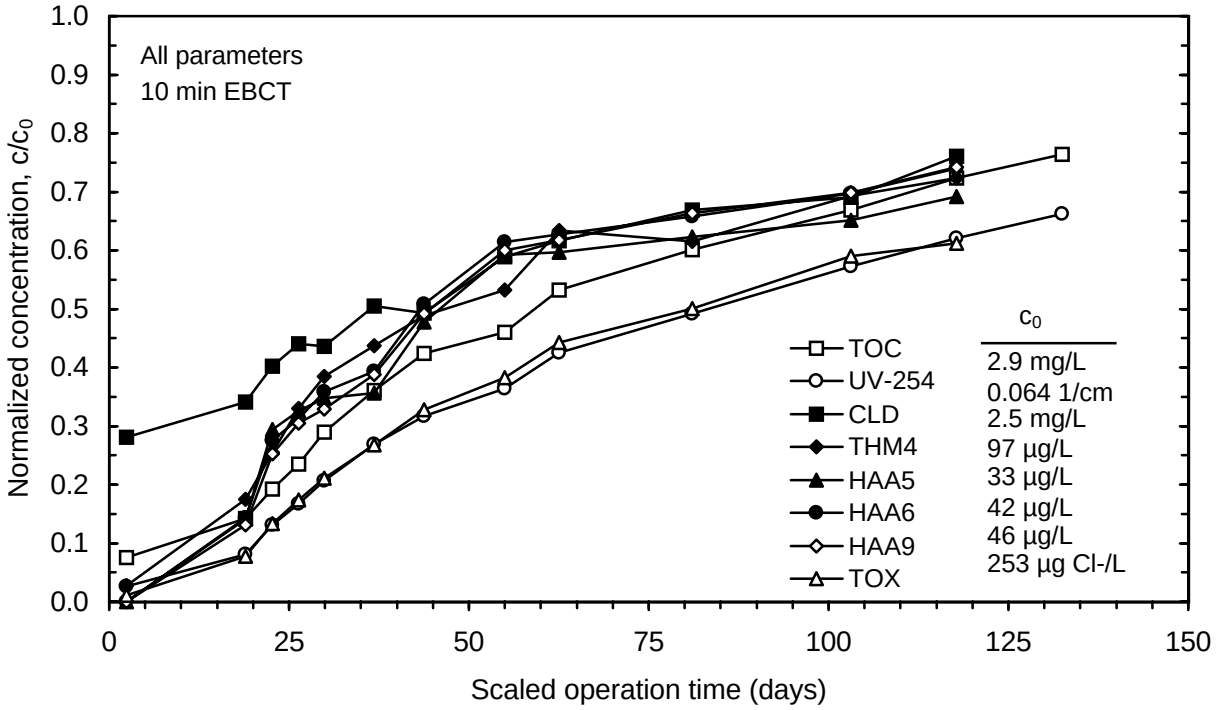


Figure 217 Normalized breakthrough patterns (10 minute EBCT) during session 4, November

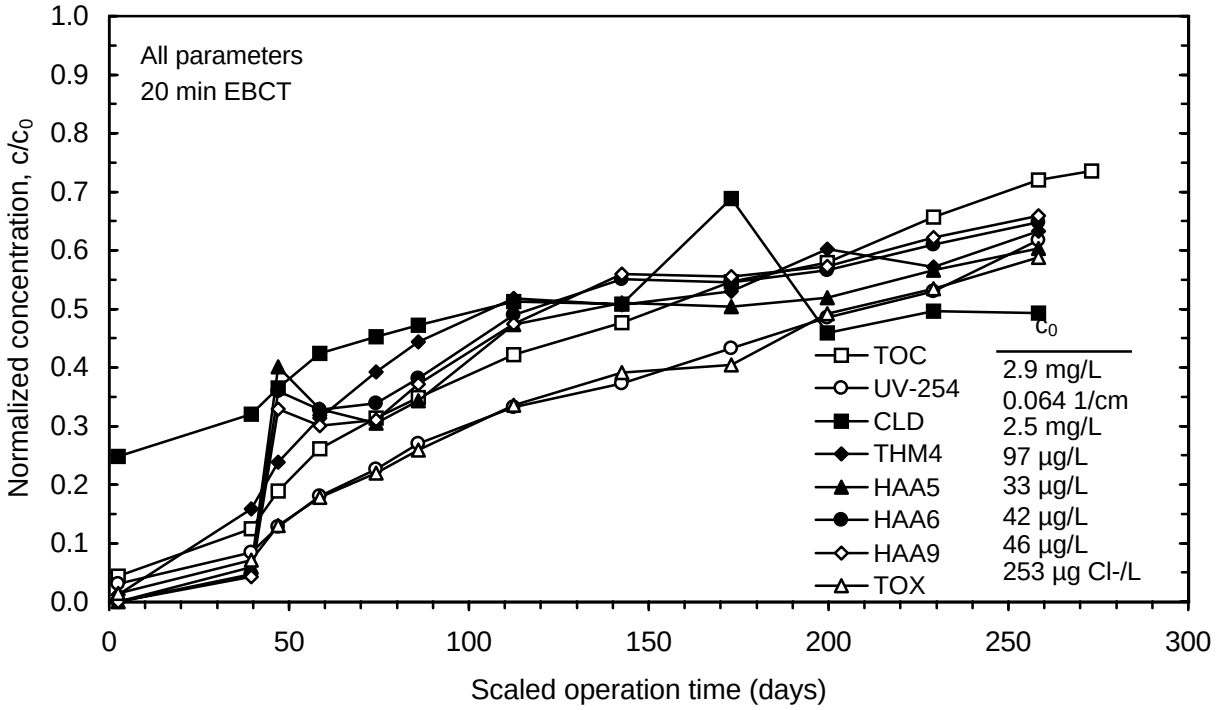


Figure 218 Normalized breakthrough patterns (20 minute EBCT) during session 4, November

12 *TOC-DBP and UV_{254}-DBP Relationships*

12 TOC-DBP and UV_{254}-DBP Relationships

Paired concentration plots of GAC effluent SDS-THM4, SDS-HAA5, SDS-HAA6, SDS-HAA9, and SDS-TOX against GAC effluent TOC and UV_{254} were generated on a concentration and on a normalized (fraction breakthrough) basis. These plots are summarized in Figures 219 through 222. Both EBCTs evaluated and all sessions are presented on the same plots. In general, TOC and UV_{254} served as good predictors of GAC effluent DBP formation regardless of season or EBCT. The graphs summarized in Figure 219 show that the correlation between TOC and SDS-THM4 during the May and September sessions yielded higher levels of formed THM4 per mg TOC than the runs performed during February and November session. This is likely an impact of the season or the SDS incubation temperature used, which were lower during February and November. The bromide levels measured during the February and November sessions were also lower than those measured during the May and September sessions. There was less of an impact of season on the correlation between SDS-HAA and TOC. The data does show that formed SDS-HAA levels per mg TOC were lower during the February session. SDS-TOX also shows lower formed concentrations per mg TOC during the February session. There was no apparent impact of EBCT on the correlation between TOC and SDS-DBPs. Similar results were observed for the correlations between UV_{254} and SDS-DBPs, shown in Figure 220. Correlated to UV_{254}, both the February and November sessions yielded lower SDS-TOX levels.

In the paired normalized concentration data plots shown in Figures 221 and 222, a line with a slope of 1 and y-intercept of 0 is also plotted. The general trend of the data in comparison to this line indicates whether the fraction breakthrough of the surrogate parameter (TOC or UV_{254}) directly predicts the fraction breakthrough of the formed DBP (data falls on the line), serves as a conservative indicator of the formed DBP breakthrough (data falls below the line), or under predicts the breakthrough of the formed DBP (data falls above the line). TOC under predicted normalized SDS-THM4 breakthrough. TOC served as a direct predictor of normalized SDS-HAA breakthrough and TOC was a conservative indicator for the fraction formation SDS-TOX. In general, UV_{254} under predicted the fraction DBP breakthrough of SDS-THM4 and SDS-HAA (Figure 222). UV_{254} served as an excellent direct predictor of SDS-TOX breakthrough, regardless of session or EBCT.

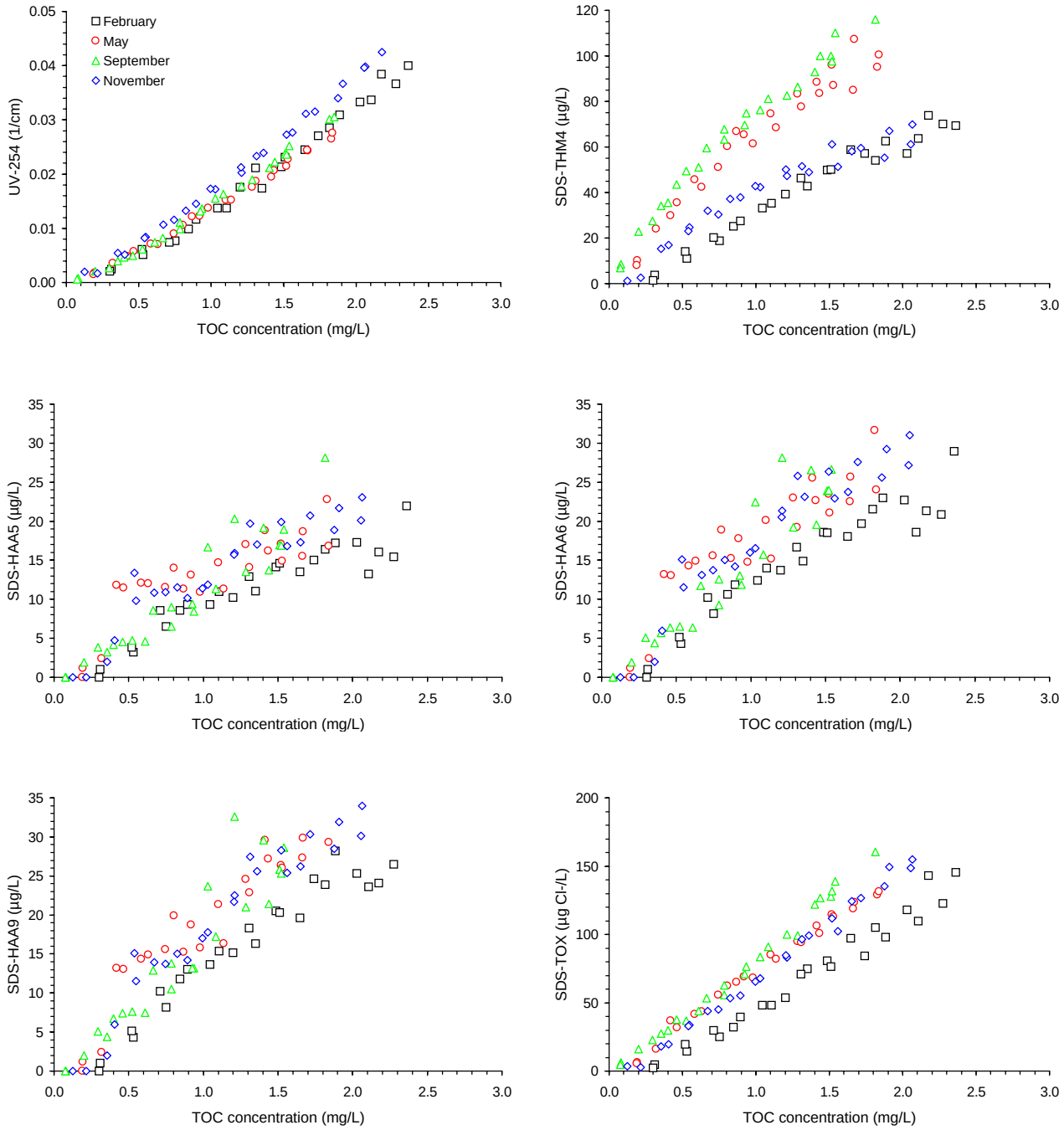


Figure 219 Correlation based on GAC effluent TOC concentration for both 10 and 20 minute EBCT contactors and all sessions

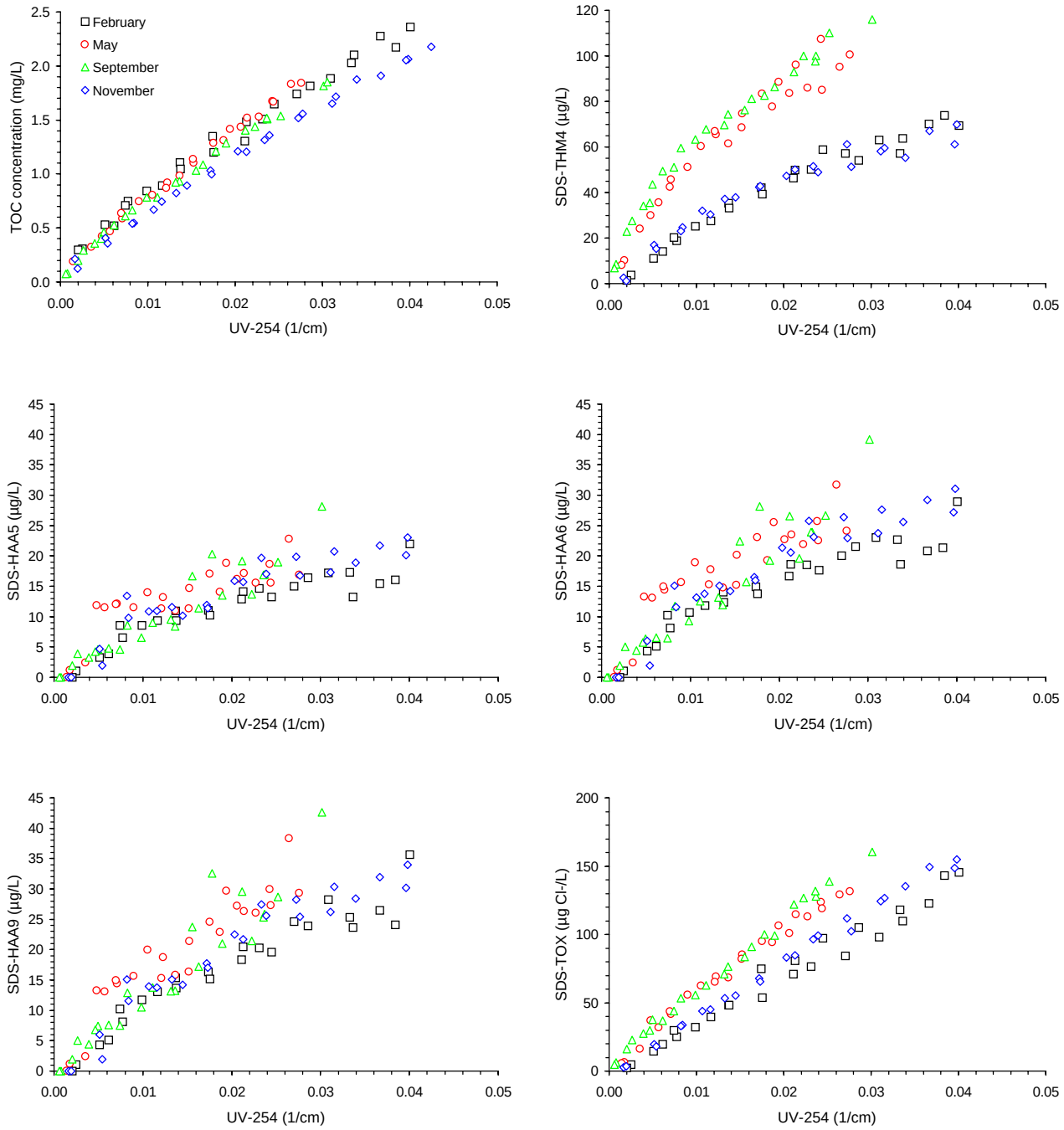


Figure 220 Correlation based on GAC effluent UV-254 for both 10 and 20 minute EBCT contactors and all sessions

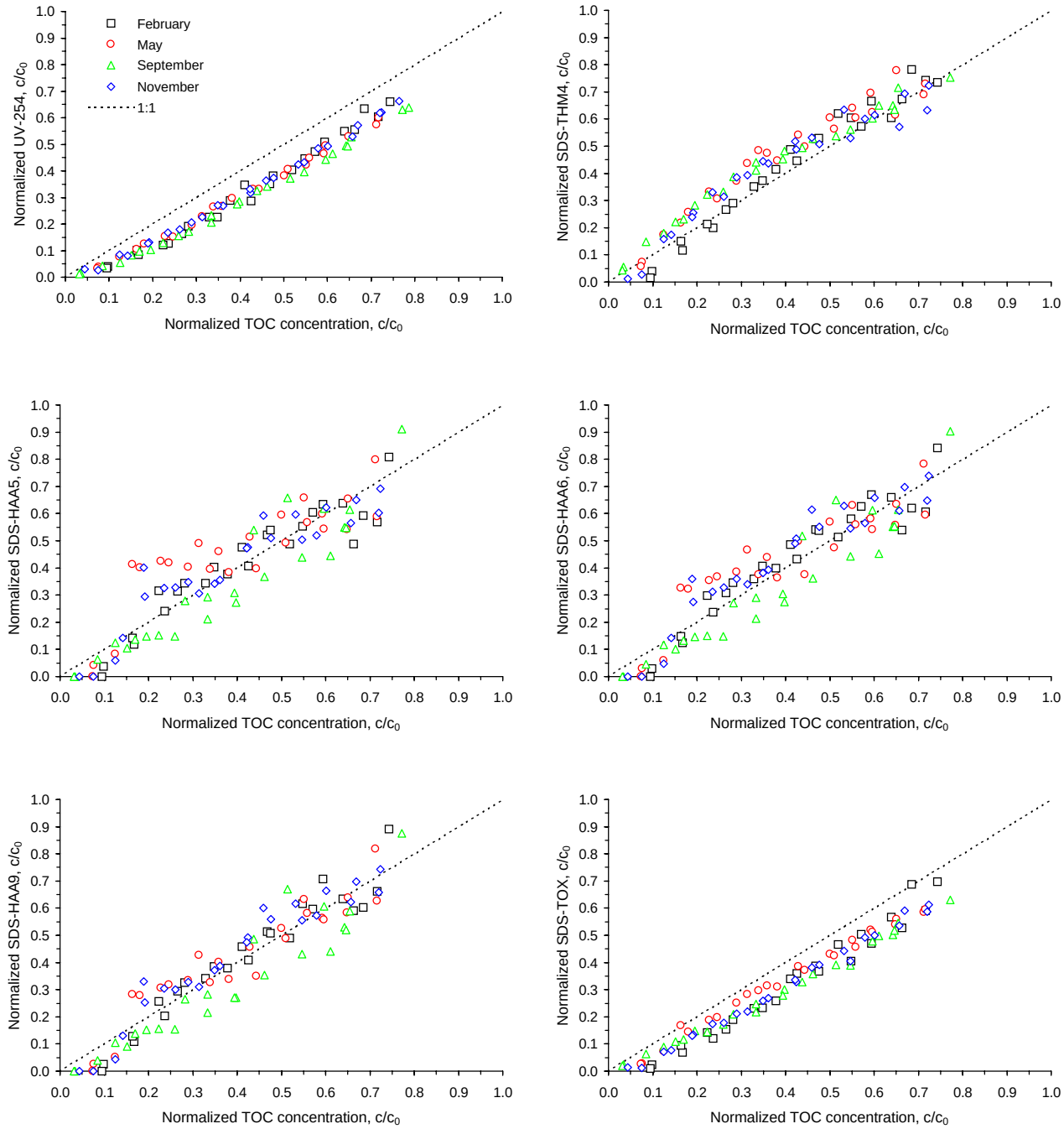


Figure 221 Correlation based on normalized GAC effluent TOC concentration for both 10 and 20 minute EBCT contactors and all sessions

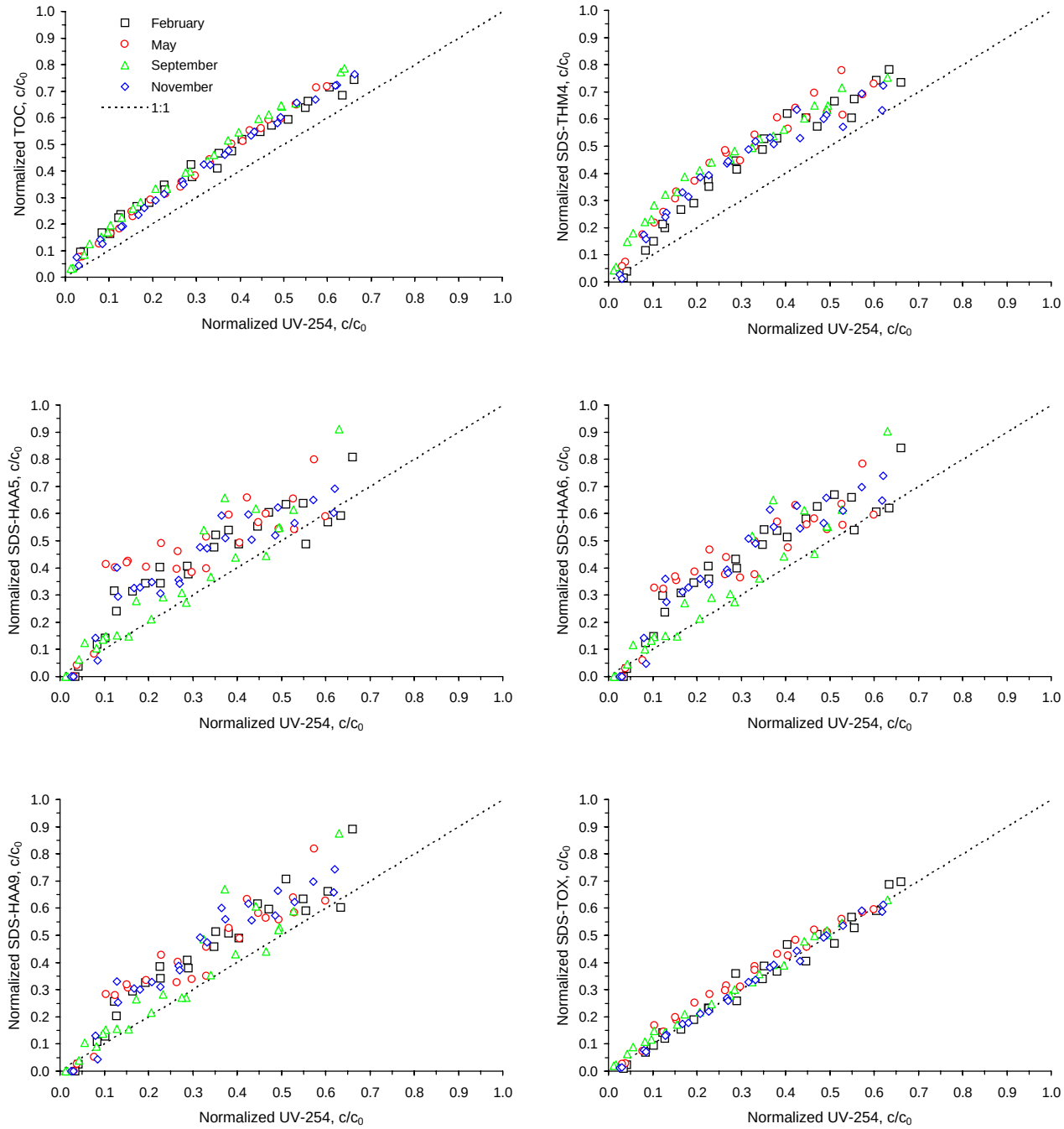


Figure 222 Correlation based on normalized GAC effluent UV-254 for both 10 and 20 minute EBCT contactors and all sessions

13 *TOC Breakthrough Performance Evaluation*

13 TOC Breakthrough Performance Evaluation

Based on a correlation that relates influent TOC concentration to bed volumes to 50 percent TOC breakthrough, BV_{50} (Summers et al. 1994; Hooper et al. 1996), the GAC performance of the West End Plant water source pretreatment can be evaluated. The correlation is given by the following equation:

$$BV_{50} = \frac{18{,}000}{TOC_0} \tag{9}$$

where TOC_0 is the mean influent TOC concentration, in mg/L. For all EBCTs and quarters evaluated, the BV_{50} obtained during each run was plotted in Figure 223. The performance of an average water is given by the dashed line, which represents Equation 9. Figure 223 shows that in general, GAC performance was close to that predicted by Equation 9.

For the four seasonal sessions, the BV_{50} value ranged from 4,650 to 9,140 bed volumes for the 10 minute EBCT contactors. Based on the influent TOC concentrations of each of the four sessions, the performance based on BV_{50} was on average 4 percent better than that predicted by Equation 9. The February and May runs performed poorer than expected, by 22 and 5 percent, respectively, while the September and November runs performed 16 and 26 percent better than expected, respectively.

For the 20 minute EBCT contactor runs the BV_{50} ranged from 5,880 to 10,990 bed volumes during the four seasonal sessions. Therefore, the run times were an average 21 percent higher than that predicted, based on the correlation between influent TOC and BV_{50}. The performance for the 20 minute EBCT runs ranged between 4 and 43 percent better than expected. The improvement in performance of the 20 minute EBCT contactors over the 10 minute EBCT contactors as compared to an average water was greater than that expected based on the increase in EBCT alone.

Although on average, BV_{50} values exceeded that expected for an average water, the influent pH used for all runs during this study was relatively high (9.0). Run times would be expected to increase at lower influent pH values. With the exception of the November session, GAC performance improved as influent TOC concentration decreased, and the improvement was roughly parallel to the correlation line for an average water. By this analysis, GAC performance for the February, May, and November water samples was similar, after accounting for the differences in influent TOC concentration. The September water sample yielded higher than expected BV_{50} values.

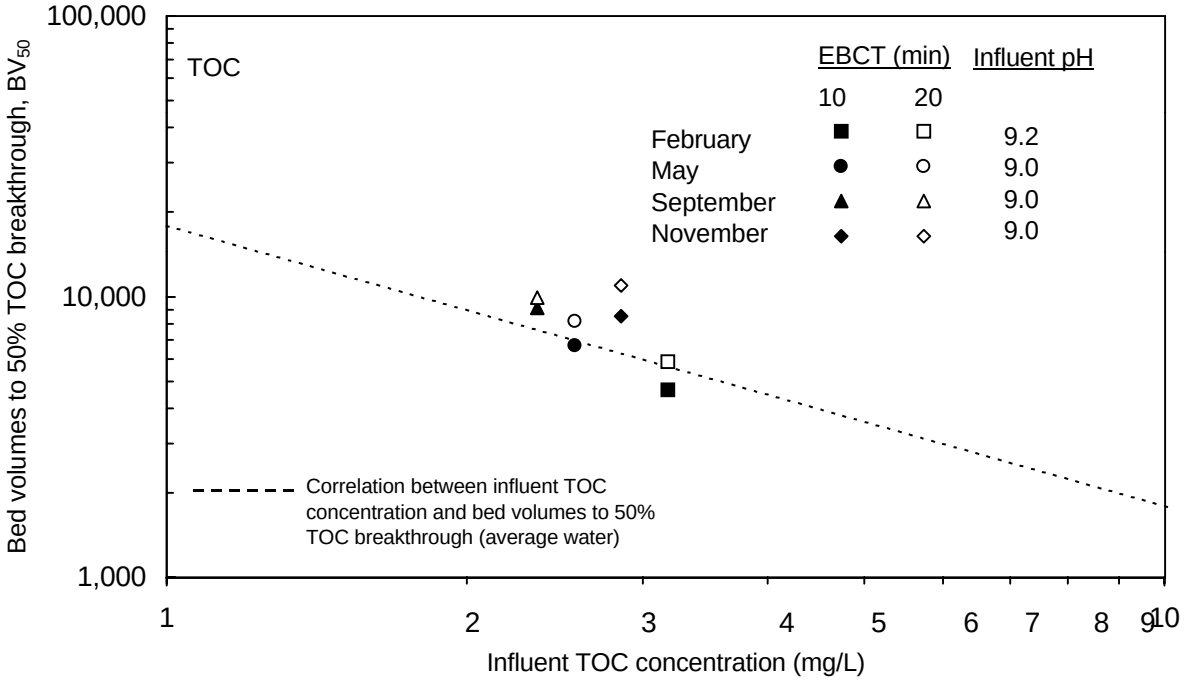


Figure 223 Comparison between GAC performance during treatment study testing and average water GAC performance

14 *Cost Information and Analysis*

14 Cost Information and Analysis

A comparative cost analysis was performed based on the data obtained during the treatment study using an EPA cost model (Clark and Adams, 1991). The cost analysis included the cost of on-site spent carbon reactivation. Costs were evaluated using concrete gravity and steel pressure contactors and were determined in cents/1,000 gal for both capital and operations and maintenance (O&M) costs. Based on the maximum plant capacity of 60 MGD, 10 concrete gravity (723 ft^2) or 23 steel pressure contactors were required (20 ft diameter; 314 ft^2). Hydraulic loading at plant capacity is 5.9 gpm/ft^2. Although plant production varies throughout the year, the average yearly production, 22 MGD, was used for modeling purposes. Hydraulic loading under average plant flow conditions was 2.2 gpm/ft^2. The economic input data to the model are summarized in Table 56.

On-site GAC reactivation was assumed for all cost modeling. An average reactivation cost was determined based on reactivation by fluidized bed, infrared, and multihearth technologies. Total costs reflect an average of reactivation costs by the three technologies: individual costs for each reactivation technology are not reported.

The cost model sizes the contactors based on the plant capacity flow. The EBCT input into the model is the EBCT under plant capacity conditions. Therefore, under average flow conditions, the EBCT in each contactor will be higher, leading to longer intervals between GAC reactivation and lower O&M costs, and the costs reported here are conservative estimates.

The estimated capital costs are based on the economic input values, EBCT, type of contactor, and spent carbon reactivation demand. A cost of 90 cents/lb GAC was assumed. The O&M costs are determined based on the service life of each contactor assuming operation of multiple contactors in parallel, staggered mode. Relative to the Stage 1 DBP MCLs and the placeholders for Stage 2 DBP MCLs, THM4 formation was much higher than HAA5 formation, and thus run time calculations are based on blended effluent SDS-THM4 levels. The service life input into the model was the run time to Stage 1 THM4 MCL (64 µg/L) or the placeholder for Stage 2 THM4 MCL (32 µg/L), both with a 20 percent safety factor. When needed, the extrapolated run time estimates made in Section 10 are used for run time estimates. Tables 57 and 58 summarize the estimated run times to comply with Stage 1 and the placeholders for Stage 2 DBP MCLs, respectively.

Table 59 summarizes the GAC treatment cost analysis results to comply with Stage 1 MCLs. Capital, O&M, and total costs, given in cents/1,000 gal water treated, are included for all runs. Seasonal variability in water quality had some impact on total costs as is seen by the variability in total costs. For example, total costs for 10 minute EBCT concrete gravity contactors ranged from 29 to 36 cents/1,000 gal. Costs were highest based on the May session data, and lowest based on the November session data.

In general, the costs for GAC treatment were lower for 10 minute EBCT contactors, mainly due to the lower capital costs associated with the smaller contactors. The decrease in O&M costs achieved with 20 minute EBCT contactors did not offset the higher capital costs. Total costs for 20 minute EBCT contactors were on average 32 and 56 percent greater than those for 10 minute

EBCT contactors, for concrete gravity and steel pressure contactors, respectively. The costs for concrete gravity contactors was on average 28 and 39 percent lower than that for steel pressure contactors for 10 and 20 minute EBCT contactors, respectively. The use of 10 minute EBCT concrete gravity contactors to meet Stage 1 MCL requirements was found to be most cost-effective, based on the results of this model.

Table 60 summarizes the GAC treatment cost analysis results to comply with the placeholders for Stage 2 MCLs. Costs are higher than for compliance with Stage 1 MCLs due to shorter run times before the effluent criteria is reached. Capital, O&M, and total costs, given in cents/1,000 gal water treated, are included for all runs. Again, seasonal variability in water quality had some impact on total costs as is seen by the variability in total costs. For example, total costs for 10 minute EBCT concrete gravity contactors ranged from 37 to 48 cents/1,000 gal. As observed for compliance with Stage 1 MCLs, costs were highest based on the May session data, and lowest based on the November session data.

Again, the use of 10 minute EBCT concrete gravity contactors to meet the placeholders for Stage 2 MCL requirements was found to be most cost-effective, based on the results of this model. Treatment costs were 39 percent higher than those for GAC treatment to meet Stage 1 MCLs.

A bar graph comparing GAC treatment costs to meet Stage 1 MCLs for either concrete gravity or steel pressure contactors, and for both EBCTs evaluated, is shown in Figure 224. The error bars shown represent the standard deviation calculated from the costs of each session. This model assumed and included the costs for on-site GAC reactivation; off-site reactivation may be more cost-effective depending on the location and charges associated with a regional reactivation facility. The same information is presented in Figure 225 for compliance with the placeholders for Stage 2 MCLs.

Parameter	Value
Capital recovery interest rate (%)	10
Capital recovery period (years)	20
Overhead & profit factor (% of construction costs)	5
Special sitework factor (% of construction costs)	5
Construction contingencies (% of construction costs)	10
Engineering fee factor (% of construction costs)	10
ENR construction cost index (CCI base year 1913) and date	6,006 (May 1999)
Producers Price Index (PPI base year 1967=100) and date	371 (May 1999)
Labor rate + fringe ($/manhour)	15
Labor overhead factor (% of labor)	10
Electric rate ($/kWh)	0.09
Fuel oil rate ($/gallon)	0.95
Natural gas rate ($/cu.ft.)	0.0055
Process water rate ($/1,000 gal)	0.35
Modifications to existing plant (% of construction cost)	5

Table 56 Economic input data to cost model

EBCT (min)	Session	Run time (days) for contactor configuration: Single	Multiple (10 or more)
10	February	60	157†
	May	31	72
	September	35	84
	November	94	225†
	Mean	55	135
	St. dev.	29	71
20	February	142	354†
	May	79	197
	September	80	206
	November	*	643†
	Mean	100	350
	St. dev.	36	208

†Extrapolation beyond maximum run time required for estimate
*Criteria not exceeded during single contactor run time

Table 57 Summary of GAC run times to meet Stage 1 MCLs

EBCT (min)	Session	Run time (days) for contactor configuration: Single	Multiple (10 or more)
10	February	18	38
	May	17	30
	September	20	33
	November	26	58
	Mean	20	40
	St. dev.	4	13
20	February	44	91
	May	41	72
	September	46	78
	November	62	138
	Mean	48	95
	St. dev.	9	30

†Extrapolation beyond maximum run time required for estimate
*Criteria not exceeded during single contactor run time

Table 58 Summary of GAC run times to meet the placeholders for Stage 2 MCLs

Contactor construction	Session	Cost (cents/1,000 gal) 10 minute EBCT Capital	O&M	Total	20 minute EBCT Capital	O&M	Total
Concrete gravity	February	24	7	31	35	6	41
	May	25	11	36	36	9	45
	September	25	10	35	36	9	45
	November	23	6	29	35	5	39
	Mean	24	8	33	35	7	43
	St. dev.	1	2	3	1	2	3
Steel pressure	February	34	8	42	61	8	69
	May	36	12	48	62	10	72
	September	35	11	46	62	10	72
	November	34	7	41	61	6	67
	Mean	35	9	44	61	9	70
	St. dev.	1	2	3	1	2	3

Table 59 Summary of GAC adsorption costs for compliance with Stage 1 MCLs

Contactor construction	Session	Cost (cents/1,000 gal) 10 minute EBCT Capital	O&M	Total	20 minute EBCT Capital	O&M	Total
Concrete gravity	February	27	17	44	38	15	53
	May	28	21	48	39	18	57
	September	28	19	47	38	17	55
	November	26	13	38	37	11	48
	Mean	27	17	44	38	15	53
	St. dev.	1	3	4	1	3	4
Steel pressure	February	37	18	56	64	16	80
	May	38	22	60	65	19	84
	September	38	20	58	64	18	83
	November	36	14	50	63	13	76
	Mean	38	19	56	64	17	81
	St. dev.	1	3	4	1	3	4

Table 60 Summary of GAC adsorption costs for compliance with the placeholders for Stage 2 MCLs

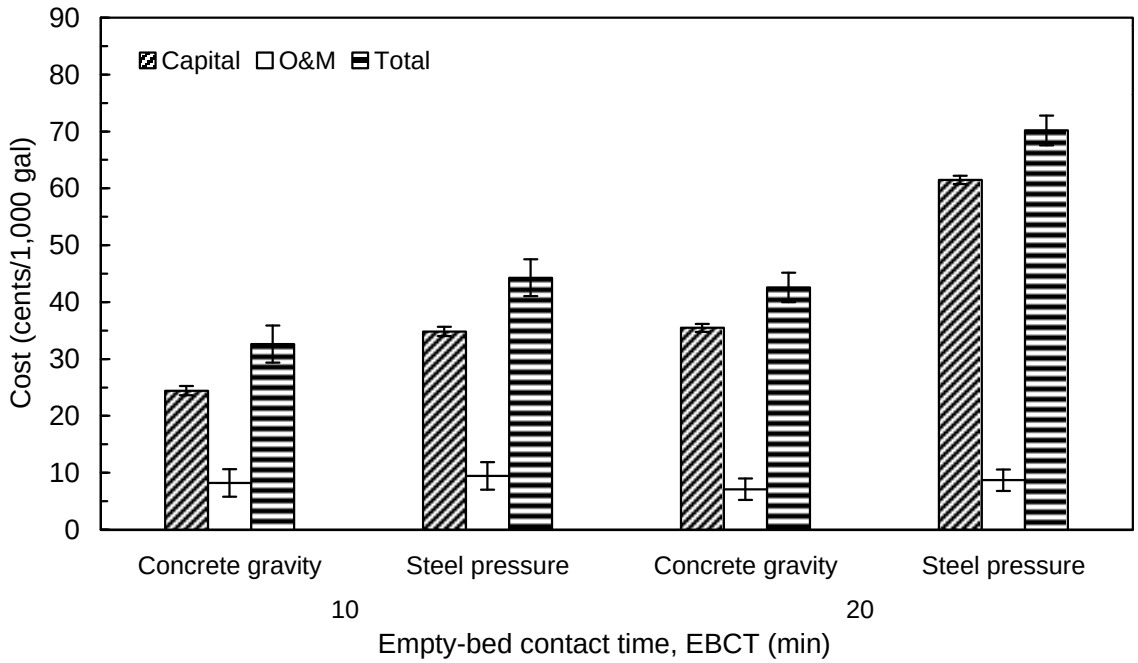


Figure 224 Average costs for GAC treatment with on-site reactivation to comply with Stage 1 MCLs

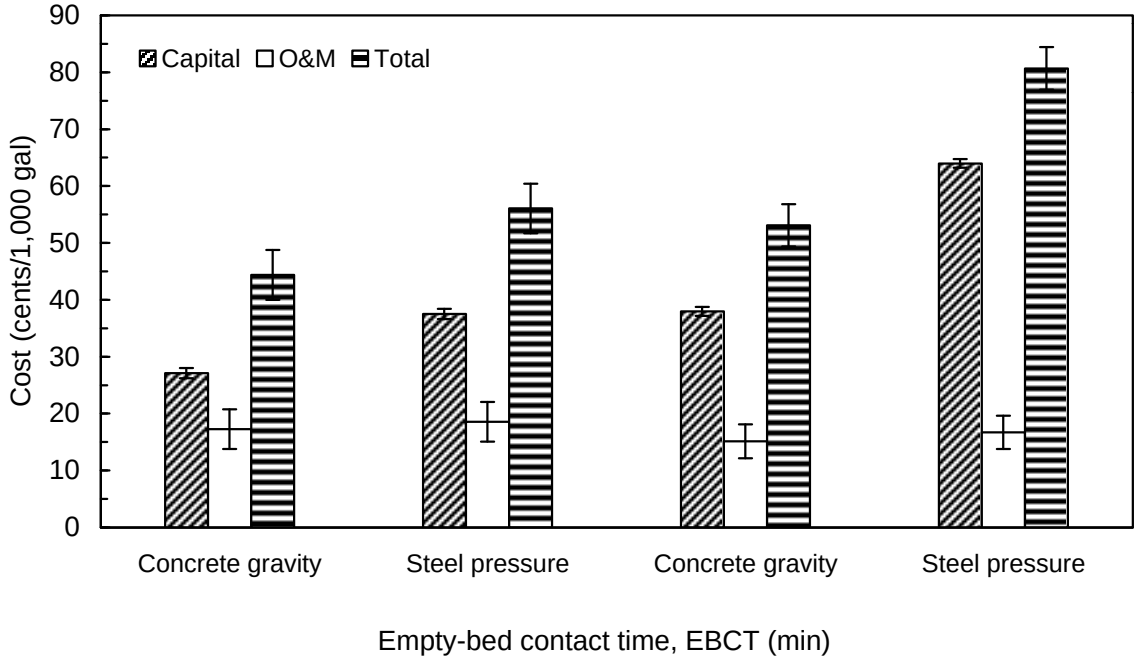


Figure 225 Average costs for GAC treatment with on-site reactivation to comply with the placeholders for Stage 2 MCLs

15 *Summary of Significant Results*

15 Summary of Significant Results

Based on compliance with Stage 1 or the placeholders for Stage 2 DBP MCLs, the formation of THM4 was the controlling parameter for determining GAC reactivation frequencies. To meet the Stage 1 THM4 MCL (64 µg/L, including a 20 percent safety factor), GAC run times ranged from 31 to 94 days for a 10 minute EBCT contactor and from 79 to >258 days for a 20 minute EBCT contactor. In practice, however, multiple contactors are operated in staggered fashion and their effluents are blended prior to chlorination. Therefore, run times to a given effluent criterion are extended as compared to a single contactor, because the poorer quality water from "older" contactors is blended with water from "newer" contactors. Based on this configuration, GAC run times for compliance with the Stage 1 THM4 MCL ranged from 72 to 225 days for 10 minute EBCT contactors and 197 to 643 days for 20 minute EBCT contactors.

To meet the placeholder for Stage 2 THM4 MCL (32 µg/L, including a 20 percent safety factor), GAC run times based on multiple contactor configuration ranged from 30 to 58 days for a 10 minute EBCT contactor and from 72 to 138 days for a 20 minute EBCT contactor.

The total costs for GAC treatment were estimated using an EPA model, which included capital and O&M costs, based on GAC reactivation frequencies. For 10 minute EBCT contactors operated in parallel staggered mode, and based on compliance with Stage 1 MCLs, the estimate for total costs for GAC treatment averaged 33 and 44 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively. For 20 minute EBCT contactors operated in parallel staggered mode, total costs averaged 43 and 70 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively. The costs for 20 minute EBCT contactors were higher due to the higher capital costs associated with the larger contactors.

Costs were higher to meet the placeholders for Stage 2 MCLs due to shorter GAC run times. For 10 minute EBCT contactors, total costs averaged 44 and 56 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively. For 20 minute EBCT contactors, total costs averaged 53 and 81 cents/1,000 gal for concrete gravity and steel pressure contactors, respectively.

Four sessions were conducted to capture seasonal variability in source water quality. Run times to Stage 1 THM4 MCLs were longest during February and November, sessions that employed lower SDS incubation temperatures. The bromide concentration varied from 80 to 150 µg/L throughout the four samples taken for the treatment study. Higher bromide levels can yield higher concentrations of brominated DBP species, because of the high bromide to TOC ratio. GAC treatment does not remove bromide, while TOC is adsorbed, resulting in higher GAC effluent bromide to TOC ratios as compared to the GAC influent. Due to this increase, GAC effluent formed DBPs may undergo shifts in speciation to higher concentrations of the more brominated DBP species. In some cases, such as for bromoform, effluent formed concentrations were measured higher than that in the influent. It is important to track the breakthrough behavior of specific DBP species, because some may be of potential health concern and a MCL could be set for a specific DBP species.

For the 10 minute EBCT contactors, mean GAC performance based on BV_{50} values was similar to that predicted for an average water, although BV_{50} values ranged from 22 percent below than

predicted to 26 percent higher than predicted. At a 20 minute EBCT, BV_{50} values averaged 21 percent higher than predicted. GAC performance was better than expected as compared to an average water even given the relatively high influent pH to GAC, 9.0, used during the treatment study.

By plotting effluent concentrations divided by their respective influent concentrations, a normalized breakthrough evaluation can be performed. This evaluation yields insight into the relative breakthrough patterns of TOC, UV_{254}, and SDS-DBPs, indicating whether DBP surrogates can serve as direct or conservative indicators of SDS-DBP breakthrough. The evaluation performed during this study showed that SDS-THM4 breakthrough usually occurred earlier than TOC breakthrough. TOC did not consistently serve as a conservative indicator of normalized SDS-HAA breakthrough, but always was a conservative indicator of SDS-TOX breakthrough. UV_{254} typically served as an excellent direct indicator of SDS-TOX breakthrough.

16 *QA/QC Summary*

16 QA/QC Summary

All analyses performed during the treatment study followed the methods and QA/QC procedures required by the *DBP/ICR Analytical Methods Manual*. A summary of the data analyzed during this treatment study and all the required QA/QC information is summarized in electronic form in portable document format as an attachment to this report. The EPA has requested that the results of laboratory duplicate analyses, laboratory fortified matrix spike analyses, and any performance evaluation (PE) analyses be reported in the *Treatment Study Summary Report Spreadsheet*, an electronic Excel workbook supplied by EPA. The required data has been input into this file, and an electronic version of it is included as an attachment to this report.

As required by the ICR, three field duplicates were collected from each RSSCT. The results of the duplicate analyses are summarized in Table 61.

16.1 Calibration Procedures

Calibration procedures for bromide, haloacetic acids, total organic carbon, total organic halide, and trihalomethanes analyzed during this study are summarized in the following sections.

16.1.1 Bromide (EPA Method 300.0 A)

Five calibration standards and a blank are prepared by adding accurately measured volumes of ICR stock standard to volumetric flask and diluting to volume with reagent water. The calibration standards range from 0.02 to 0.50 mg/L. Using a 200 µL injection volume, the peak area responses against the concentration are tabulated and a linear curve is established. The calibration correlation coefficient must be equal to or greater than 0.995. After establishing the calibration the fourth calibration standard is analyzed. The recovery must be within 90-110 percent of the true value. Next a second source standard at the MID level is analyzed and the recovery must be within 90-110 percent of the true value prior to proceeding with ICR protocol.

16.1.2 Haloacetic Acids (EPA Method 552.2)

An initial calibration curve is extracted and analyzed for each set of samples to be analyzed for haloacetic acids. The concentrations of each of the levels of aqueous calibration standards are given in Table 62.

Level 1 represents concentrations near the MDL for each analyte. The concentrations of the remaining levels define the working range of the detector. Levels 5 and 6 are specified by the *DBP/ICR Analytical Methods Manual* to be used as continuing calibration checks.

Each analysis run is started with a methyl tert-butyl ether (MtBE) solvent blank. This is a check on the extraction solvent as well as on the instrument system. If this run is acceptable, the extracts of the seven levels of the calibration curve are analyzed (2-µL injection volume). The Chemstation Chromatography Software System is used to generate a calibration curve by

plotting the areas against the concentrations of the seven calibration extracts. The curve is defined as first order; correlation coefficients must be greater than 0.9900.

16.1.3 Total Organic Carbon (Standard Method 5310 C)

The instrument calibration accuracy is verified daily by analysis of a 4.00 mg/L as carbon standard solution of potassium hydrogen phthalate. Recovery of the standard must be between 99 and 101 percent. When outside of this range, the slope of a linear regression between standard amount and area count and the origin is adjusted and the standard is reanalyzed to ensure a recovery between 99 and 101 percent. Calibration check standards and samples are then analyzed as described in the *DBP/ICR Analytical Methods Manual*.

16.1.4 Total Organic Halide (Standard Method 5320 B)

An instrument calibration verification is performed yearly. The 2,4,6-trichlorophenol standard is injected directly onto the nitrate-washed method blank. Concentrations of 0.5, 1, 2.5, 5, 10, and 20 µg as Cl^- are included in the curve. A first order curve with correlation coefficient greater than 0.99 must be obtained, and is only used to verify instrument performance.

At the beginning of each daily run, and after cell cleaning during the day, three NaCl injections of 5 µg as Cl^- are made directly into the titration cell. This serves as a cell performance check. Recovery of the NaCl standard must be within 3 percent of the historic mean. Typically, recovery is 95 to 105 percent.

16.1.5 Trihalomethanes (EPA Method 551.1)

An initial calibration curve is extracted and analyzed for each set of samples to be analyzed for trihalomethanes. The concentrations of each of the levels of aqueous calibration standards are given in Table 63.

Level 1 represents concentrations near the MDL for each analyte. The concentrations of the remaining levels define the working range of the detector. Levels 4 and 5 are specified by the DBP/ICR Analytical Methods Manual to be used as continuing calibration checks.

Each analysis run is started with a MtBE solvent blank. This is a check on the extraction solvent as well as on the instrument system. If this run is acceptable, the extracts of the six levels of the calibration curve are analyzed (2.0-µL injection volume). The Chemstation Chromatography Software System is used to generate a calibration curve by plotting the areas against the concentrations of the six calibration extracts. The curve is defined as first order; correlation coefficients must be greater than 0.99.

Analyte	Count	Mean RPD	Percentiles 25th	50th	75th
TOC	24	1.3	0.4	1.1	2.2
UV-254	24	1.7	0.4	0.7	2.3
pH	24	0.6	0.1	0.2	0.6
Temperature	23	0.3	0.0	0.4	0.5
SDS-TOX	24	4.0	1.7	3.3	4.9
SDS-THM4	24	4.6	1.8	4.0	5.9
SDS-HAA5	24	10.5	1.9	6.1	14.1
SDS-HAA6	24	10.4	3.0	5.0	12.1
SDS-HAA9	24	11.0	3.1	5.0	13.1
SDS-chlorine residual	24	5.3	2.1	4.8	7.2
THM Species					
SDS-$CHCl_3$	20	4.8	2.3	4.3	7.0
SDS-BDCM	24	4.3	1.6	3.2	6.3
SDS-DBCM	24	4.9	2.3	4.5	7.3
SDS-$CHBr_3$	24	5.8	2.3	5.1	9.0
HAA Species					
SDS-MCAA	0	NA	NA	NA	NA
SDS-DCAA	22	7.3	1.6	5.3	8.6
SDS-TCAA	15	23.7	1.2	4.2	14.3
SDS-MBAA	5	85.5	6.8	15.4	200
SDS-DBAA	24	12.0	2.7	8.5	17.1
SDS-BCAA	24	11.0	3.8	7.3	16.0
SDS-TBAA	0	NA	NA	NA	NA
SDS-CDBAA	4	102.2	5.2	103	200
SDS-DCBAA	19	16.3	2.2	5.4	8.9

RPD: relative percent difference
NA: not applicable

Table 61 Summary of field duplicate precision for both EBCTs and all sessions

Level	Concentration (µg/L)
1	0.5
2	1.0
3	2.0
4	4.0
5	20.
6	40.
7	80.

Table 62 Haloacetic acid aqueous calibration standard concentrations (EPA Method 552.2)

Level	Concentration (µg/L)
1	0.5
2	1.0
3	5.0
4	20.
5	40.
6	80.

Table 63 Trihalomethane aqueous calibration standard concentrations (EPA Method 551.1)

17 *References*

17 References

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Appendix: Summary of Treatment Study Data

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #1

Client: City of Topeka **Study#:** 108

No.	Sample ID	Client Sample ID	Start Date/Time		End Date/Time		Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
Effluent C		**EBCT:** 10 min	**Carbon Type:** Bituminous				**Influent pH:** 9.2		**Scaling Factor:** 12.6														
1	9802-150	108.10.Eff-1	2/12/98	16:30	2/13/98	8:03		0.39	5	0.31	0.003	20.3	9.2	2.13	0.79	1.34	3.6	9.17	47.7				
2	9802-160	108.10.Eff-2	2/13/98	8:03	2/13/98	14:30		0.84	11	0.53	0.005	20.8	8.8	2.30	0.85	1.45	3.6	9.16	47.7				
3	9802-173	108.10.Eff-3	2/13/98	14:30	2/13/98	18:09		1.06	13	0.75	0.008	22.3	8.9	2.39	0.86	1.53	3.6	9.25	47.8				
4	9802-174	108.10.Eff-4	2/13/98	18:09	2/13/98	21:40		1.20	15	0.84	0.010	21.4	9.0	2.43	0.85	1.58	3.6	9.26	47.8				
5	9802-175	108.10.Eff-5	2/13/98	21:40	2/14/98	8:21		1.50	19	1.12	0.014	20.7	7.1	2.54	0.81	1.73	3.6	9.23	47.8				
5d	9802-176	108.10.Eff-5d	2/13/98	21:40	2/14/98	8:21		1.50	19	1.10	0.014	20.8	7.5	2.53	0.79	1.74	3.6	9.17	47.8				
6	9802-180	108.10.Eff-6	2/14/98	8:21	2/14/98	11:52		1.80	23	1.35	0.017	21.2	8.7	2.63	0.83	1.80	3.6	9.25	47.8				
7	9802-183	108.10.Eff-9	2/14/98	18:39	2/15/98	1:30		2.29	29	1.48	0.021	20.8	7.3	2.69	0.77	1.92	3.6	9.24	47.9				
8	9802-192	108.10.Eff-11	2/15/98	5:09	2/15/98	11:52		2.73	34	1.66	0.025	21.3	8.0	2.76	0.81	1.95	3.6	9.26	47.9				
8d	9802-193	108.10.Eff-11d	2/15/98	5:09	2/15/98	11:52		2.73	34	1.64	0.024	21.3	8.0	2.75	0.77	1.98	3.6	9.22	47.9				
9	9802-201	108.10.Eff-14	2/15/98	23:27	2/16/98	3:04		3.43	43	1.81	0.029	21.0	8.5	2.82	0.80	2.02	3.6	9.24	48.0				
10	9802-211	108.10.Eff-17	2/16/98	13:29	2/16/98	20:16		4.08	51	2.04	0.033	23.0	8.9	2.94	0.90	2.04	3.2	9.17	47.9				
10d	9802-212	108.10.Eff-17d	2/16/98	13:29	2/16/98	20:16		4.08	51	2.02	0.033	22.9	8.9	2.93	0.86	2.07	3.2	9.19	47.9				
11	9802-233	108.10.Eff-22	2/18/98	10:00	2/18/98	13:36		5.87	74	2.17	0.038	21.8	8.9	3.01	0.87	2.14	3.2	9.22	47.9				
12	9802-239	108.10.Eff-23	2/19/98	3:14	2/19/98	10:12		6.65	84	2.36	0.040	21.3	8.9	3.09	0.82	2.27	3.2	9.21	48.0				
13	9802-257	108.10.Eff-24	2/20/98	9:41	2/20/98	11:26		7.81	98	2.48		21.1	9.1										
Effluent C		**EBCT:** 20 min	**Carbon Type:** Bituminous				**Influent pH:** 9.2		**Scaling Factor:** 12.6														
1	9802-151	108.20.Eff-1	2/12/98	0:00	2/13/98	8:03	0.00	0.04	1	0.30	0.002	20.1	9.3	2.21	0.85	1.36	3.6	9.23	48.0				
2	9802-185	108.20.Eff-4	2/14/98	11:46	2/14/98	18:43	0.01	2.00	25	0.52	0.006	22.5	8.6	2.30	0.89	1.41	3.6	9.19	48.0				
3	9802-187	108.20.Eff-6	2/14/98	22:16	2/15/98	5:13	0.01	2.43	31	0.71	0.007	21.0	8.6	2.37	0.88	1.49	3.6	9.24	48.0				
4	9802-197	108.20.Eff-8	2/15/98	12:20	2/15/98	19:10	0.01	3.02	38	0.89	0.011	22.5	8.8	2.45	0.84	1.61	3.6	9.15	48.0				
4d	9802-203	108.20.Eff-8d	2/15/98	12:20	2/15/98	19:10	0.01	3.02	38	0.90	0.012		8.7	2.45	0.85	1.60	3.6	9.19	48.1				
5	9802-199	108.20.Eff-10	2/16/98	2:10	2/16/98	9:06	0.01	3.60	45	1.04	0.014	21.3	8.8	2.51	0.83	1.68	3.6	9.19	48.1				
6	9802-214	108.20.Eff-11	2/16/98	19:33	2/16/98	23:02	0.01	4.25	53	1.20	0.018	22.0	8.8	2.55	0.94	1.61	3.2	9.20	48.0				
7	9802-228	108.20.Eff-13	2/17/98	13:00	2/17/98	19:41	0.01	5.04	63	1.31	0.021	23.1	8.8	2.60	0.88	1.72	3.2	9.20	48.0				
7d	9802-229	108.20.Eff-13d	2/17/98	13:00	2/17/98	19:41	0.01	5.04	63	1.30	0.021	23.2	8.9	2.60	0.90	1.70	3.2	9.19	48.1				
8	9802-235	108.20.Eff-15	2/18/98	9:53	2/18/98	16:43	0.01	5.92	74	1.51	0.023	22.0	8.8	2.70	0.91	1.79	3.2	9.18	48.1				
9	9802-250	108.20.Eff-19	2/20/98	3:08	2/20/98	10:01	0.01	7.64	96	1.74	0.027	21.1	8.9	2.76	0.91	1.85	3.0	9.23	48.0				
10	9802-262	108.20.Eff-21	2/21/98	16:32	2/21/98	23:14	0.01	9.19	116	1.86	0.030	21.1	7.7	2.81	0.81	2.00	3.0	9.21	48.0				
10d	9802-263	108.20.Eff-21d	2/21/98	16:32	2/21/98	23:14	0.01	9.19	116	1.91	0.031	21.0	7.8	2.83	0.87	1.96	3.0	9.19	48.0				
11	9802-281	108.20.Eff-24	2/23/98	15:33	2/23/98	22:18	0.01	11.15	140	2.11	0.034	21.3	8.5	2.89	0.76	2.13	3.3	9.19	48.1				
12	9802-306	108.20.Eff-31	2/26/98	23:31	2/27/98	6:13	0.02	14.48	182	2.27	0.037	21.5	9.0	2.98	0.77	2.21	3.3	9.19	48.1				

ND: Non-detect. Blank Results: Either analysis was not performed or result did not meet ICR QC requirements.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #1

Client: City of Topeka **Study#:** 108

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
Effluent C		**EBCT:** 10 min	**Carbon Type:** Bituminous			**Influent pH:** 9.2			**Scaling Factor:** 12.6														
1	9802-150	108.10.Eff-1	5	0.31	5	ND	1.3	ND	2.4	**3.7**	ND	ND	ND	ND	1	ND	ND	ND	ND	**1**	**1**		
2	9802-160	108.10.Eff-2	11	0.53	14	ND	4.0	1.6	5.4	**11.0**	ND	2	ND	ND	2	1	ND	ND	ND	**4**	**4**		
3	9802-173	108.10.Eff-3	13	0.75	25	1.4	7.0	3.1	7.4	**18.9**	ND	4	ND	ND	2	2	ND	ND	ND	**8**	**8**		
4	9802-174	108.10.Eff-4	15	0.84	32	2.3	9.4	4.7	8.8	**25.2**	ND	6	ND	ND	3	2	1	ND	ND	**11**	**12**		
5	9802-175	108.10.Eff-5	19	1.12	49	3.7	13.5	7.7	10.2	**35.1**	ND	5	1	1	3	3	1	ND	ND	**14**	**16**		
5d	9802-176	108.10.Eff-5d	19	1.10	48	3.9	13.6	8.1	10.0	**35.5**	ND	5	1	1	3	3	1	ND	ND	**14**	**15**		
6	9802-180	108.10.Eff-6	23	1.35	75	5.7	16.2	10.9	10.1	**42.9**	ND	6	1	ND	4	4	1	ND	ND	**15**	**16**		
7	9802-183	108.10.Eff-9	29	1.48	81	7.4	19.0	14.0	9.5	**49.9**	ND	6	3	1	4	4	2	ND	ND	**19**	**21**		
8	9802-192	108.10.Eff-11	34	1.66	92	11.2	22.9	18.9	9.7	**62.7**	ND	6	3	ND	4	4	2	ND	ND	**16**	**18**		
8d	9802-193	108.10.Eff-11d	34	1.64	102	9.5	20.2	16.5	8.6	**54.8**	ND	7	4	ND	5	5	2	ND	ND	**20**	**22**		
9	9802-201	108.10.Eff-14	43	1.81	105	11.4	18.9	17.4	6.5	**54.1**	ND	7	4	1	4	5	2	ND	ND	**22**	**24**		
10	9802-211	108.10.Eff-17	51	2.04	120	13.8	18.7	19.3	5.6	**57.4**	ND	8	4	1	4	5	3	ND	ND	**22**	**25**		
10d	9802-212	108.10.Eff-17d	51	2.02	117	13.7	18.8	18.9	5.7	**57.1**	ND	8	4	1	4	6	3	ND	ND	**23**	**26**		
11	9802-233	108.10.Eff-22	74	2.17	143	21.4	22.0	25.1	5.5	**74.0**	ND	8	4	ND	4	5	3	ND	ND	**21**	**24**		
12	9802-239	108.10.Eff-23	84	2.36	145	20.9	20.1	23.6	5.0	**69.5**	ND	10	6	1	5	7	4	3	ND	**29**	**36**		
13	9802-257	108.10.Eff-24	98	2.48																			
Effluent C		**EBCT:** 20 min	**Carbon Type:** Bituminous			**Influent pH:** 9.2			**Scaling Factor:** 12.6														
1	9802-151	108.20.Eff-1	1	0.30	2	ND	ND	ND	1.4	**1.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	**ND**		
2	9802-185	108.20.Eff-4	25	0.52	20	ND	5.5	1.9	6.7	**14.1**	ND	2	ND	ND	2	1	ND	ND	ND	**5**	**5**		
3	9802-187	108.20.Eff-6	31	0.71	30	1.4	7.6	3.1	8.1	**20.2**	ND	6	ND	ND	3	2	ND	ND	ND	**10**	**10**		
4	9802-197	108.20.Eff-8	38	0.89	40	2.0	11.2	5.0	9.8	**28.1**	ND	6	ND	1	3	2	1	ND	ND	**12**	**13**		
4d	9802-203	108.20.Eff-8d	38	0.90	39	2.0	10.9	4.9	9.1	**26.9**	ND	6	ND	ND	3	3	1	ND	ND	**12**	**13**		
5	9802-199	108.20.Eff-10	45	1.04	48	2.9	13.6	6.9	9.9	**33.2**	ND	5	ND	1	3	3	1	ND	ND	**12**	**14**		
6	9802-214	108.20.Eff-11	53	1.20	54	4.1	15.5	9.3	10.3	**39.3**	ND	5	1	ND	4	4	1	ND	ND	**14**	**15**		
7	9802-228	108.20.Eff-13	63	1.31	71	6.0	18.6	12.5	10.2	**47.4**	ND	5	3	ND	4	4	2	ND	ND	**16**	**17**		
7d	9802-229	108.20.Eff-13d	63	1.30	70	5.6	18.2	11.6	9.6	**45.1**	ND	6	3	1	4	4	2	ND	ND	**18**	**19**		
8	9802-235	108.20.Eff-15	74	1.51	77	7.2	19.4	13.8	9.6	**50.0**	ND	6	4	1	4	4	2	ND	ND	**19**	**20**		
9	9802-250	108.20.Eff-19	96	1.74	85	10.5	20.8	17.8	8.0	**57.1**	ND	6	4	1	4	5	2	2	ND	**20**	**24**		
10	9802-262	108.20.Eff-21	116	1.86	98	13.6	22.0	20.4	7.3	**63.2**	ND	7	5	1	5	6	3	2	ND	**24**	**30**		
10d	9802-263	108.20.Eff-21d	116	1.91	98	13.2	21.5	20.2	7.0	**61.8**	ND	6	4	1	5	6	3	2	ND	**22**	**27**		
11	9802-281	108.20.Eff-24	140	2.11	110	15.4	20.8	21.3	6.1	**63.7**	ND	5	4	ND	4	5	3	2	ND	**19**	**24**		
12	9802-306	108.20.Eff-31	182	2.27	123	19.6	20.9	24.2	5.5	**70.2**	ND	6	5	1	4	5	3	2	ND	**21**	**26**		

ND: Non-detect. Blank Results: Either analysis was not performed or result did not meet ICR QC requirements.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #1

Client: City of Topeka **Study#:** 108

No.	Sample ID	Client Sample ID	Start Date/Time		End Date/Time		Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
13	9803-2	108.20.Eff-35	3/1/98	19:30	3/1/98	21:24	0.02	17.21	216	2.34		21.7	9.2										
14	9803-5	108.20.Eff-37	3/3/98	6:32	3/3/98	10:14	0.02	18.71	235	2.34		21.6	8.9										
Influent A		**EBCT:**	**Carbon Type:**				**Influent pH:**	9.2	**Scaling Factor:**	12.6													
1	9802-148	108.INF.A-1	2/12/98	18:40	2/12/98	18:40		0.15	2											41	81	69	
2	9802-268	108.INF.A-2	2/23/98	11:10	2/23/98	11:10		10.84	136											46	85	75	
Influent B		**EBCT:**	**Carbon Type:**				**Influent pH:**	9.2	**Scaling Factor:**	12.6													
1	9802-149	108.INF.B-1	2/12/98	18:45	2/12/98	18:45		0.16	2	3.25	0.060	12.5	9.2	3.71	0.86	2.85	3.6	9.18	48.1				0.15
2	9802-194	108.INF.B-2	2/15/98	13:50	2/15/98	13:50		2.95	37	3.17		17.6	9.2										
3	9802-222	108.INF.B-3	2/17/98	13:08	2/17/98	13:08		4.92	62	3.09		17.3	9.2										
4	9802-249	108.INF.B-4	2/20/98	9:20	2/20/98	9:20		7.76	98	3.13	0.061	17.4	9.2	3.65	0.86	2.79	3.0	9.31	48.0				0.15
5	9802-282	108.INF.B-5	2/24/98	9:15	2/24/98	9:15		11.76	148	3.25		18.2	9.2										
6	9802-307	108.INF.B-6	2/27/98	8:25	2/27/98	8:25		14.73	185	3.17	0.060	19.3	9.2	3.55	0.76	2.79	3.3	9.24	48.1				0.15
PreStudy		**EBCT:**	**Carbon Type:**				**Influent pH:**		**Scaling Factor:**														
1	9802-124	Raw Screening	2/9/98	8:30	2/9/98	8:30				5.67													
2	9802-125	Settled Screening	2/9/98	8:30	2/9/98	8:30				3.13													
3	9802-143	2/10 Settled	2/10/98	7:30	2/10/98	7:30				3.33													
4	9802-144	2/12 Barrel	2/12/98	12:05	2/12/98	12:05				3.38													
5	9802-145	2/12 Filtered	2/12/98	12:40	2/12/98	12:40				3.27													

***Target SDS Chlorination Conditions**

Free Cl2 Residual: 0.80 mg/L **pH:** 9.2 **Temperature:** 4.0 ºC **Holding time:** 48.0 hrs

Study Comments

Sample 9802-203: Sample was split from 9802-197 after 9802-197 had cooled to 4ºC. Sampling temperature is unavailable.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #1

Client: City of Topeka **Study#:** 108

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
13	9803-2	108.20.Eff-35	216	2.34																			
14	9803-5	108.20.Eff-37	235	2.34																			
Influent A		**EBCT:**	**Carbon Type:**			**Influent pH:**	9.2		**Scaling Factor:**	12.6													
1	9802-148	108.INF.A-1	2																			0.10	86
2	9802-268	108.INF.A-2	136																			0.12	81
Influent B		**EBCT:**	**Carbon Type:**			**Influent pH:**	9.2		**Scaling Factor:**	12.6													
1	9802-149	108.INF.B-1	2	3.25	218	39.9	15.7	29.2	2.5	**87.3**	4	15	7	1	3	7	4	ND	ND	**37**	**41**		
2	9802-194	108.INF.B-2	37	3.17																			
3	9802-222	108.INF.B-3	62	3.09																			
4	9802-249	108.INF.B-4	98	3.13	205	46.1	18.2	32.4	3.0	**99.7**	ND	15	8	1	3	8	4	2	ND	**35**	**41**		
5	9802-282	108.INF.B-5	148	3.25																			
6	9802-307	108.INF.B-6	185	3.17	202	43.4	18.0	32.4	2.9	**96.7**	ND	14	7	ND	3	7	4	2	ND	**31**	**38**		
PreStudy		**EBCT:**	**Carbon Type:**			**Influent pH:**			**Scaling Factor:**														
1	9802-124	Raw Screening		5.67																			
2	9802-125	Settled Screening		3.13																			
3	9802-143	2/10 Settled		3.33																			
4	9802-144	2/12 Barrel		3.38																			
5	9802-145	2/12 Filtered		3.27																			

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #2

Client: City of Topeka **Study#:** 118

No.	Sample ID	Client Sample ID	Start Date/Time	End Date/Time	Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
Effluent C	**EBCT:** 10 min	**Carbon Type:** Bituminous	**Influent pH:** 9	**Scaling Factor:** 12.6																	
1	9806-5	118.10.Eff-1	6/1/98 16:58	6/2/98 0:17		0.22	3	0.20	0.002	22.5	8.6	2.00	0.77	1.23	20.2	9.18	48.3				
2	9806-7	118.10.Eff-3	6/2/98 11:47	6/2/98 18:56		1.00	13	0.32	0.004	23.1	8.6	2.09	0.81	1.28	20.2	9.20	48.4				
3	9806-9	118.10.Eff-5	6/2/98 22:33	6/3/98 5:46		1.45	18	0.46	0.006	21.6	8.7	2.20	0.85	1.35	20.2	9.23	48.3				
3d	9806-36	118.10.Eff-5d	6/2/98 22:33	6/3/98 5:46		1.45	18	0.47	0.006	21.5	8.7	2.20	0.78	1.42	20.2	9.22	48.3				
4	9806-10	118.10.Eff-6	6/3/98 5:46	6/3/98 9:27		1.68	21	0.58	0.007	22.7	8.7	2.29	0.77	1.52	20.2	9.22	48.4				
5	9806-12	118.10.Eff-8	6/3/98 17:31	6/4/98 1:05		2.25	28	0.81	0.011	21.5	8.6	2.46	0.69	1.77	20.2	9.22	48.4				
6	9806-13	118.10.Eff-9	6/4/98 1:05	6/4/98 8:45		2.57	32	0.92	0.012	21.5	8.6	2.54	0.73	1.81	20.2	9.21	48.5				
7	9806-14	118.10.Eff-10	6/4/98 13:54	6/4/98 21:09		3.09	39	1.09	0.016	22.3	8.5	2.80	1.18	1.62	19.6	9.15	48.1				
7d	9806-38	118.10.Eff-10d	6/4/98 13:54	6/4/98 21:09		3.09	39	1.12	0.015	22.2	8.5	2.84	1.16	1.68	19.6	9.14	48.1				
8	9806-16	118.10.Eff-12	6/5/98 4:29	6/5/98 11:38		3.70	46	1.29	0.018	21.7	8.4	2.99	1.38	1.61	19.6	9.17	48.1				
9	9806-17	118.10.Eff-13	6/5/98 19:01	6/5/98 22:48		4.23	53	1.42	0.019	23.0	8.4	3.12	0.89	2.23	19.6	9.18	48.2				
10	9806-20	118.10.Eff-16	6/6/98 9:59	6/6/98 17:15		4.93	62	1.52	0.021	22.4	8.7	3.21	0.89	2.32	19.6	9.15	48.2				
10d	9806-41	118.10.Eff-16d	6/6/98 9:59	6/6/98 17:15		4.93	62	1.52	0.021	22.3	8.7	3.22	0.90	2.32	19.6	9.19	48.2				
11	9806-22	118.10.Eff-18	6/7/98 7:52	6/7/98 15:15		5.84	73	1.67	0.024	22.3	8.8	3.36	0.87	2.49	19.6	9.22	48.2				
12	9806-26	118.10.Eff-22	6/8/98 13:25	6/8/98 20:43		7.07	89	1.83	0.026	24.4	8.6	3.45	0.88	2.57	19.7	9.12	47.9				
13	9806-28	118.10.Eff-24	6/9/98 18:36	6/10/98 1:53		8.29	104	1.88		23.4	8.6										
Effluent C	**EBCT:** 20 min	**Carbon Type:** Bituminous	**Influent pH:** 9	**Scaling Factor:** 12.6																	
1	9806-45	118.20.Eff-1	6/1/98 16:58	6/1/98 22:53		0.19	2	0.19	0.001	23.2	8.8	2.00	0.96	1.04	20.2	9.26	48.4				
2	9806-50	118.20.Eff-6	6/4/98 16:34	6/4/98 22:31		3.18	40	0.42	0.005	21.5	8.5	2.16	0.77	1.39	19.6	9.20	48.3				
3	9806-52	118.20.Eff-8	6/5/98 10:26	6/5/98 16:38		3.93	49	0.63	0.007	22.3	8.6	2.36	0.81	1.55	19.6	9.20	48.3				
3d	9806-75	118.20.Eff-8d	6/5/98 10:26	6/5/98 16:38		3.93	49	0.64	0.007	22.4	8.6	2.37	0.72	1.65	19.6	9.19	48.3				
4	9806-55	118.20.Eff-11	6/6/98 4:28	6/6/98 10:34		4.67	59	0.75	0.009	20.4	8.7	2.47	0.78	1.69	19.6	9.23	48.3				
5	9806-57	118.20.Eff-13	6/6/98 22:25	6/7/98 4:20		5.42	68	0.87	0.012	21.4	8.7	2.59	0.77	1.82	19.6	9.22	48.3				
6	9806-59	118.20.Eff-15	6/7/98 10:20	6/7/98 16:15		5.91	74	0.98	0.014	22.3	8.8	2.69	0.74	1.95	20.0	9.17	47.9				
7	9806-63	118.20.Eff-19	6/8/98 10:02	6/8/98 15:59		6.90	87	1.14	0.015	23.6	8.5	2.85	0.77	2.08	20.0	9.15	47.9				
7d	9806-77	118.20.Eff-19d	6/8/98 10:02	6/8/98 15:59		6.90	87	1.13	0.015	23.6	8.6	2.85	0.76	2.09	20.0	9.13	48.0				
8	9806-71	118.20.Eff-27	6/10/98 21:44	6/11/98 3:42		9.39	118	1.31	0.019	22.8	8.6	2.98	0.77	2.21	19.7	9.20	48.0				
9	9806-73	118.20.Eff-29	6/12/98 21:26	6/13/98 3:22		11.38	143	1.44	0.021	23.0	8.6	3.09	0.72	2.37	19.7	9.23	48.0				
10	9806-358	118.20.Eff-31	6/14/98 9:16	6/14/98 15:13		12.87	162	1.54	0.023	23.4	8.6	3.19	0.78	2.41	20.0	9.22	48.7				
10d	9806-79	118.20.Eff-31d	6/14/98 9:16	6/14/98 15:13		12.87	162	1.52	0.023	23.4	8.6	3.19	0.69	2.50	20.0	9.21	48.8				
11	9806-360	118.20.Eff-33	6/16/98 21:06	6/17/98 3:04		15.36	193	1.67	0.024	23.1	8.7	3.32	0.31	3.01	20.3	9.15	48.0				
12	9806-362	118.20.Eff-35	6/20/98 10:01	6/20/98 16:03		18.90	238	1.84	0.028	24.1	8.8	3.47	0.62	2.85	20.3	9.14	48.0				

ND: Non-detect. Blank Results: Either analysis was not performed or result did not meet ICR QC requirements.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #2

Client: City of Topeka **Study#:** 118

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
Effluent C		**EBCT:** 10 min	**Carbon Type:** Bituminous			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9806-5	118.10.Eff-1	3	0.20	6	ND	3.3	ND	6.8	**10.1**	ND	ND	ND	ND	1	ND	ND	ND	ND	**1**	**1**		
2	9806-7	118.10.Eff-3	13	0.32	16	ND	6.3	1.7	16.0	**23.9**	ND	ND	ND	ND	2	ND	ND	ND	ND	**2**	**2**		
3	9806-9	118.10.Eff-5	18	0.46	35	ND	10.6	3.0	23.3	**36.9**	ND	8	ND	ND	4	2	ND	ND	ND	**13**	**13**		
3d	9806-36	118.10.Eff-5d	18	0.47	29	ND	9.8	2.9	21.2	**33.9**	ND	7	ND	ND	4	2	ND	ND	ND	**13**	**13**		
4	9806-10	118.10.Eff-6	21	0.58	41	ND	13.6	3.9	28.2	**45.7**	ND	8	ND	ND	4	2	ND	ND	ND	**14**	**14**		
5	9806-12	118.10.Eff-8	28	0.81	63	2.4	19.8	7.0	31.2	**60.3**	ND	7	ND	ND	7	5	1	ND	ND	**19**	**20**		
6	9806-13	118.10.Eff-9	32	0.92	69	2.7	22.6	8.4	31.8	**65.5**	ND	6	ND	ND	7	5	1	ND	ND	**18**	**19**		
7	9806-14	118.10.Eff-10	39	1.09	88	4.6	28.4	13.4	28.7	**75.1**	ND	7	1	ND	8	6	1	ND	ND	**22**	**24**		
7d	9806-38	118.10.Eff-10d	39	1.12	83	4.4	28.2	13.3	28.3	**74.1**	ND	6	ND	ND	7	5	1	ND	ND	**18**	**19**		
8	9806-16	118.10.Eff-12	46	1.29	95	6.2	32.1	17.2	27.7	**83.3**	ND	8	1	ND	8	6	2	ND	ND	**23**	**25**		
9	9806-17	118.10.Eff-13	53	1.42	106	7.7	33.5	19.1	28.0	**88.4**	ND	8	2	ND	9	7	2	2	ND	**26**	**30**		
10	9806-20	118.10.Eff-16	62	1.52	112	9.8	37.7	23.1	29.6	**100.1**	ND	8	2	ND	9	7	2	2	ND	**25**	**29**		
10d	9806-41	118.10.Eff-16d	62	1.52	117	9.5	34.3	21.9	26.1	**91.8**	ND	7	1	ND	7	6	2	ND	ND	**22**	**23**		
11	9806-22	118.10.Eff-18	73	1.67	123	13.2	39.2	26.9	28.0	**107.2**	ND	9	2	ND	8	7	2	2	ND	**26**	**30**		
12	9806-26	118.10.Eff-22	89	1.83	129	13.1	35.0	26.1	20.9	**95.1**	ND	8	3	ND	11	9	3	3	ND	**32**	**38**		
13	9806-28	118.10.Eff-24	104	1.88																			
Effluent C		**EBCT:** 20 min	**Carbon Type:** Bituminous			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9806-45	118.20.Eff-1	2	0.19	6	ND	2.5	ND	5.5	**8.0**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	**ND**		
2	9806-50	118.20.Eff-6	40	0.42	37	ND	8.2	2.4	19.4	**29.9**	ND	8	ND	ND	4	1	ND	ND	ND	**13**	**13**		
3	9806-52	118.20.Eff-8	49	0.63	44	ND	12.8	3.9	24.5	**41.2**	ND	8	ND	ND	4	3	ND	ND	ND	**15**	**15**		
3d	9806-75	118.20.Eff-8d	49	0.64	43	ND	13.6	4.2	25.6	**43.4**	ND	7	ND	ND	4	3	ND	ND	ND	**15**	**15**		
4	9806-55	118.20.Eff-11	59	0.75	56	1.8	16.4	5.7	27.2	**51.2**	ND	6	ND	ND	5	4	ND	ND	ND	**16**	**16**		
5	9806-57	118.20.Eff-13	68	0.87	65	3.1	22.7	8.8	32.3	**66.9**	ND	6	ND	ND	6	4	ND	ND	ND	**15**	**15**		
6	9806-59	118.20.Eff-15	74	0.98	68	2.6	22.3	8.8	27.8	**61.5**	ND	5	ND	ND	6	4	1	ND	ND	**15**	**16**		
7	9806-63	118.20.Eff-19	87	1.14	84	3.5	25.7	11.1	28.3	**68.5**	ND	5	1	ND	6	4	1	ND	ND	**16**	**17**		
7d	9806-77	118.20.Eff-19d	87	1.13	80	3.6	25.8	10.9	28.2	**68.5**	ND	4	1	ND	6	4	1	ND	ND	**15**	**16**		
8	9806-71	118.20.Eff-27	118	1.31	94	5.2	29.7	14.7	28.1	**77.7**	ND	3	2	ND	9	5	2	2	ND	**19**	**23**		
9	9806-73	118.20.Eff-29	143	1.44	101	6.6	32.4	18.1	26.4	**83.5**	ND	3	2	ND	11	6	2	2	ND	**23**	**27**		
10	9806-358	118.20.Eff-31	162	1.54	112	8.3	32.3	20.0	25.8	**86.4**	ND	4	2	ND	9	6	2	2	ND	**21**	**25**		
10d	9806-79	118.20.Eff-31d	162	1.52	114	8.4	33.6	20.6	25.2	**87.8**	ND	4	2	ND	9	6	2	2	ND	**21**	**25**		
11	9806-360	118.20.Eff-33	193	1.67	119	9.2	32.6	21.6	21.4	**84.8**	ND	4	2	ND	10	7	2	3	ND	**23**	**27**		
12	9806-362	118.20.Eff-35	238	1.84	131	13.2	36.0	26.4	24.9	**100.4**	ND	5	2	ND	9	7	3	3	ND	**24**	**29**		

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #2

Client: City of Topeka **Study#:** 118

No.	Sample ID	Client Sample ID	Start Date/Time		End Date/Time		Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
13	9806-364	118.20.Eff-37	6/21/98	16:15	6/21/98	18:34		20.09	252	1.80		22.3	8.8										
Influent A		**EBCT:**	**Carbon Type:**			**Influent pH:**	9		**Scaling Factor:**	12.6													
1	9806-85	118.Inf.A-1	6/1/98	17:15	6/1/98	17:15		0.08	1											37	166	125	
2	9806-86	118.Inf.A-2	6/9/98	16:40	6/9/98	16:40		8.06	101											38	166	125	
Influent B		**EBCT:**	**Carbon Type:**			**Influent pH:**	9		**Scaling Factor:**	12.6													
1	9806-87	118.Inf.B-1	6/1/98	17:20	6/1/98	17:20		0.08	1	2.57	0.046	16.3	9.0	4.20	0.82	3.38	20.2	9.27	48.5				0.10
2	9806-88	118.Inf.B-2	6/4/98	9:10	6/4/98	9:10		2.74	34	2.54													
3	9806-89	118.Inf.B-3	6/6/98	9:05	6/6/98	9:05		4.74	60	2.57													
4	9806-90	118.Inf.B-4	6/9/98	16:35	6/9/98	16:35		8.05	101	2.61	0.046	18.1	9.0	4.14	0.76	3.38	19.7	9.27	48.0				0.10
5	9806-91	118.Inf.B-5	6/12/98	11:00	6/12/98	11:00		10.82	136	2.56													
6	9806-92	118.Inf.B-6	6/21/98	17:30	6/21/98	17:30		20.09	253	2.56	0.047	19.4	9.0	4.18	0.40	3.78	20.3	9.20	47.9				0.10
PreStudy		**EBCT:**	**Carbon Type:**			**Influent pH:**			**Scaling Factor:**														
1	9805-477	118.Settled.Day 1	5/26/98	9:00	5/26/98	9:00				2.74													
2	9805-500	118.Settled. Day 2	5/27/98	8:15	5/27/98	8:15				2.84													
3	9805-501	118.Filtered. Day 2	5/27/98	13:00	5/27/98	13:00				4.02													
4	9805-505	118.Set. On Arrival	5/29/98	15:15	5/29/98	15:15				2.66													
5	9805-506	118.Filtered S&H	5/29/98	15:20	5/29/98	15:20				2.49													

***Target SDS Chlorination Conditions**

Free Cl2 Residual: 0.80 mg/L **pH:** 9.2 **Temperature:** 20.0 ºC **Holding time:** 48.0 hrs

Study Comments

Sample 9805-501 (Pre-Study) is a sample taken from a different treatment train.

Sample 9806-26 broke during its first chlorination period. It was rechlorinated on the sixth day past its sampling date.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #2

Client: City of Topeka **Study#:** 118

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
13	9806-364	118.20.Eff-37	252	1.80																			
Influent A		**EBCT:**	**Carbon Type:**			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9806-85	118.Inf.A-1	1																			0.15	110
2	9806-86	118.Inf.A-2	101																			0.16	110
Influent B		**EBCT:**	**Carbon Type:**			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9806-87	118.Inf.B-1	1	2.57	220	50.7	41.0	48.0	14.0	**153.7**	ND	18	3	ND	10	13	4	3	ND	**44**	**50**		
2	9806-88	118.Inf.B-2	34	2.54																			
3	9806-89	118.Inf.B-3	60	2.57																			
4	9806-90	118.Inf.B-4	101	2.61	222	42.2	36.5	41.3	12.0	**132.0**	ND	16	4	ND	9	11	4	3	ND	**40**	**46**		
5	9806-91	118.Inf.B-5	136	2.56																			
6	9806-92	118.Inf.B-6	253	2.56	220	37.3	33.9	37.7	12.2	**121.0**	ND	13	4	ND	10	12	3	3	ND	**38**	**44**		
PreStudy		**EBCT:**	**Carbon Type:**			**Influent pH:**			**Scaling Factor:**														
1	9805-477	118.Settled.Day 1		2.74																			
2	9805-500	118.Settled. Day 2		2.84																			
3	9805-501	118.Filtered. Day 2		4.02																			
4	9805-505	118.Set. On Arrival		2.66																			
5	9805-506	118.Filtered S&H		2.49																			

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #3

Client: City of Topeka **Study#:** 136

No.	Sample ID	Client Sample ID	Start Date/Time	End Date/Time	Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
Effluent C	**EBCT:** 10 min	**Carbon Type:** Bituminous	**Influent pH:** 9	**Scaling Factor:** 12.6																	
1	9809-51	136.10.Eff-1	9/8/98 14:05	9/8/98 19:14		0.15	2	0.08	0.001	21.1	8.9	1.50	0.72	0.78	26.2	9.12	47.8				
2	9809-53	136.10.Eff-3	9/9/98 15:52	9/9/98 20:58		1.23	15	0.20	0.002	21.2	8.6	1.72	0.79	0.93	26.2	9.15	47.8				
3	9809-55	136.10.Eff-5	9/10/98 2:06	9/10/98 7:29		1.66	21	0.35	0.004	21.4	8.8	1.99	0.91	1.08	26.2	9.17	47.8				
4	9809-56	136.10.Eff-6	9/10/98 7:29	9/10/98 12:24		1.87	24	0.46	0.005	21.4	8.5	2.02	0.75	1.27	26.1	9.09	48.3				
4d	9809-82	136.10.Eff-6d	9/10/98 7:29	9/10/98 12:24		1.87	24	0.46	0.005	21.3	8.5	2.02	0.73	1.29	26.1	9.13	48.3				
5	9809-59	136.10.Eff-9	9/10/98 22:48	9/11/98 4:02		2.52	32	0.67	0.008	21.0	8.6	2.25	0.80	1.45	26.1	9.13	48.3				
6	9809-61	136.10.Eff-11	9/11/98 9:13	9/11/98 14:27		2.95	37	0.79	0.011	21.1	8.4	2.38	0.74	1.64	26.1	9.14	48.3				
7	9809-62	136.10.Eff-12	9/12/98 0:43	9/12/98 6:02		3.60	45	0.93	0.014	21.3	8.6	2.55	0.79	1.76	26.1	9.09	48.3				
7d	9809-84	136.10.Eff-12d	9/12/98 0:43	9/12/98 6:02		3.60	45	0.94	0.014	21.2	8.6	2.55	0.78	1.77	26.1	9.14	48.3				
8	9809-65	136.10.Eff-15	9/12/98 19:09	9/13/98 0:17		4.36	55	1.09	0.016	21.6	8.7	2.72	0.81	1.91	26.1	9.16	48.3				
9	9809-69	136.10.Eff-19	9/14/98 7:17	9/14/98 12:30		5.87	74	1.29	0.019	21.7	8.4	2.96	0.79	2.17	26.2	9.12	48.1				
10	9809-71	136.10.Eff-21	9/15/98 19:33	9/16/98 0:44		7.38	93	1.44	0.022	21.6	8.3	3.14	0.84	2.30	26.2	9.16	48.1				
10d	9809-86	136.10.Eff-21d	9/15/98 19:33	9/16/98 0:44		7.38	93	1.44	0.022	21.6	8.4	3.14	0.78	2.36	26.2	9.14	48.1				
11	9809-73	136.10.Eff-23	9/17/98 8:05	9/17/98 13:22		8.91	112	1.54	0.025	21.2	8.4	3.26	0.90	2.36	26.2	9.15	47.7				
12	9809-75	136.10.Eff-25	9/19/98 17:58	9/19/98 23:03		11.31	142	1.81	0.030	22.4	8.5	3.54	0.92	2.62	26.0	9.14	48.0				
13	9809-77	136.10.Eff-27	9/21/98 0:53	9/21/98 6:01		12.60	158	1.85	0.031	21.0	8.5										
Effluent C	**EBCT:** 20 min	**Carbon Type:** Bituminous	**Influent pH:** 9	**Scaling Factor:** 12.6																	
1	9809-91	136.20.Eff-1	9/8/98 14:05	9/8/98 19:21		0.15	2	0.08	0.001	21.3	9.1	1.50	0.73	0.77	26.2	9.18	47.8				
2	9809-92	136.20.Eff-2	9/11/98 16:53	9/11/98 22:01		3.27	41	0.29	0.003	22.2	8.5	1.83	0.76	1.07	26.1	9.15	48.3				
3	9809-94	136.20.Eff-4	9/12/98 9:01	9/12/98 14:25		3.95	50	0.41	0.005	21.7	8.7	1.96	0.82	1.14	26.1	9.15	48.3				
3d	9809-121	136.20.Eff-4d	9/12/98 9:01	9/12/98 14:25		3.95	50	0.40	0.005	21.7	8.7	1.96	0.81	1.15	26.1	9.17	48.3				
4	9809-96	136.20.Eff-6	9/13/98 1:04	9/13/98 6:38		4.62	58	0.53	0.006	21.5	8.7	2.09	0.76	1.33	26.1	9.17	48.3				
5	9809-97	136.20.Eff-7	9/13/98 17:18	9/13/98 22:33		5.29	66	0.61	0.007	22.6	8.5	2.20	0.77	1.43	26.2	9.15	48.1				
6	9809-99	136.20.Eff-9	9/14/98 14:53	9/14/98 20:11		6.19	78	0.79	0.010	22.7	8.4	2.40	0.83	1.57	26.2	9.15	48.2				
7	9809-100	136.20.Eff-10	9/16/98 4:38	9/16/98 10:15		7.77	98	0.93	0.013	21.2	8.4	2.56	0.80	1.76	26.2	9.17	48.2				
7d	9809-122	136.20.Eff-10d	9/16/98 4:38	9/16/98 10:15		7.77	98	0.93	0.013	21.1	8.4	2.56	0.73	1.83	26.2	9.16	48.2				
8	9809-103	136.20.Eff-13	9/18/98 11:18	9/18/98 16:41		10.04	126	1.03	0.016	21.7	8.3	2.71	0.87	1.84	26.0	9.13	48.0				
9	9809-104	136.20.Eff-14	9/19/98 14:22	9/19/98 19:43		11.17	140	1.21	0.018	23.0	8.5	2.87	0.88	1.99	26.0	9.14	47.9				
10	9809-112	136.20.Eff-22	9/25/98 0:05	9/25/98 5:21		16.57	208	1.40	0.021	21.5	8.6	3.07	0.81	2.26	26.0	9.22	48.0				
10d	9809-128	136.20.Eff-22d	9/25/98 0:05	9/25/98 5:21		16.57	208	1.40	0.021	21.5	8.6	3.07	0.77	2.30	26.0	9.22	48.0				
11	9809-114	136.20.Eff-24	9/26/98 12:50	9/26/98 18:06		18.10	228	1.51	0.024	23.0	8.5	3.17	0.64	2.53	25.7	9.18	47.7				
12	9809-115	136.20.Eff-25	9/28/98 2:12	9/28/98 7:37		19.66	247	1.52	0.024	22.0	8.7	3.19	0.86	2.33	24.3	9.18	48.0				

ND: Non-detect. Blank Results: Either analysis was not performed or result did not meet ICR QC requirements.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #3

Client: City of Topeka **Study#:** 136

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
Effluent C		**EBCT:** 10 min	**Carbon Type:** Bituminous			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9809-51	136.10.Eff-1	2	0.08	6	ND	2.5	ND	5.9	**8.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	**ND**		
2	9809-53	136.10.Eff-3	15	0.20	16	ND	6.1	1.2	15.6	**22.9**	ND	ND	ND	ND	2	ND	ND	ND	ND	**2**	**2**		
3	9809-55	136.10.Eff-5	21	0.35	28	ND	10.2	2.5	21.4	**34.1**	ND	ND	ND	ND	3	1	ND	ND	ND	**4**	**4**		
4	9809-56	136.10.Eff-6	24	0.46	38	ND	14.1	3.5	24.3	**42.0**	ND	ND	ND	ND	5	2	1	ND	ND	**7**	**8**		
4d	9809-82	136.10.Eff-6d	24	0.46	38	ND	15.6	3.8	25.5	**44.9**	ND	ND	ND	ND	4	2	1	ND	ND	**6**	**7**		
5	9809-59	136.10.Eff-9	32	0.67	53	1.6	21.6	6.7	29.7	**59.6**	ND	1	ND	ND	8	3	1	ND	ND	**12**	**13**		
6	9809-61	136.10.Eff-11	37	0.79	63	2.7	25.8	8.9	30.4	**67.8**	ND	1	ND	ND	8	4	1	ND	ND	**13**	**14**		
7	9809-62	136.10.Eff-12	45	0.93	77	3.5	31.1	12.5	30.2	**77.4**	ND	2	ND	ND	7	4	1	ND	ND	**12**	**14**		
7d	9809-84	136.10.Eff-12d	45	0.94	76	3.3	29.3	11.7	28.2	**72.5**	ND	2	ND	ND	7	3	1	ND	ND	**11**	**13**		
8	9809-65	136.10.Eff-15	55	1.09	91	5.1	33.7	15.8	26.7	**81.2**	ND	2	1	ND	8	4	2	ND	ND	**16**	**17**		
9	9809-69	136.10.Eff-19	74	1.29	99	7.9	35.5	20.3	22.9	**86.4**	ND	3	1	ND	9	6	2	ND	ND	**19**	**21**		
10	9809-71	136.10.Eff-21	93	1.44	126	13.0	37.5	25.5	21.5	**97.4**	ND	5	1	ND	8	6	2	ND	ND	**20**	**22**		
10d	9809-86	136.10.Eff-21d	93	1.44	128	13.9	39.9	26.7	22.2	**102.7**	ND	4	1	ND	8	6	2	ND	ND	**19**	**21**		
11	9809-73	136.10.Eff-23	112	1.54	139	18.0	38.7	30.3	23.1	**110.2**	ND	6	3	ND	10	8	2	ND	ND	**27**	**29**		
12	9809-75	136.10.Eff-25	142	1.81	161	26.5	36.9	33.8	18.8	**116.0**	ND	10	4	ND	14	11	3	ND	ND	**39**	**43**		
13	9809-77	136.10.Eff-27	158	1.85																			
Effluent C		**EBCT:** 20 min	**Carbon Type:** Bituminous			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9809-91	136.20.Eff-1	2	0.08	5	ND	2.0	ND	4.8	**6.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	**ND**		
2	9809-92	136.20.Eff-2	41	0.29	23	ND	8.2	1.6	17.7	**27.6**	ND	ND	ND	ND	4	1	ND	ND	ND	**5**	**5**		
3	9809-94	136.20.Eff-4	50	0.41	31	ND	11.8	2.6	22.2	**36.6**	ND	ND	ND	ND	5	2	1	ND	ND	**6**	**7**		
3d	9809-121	136.20.Eff-4d	50	0.40	29	ND	11.1	2.5	21.0	**34.6**	ND	ND	ND	ND	4	1	1	ND	ND	**5**	**6**		
4	9809-96	136.20.Eff-6	58	0.53	37	1.1	16.6	4.2	27.6	**49.5**	ND	ND	ND	ND	5	2	1	ND	ND	**7**	**8**		
5	9809-97	136.20.Eff-7	66	0.61	44	1.2	17.8	4.8	27.1	**51.0**	ND	ND	ND	ND	5	2	1	ND	ND	**6**	**7**		
6	9809-99	136.20.Eff-9	78	0.79	56	1.9	24.0	7.5	30.1	**63.4**	ND	ND	ND	ND	7	3	1	ND	ND	**9**	**10**		
7	9809-100	136.20.Eff-10	98	0.93	69	2.8	29.1	10.3	31.5	**73.6**	ND	2	ND	ND	8	3	ND	ND	ND	**13**	**13**		
7d	9809-122	136.20.Eff-10d	98	0.93	73	2.6	26.2	9.4	27.5	**65.6**	ND	2	ND	ND	8	4	ND	ND	ND	**13**	**13**		
8	9809-103	136.20.Eff-13	126	1.03	84	4.2	30.1	13.9	27.9	**76.1**	ND	2	2	ND	12	6	1	ND	ND	**22**	**24**		
9	9809-104	136.20.Eff-14	140	1.21	100	6.1	32.6	17.5	26.5	**82.7**	ND	4	2	ND	14	8	2	3	ND	**28**	**33**		
10	9809-112	136.20.Eff-22	208	1.40	120	11.9	33.6	23.1	25.0	**93.5**	ND	7	3	ND	15	10	3	3	ND	**35**	**41**		
10d	9809-128	136.20.Eff-22d	208	1.40	124	11.9	34.3	23.5	22.5	**92.2**	ND	4	2	ND	7	5	ND	ND	ND	**18**	**18**		
11	9809-114	136.20.Eff-24	228	1.51	128	15.4	36.0	26.7	22.0	**100.0**	ND	6	2	ND	9	7	2	ND	ND	**24**	**26**		
12	9809-115	136.20.Eff-25	247	1.52	132	14.4	34.8	25.8	22.5	**97.5**	ND	6	1	ND	9	7	1	ND	ND	**24**	**25**		

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #3

Client: City of Topeka **Study#:** 136

No.	Sample ID	Client Sample ID	Start Date/Time		End Date/Time		Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
Influent A		**EBCT:**	**Carbon Type:**				**Influent pH:** 9		**Scaling Factor:** 12.6														
1	9809-131	136.Inf.A-1	9/8/98	14:10	9/8/98	14:10		0.05	1											30	133	95	
2	9809-132	136.Inf.A-2	9/21/98	10:20	9/21/98	10:20		12.89	162											30	133	95	
Influent B		**EBCT:**	**Carbon Type:**				**Influent pH:** 9		**Scaling Factor:** 12.6														
1	9809-133	136.Inf.B-1	9/8/98	14:15	9/8/98	14:15		0.05	1	2.34	0.049	16.5	9.0	4.60	1.10	3.50	26.2	9.18	47.9				0.15
2	9809-134	136.Inf.B-2	9/10/98	16:38	9/10/98	16:18		2.14	27	2.50		17.3	8.9										
3	9809-135	136.Inf.B-3	9/13/98	8:30	9/13/98	8:30		4.81	60	2.34		17.1	9.1										
4	9809-136	136.Inf.B-4	9/20/98	14:50	9/20/98	14:50		12.08	152	2.31	0.048	17.2	9.0	4.30	0.91	3.39	26.0	9.16	47.9				0.15
5	9809-137	136.Inf.B-5	9/25/98	18:13	9/25/98	18:13		17.22	216	2.32		18.1	9.0										
6	9809-138	136.Inf.B-6	9/28/98	16:00	9/28/98	16:00		20.13	253	2.30	0.047			4.20	0.83	3.37	24.3	9.11	47.9				0.15
PreStudy		**EBCT:**	**Carbon Type:**				**Influent pH:**		**Scaling Factor:**														
1	9809-5	Settled.Top	8/31/98	10:30	8/31/98	10:30				2.51													
2	9809-26	settled.drum.top	9/1/98	8:15	9/1/98	8:15				3.11													
3	9809-30	Filtered at S&H	9/3/98	0:00	9/3/98	0:00				2.35													
4	9809-29	Top.settled on arrival	9/3/98	0:00	9/3/98	0:00				2.38													

***Target SDS Chlorination Conditions**

Free Cl2 Residual: 0.80 mg/L **pH:** 9.2 **Temperature:** 26.0 ºC **Holding time:** 48.0 hrs

Study Comments

Sample 9809-138 taken 4 hours after the run ended. Temperature and pH were not measured.

The 20-minute RSSCT was stopped according to the 2 month, change less than 10% of influent provision of the ICR.

After a short power outage on 9/30/98, the incubation bath circulators did not restart affecting the SDS temperature of samples 9809-115 and 9809-138. This was corrected after 14 hours.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #3

Client: City of Topeka **Study#:** 136

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
Influent A		**EBCT:**	**Carbon Type:**			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9809-131	136.Inf.A-1	1																			ND	140
2	9809-132	136.Inf.A-2	162																			ND	160
Influent B		**EBCT:**	**Carbon Type:**			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9809-133	136.Inf.B-1	1	2.34	248	71.0	38.8	49.1	13.0	**171.8**	ND	13	3	ND	7	10	3	2	ND	**33**	**38**		
2	9809-134	136.Inf.B-2	27	2.50																			
3	9809-135	136.Inf.B-3	60	2.34																			
4	9809-136	136.Inf.B-4	152	2.31	251	56.6	35.7	43.0	13.1	**148.4**	ND	19	8	ND	14	17	6	3	ND	**59**	**67**		
5	9809-137	136.Inf.B-5	216	2.32																			
6	9809-138	136.Inf.B-6	253	2.30	265	53.3	34.1	41.3	12.9	**141.5**	ND	15	4	ND	8	11	3	ND	ND	**38**	**41**		
PreStudy		**EBCT:**	**Carbon Type:**			**Influent pH:**			**Scaling Factor:**														
1	9809-5	Settled.Top		2.51																			
2	9809-26	settled.drum.top		3.11																			
3	9809-30	Filtered at S&H		2.35																			
4	9809-29	Top.settled on arrival		2.38																			

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #4

Client: City of Topeka **Study#:** 184

No.	Sample ID	Client Sample ID	Start Date/Time	End Date/Time	Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
Effluent C	**EBCT:** 10 min	**Carbon Type:** Bituminous	**Influent pH:** 9	**Scaling Factor:** 12.6																	
1	9811-373	184.10.Eff-1	11/19/98 16:34	11/19/98 23:44		0.19	2	0.22	0.002	22.2	8.9	1.52	0.82	0.70	11.0	9.20	48.0				
2	9811-377	184.10.Eff-5	11/21/98 0:15	11/21/98 7:12		1.51	19	0.41	0.005	21.0	8.9	1.66	0.81	0.85	11.0	9.24	48.0				
3	9811-378	184.10.Eff-6	11/21/98 7:12	11/21/98 14:17		1.80	23	0.56	0.008	21.2	8.8	1.75	0.77	0.98	11.0	9.23	48.0				
3d	9811-403	184.10.Eff-6d	11/21/98 7:12	11/21/98 14:17		1.80	23	0.54	0.009	21.2	8.8	1.75	0.72	1.03	11.0	9.21	48.0				
4	9811-379	184.10.Eff-7	11/21/98 14:17	11/21/98 21:08		2.09	26	0.67	0.011	21.4	8.8	1.83	0.73	1.10	11.1	9.18	47.8				
5	9811-380	184.10.Eff-8	11/21/98 21:08	11/22/98 4:01		2.38	30	0.82	0.013	21.3	8.9	1.94	0.85	1.09	11.1	9.20	47.9				
6	9811-382	184.10.Eff-10	11/22/98 11:02	11/22/98 16:46		2.93	37	1.03	0.017	21.8	8.8	2.07	0.81	1.26	11.1	9.22	47.9				
7	9811-384	184.10.Eff-12	11/22/98 23:40	11/23/98 6:38		3.49	44	1.21	0.020	21.6	8.9	2.18	0.95	1.23	11.0	9.21	48.1				
8	9811-386	184.10.Eff-14	11/23/98 20:51	11/24/98 4:11		4.38	55	1.31	0.023	21.3	8.8	2.26	0.81	1.45	11.0	9.22	48.1				
8d	9811-406	184.10.Eff-14d	11/23/98 20:51	11/24/98 4:11		4.38	55	1.31	0.023	21.3	8.9	2.26	0.77	1.49	11.0	9.19	48.1				
9	9811-388	184.10.Eff-16	11/24/98 11:31	11/24/98 18:29		4.98	63	1.52	0.027	23.9	8.7	2.39	0.85	1.54	11.0	9.20	48.1				
10	9811-393	184.10.Eff-21	11/25/98 22:39	11/26/98 5:43		6.45	81	1.71	0.032	21.2	8.9	2.51	0.84	1.67	11.0	9.21	48.1				
11	9811-395	184.10.Eff-23	11/27/98 16:56	11/27/98 23:55		8.21	103	1.92	0.037	21.9	8.8	2.59	0.88	1.71	11.1	9.19	48.1				
11d	9811-411	184.10.Eff-23d	11/27/98 16:56	11/27/98 23:55		8.21	103	1.90	0.037	21.8	8.7	2.59	0.85	1.74	11.1	9.19	48.1				
12	9811-397	184.10.Eff-25	11/28/98 20:51	11/29/98 3:52		9.37	118	2.06	0.040	21.7	8.8	2.70	0.80	1.90	11.1	9.21	48.1				
13	9811-399	184.10.Eff-27	11/30/98 0:56	11/30/98 8:06		10.54	133	2.18	0.042	21.4	8.8										
Effluent C	**EBCT:** 20 min	**Carbon Type:** Bituminous	**Influent pH:** 9	**Scaling Factor:** 12.6																	
1	9811-413	184.20.Eff-1	11/19/98 16:34	11/19/98 23:37		0.19	2	0.13	0.002	22.2	9.1	1.47	0.85	0.62	11.0	9.24	48.0				
2	9811-415	184.20.Eff-3	11/22/98 15:27	11/22/98 22:33		3.15	40	0.35	0.005	21.7	8.8	1.63	0.83	0.80	11.1	9.20	48.0				
3	9811-416	184.20.Eff-4	11/23/98 5:30	11/23/98 12:44		3.73	47	0.54	0.008	21.8	8.8	1.74	0.83	0.91	11.1	9.20	48.0				
4	9811-419	184.20.Eff-7	11/24/98 3:19	11/24/98 10:56		4.65	58	0.75	0.012	21.9	8.8	1.88	0.75	1.13	11.0	9.18	48.1				
4d	9811-443	184.20.Eff-7d	11/24/98 3:19	11/24/98 10:56		4.65	58	0.75	0.012	21.9	8.8	1.88	0.89	0.99	11.0	9.17	48.1				
5	9811-422	184.20.Eff-10	11/25/98 9:29	11/25/98 16:42		5.90	74	0.90	0.014	22.1	8.7	1.97	0.84	1.13	11.0	9.17	48.2				
6	9811-424	184.20.Eff-12	11/26/98 8:01	11/26/98 15:20		6.84	86	1.00	0.017	22.1	8.9	2.05	0.87	1.18	11.0	9.21	48.2				
7	9811-428	184.20.Eff-16	11/28/98 10:50	11/28/98 17:50		8.95	113	1.21	0.021	23.1	8.7	2.15	0.90	1.25	11.1	9.19	48.0				
7d	9811-448	184.20.Eff-16d	11/28/98 10:50	11/28/98 17:50		8.95	113	1.21	0.021	23.2	8.7	2.15	0.84	1.31	11.1	9.17	48.0				
8	9811-432	184.20.Eff-20	11/30/98 19:52	12/1/98 3:09		11.33	142	1.36	0.024	22.5	8.6	2.20	0.93	1.27	11.0	9.12	47.5				
9	9811-433	184.20.Eff-21	12/3/98 6:04	12/3/98 13:16		13.76	173	1.56	0.028	22.7	8.7	2.27	0.55	1.72	11.1	9.15	48.1				
10	9811-435	184.20.Eff-23	12/5/98 9:00	12/5/98 16:02		15.88	200	1.65	0.031	23.2	8.8	2.32	1.19	1.13	11.1	9.21	48.1				
10d	9811-451	184.20.Eff-23d	12/5/98 9:00	12/5/98 16:02		15.88	200	1.65	0.031	23.2	8.8	2.32	1.16	1.16	11.1	9.22	48.2				
11	9811-436	184.20.Eff-24	12/7/98 17:20	12/8/98 0:30		18.23	229	1.88	0.034	21.4	8.6	2.44	1.20	1.24	11.1	9.16	47.9				
12	9811-437	184.20.Eff-25	12/10/98 1:26	12/10/98 8:17		20.56	258	2.05	0.040	22.1	8.7	2.05	0.82	1.23	11.2	9.21	48.6				

ND: Non-detect. Blank Results: Either analysis was not performed or result did not meet ICR QC requirements.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #4

Client: City of Topeka **Study#:** 184

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
Effluent C		**EBCT:** 10 min	**Carbon Type:** Bituminous			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9811-373	184.10.Eff-1	2	0.22	3	ND	1.1	ND	1.6	**2.7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	**ND**		
2	9811-377	184.10.Eff-5	19	0.41	20	ND	6.7	2.6	7.6	**16.9**	ND	2	ND	ND	2	1	ND	ND	ND	**6**	**6**		
3	9811-378	184.10.Eff-6	23	0.56	34	1.5	9.7	4.1	9.0	**24.3**	ND	7	ND	ND	3	2	ND	ND	ND	**12**	**12**		
3d	9811-403	184.10.Eff-6d	23	0.54	33	1.6	9.9	4.3	9.2	**25.0**	ND	7	ND	ND	3	2	ND	ND	ND	**11**	**11**		
4	9811-379	184.10.Eff-7	26	0.67	44	2.1	13.1	6.0	10.7	**31.9**	ND	8	ND	ND	3	2	1	ND	ND	**13**	**14**		
5	9811-380	184.10.Eff-8	30	0.82	53	3.2	15.5	8.3	10.2	**37.2**	ND	7	ND	ND	4	3	ND	ND	ND	**15**	**15**		
6	9811-382	184.10.Eff-10	37	1.03	68	5.2	17.2	11.2	8.6	**42.2**	ND	7	ND	ND	5	5	1	ND	ND	**17**	**18**		
7	9811-384	184.10.Eff-12	44	1.21	83	7.9	18.1	14.2	7.1	**47.2**	ND	7	3	ND	6	5	1	ND	ND	**21**	**23**		
8	9811-386	184.10.Eff-14	55	1.31	96	10.7	18.3	16.1	5.8	**51.0**	ND	8	6	ND	6	6	2	ND	ND	**26**	**28**		
8d	9811-406	184.10.Eff-14d	55	1.31	97	10.8	18.3	16.3	6.6	**52.0**	ND	8	6	ND	6	6	2	ND	ND	**26**	**27**		
9	9811-388	184.10.Eff-16	63	1.52	112	16.4	19.9	19.8	5.1	**61.3**	ND	9	6	ND	5	6	2	ND	ND	**26**	**28**		
10	9811-393	184.10.Eff-21	81	1.71	127	19.2	16.8	20.0	3.5	**59.5**	ND	10	5	ND	5	7	3	ND	ND	**28**	**30**		
11	9811-395	184.10.Eff-23	103	1.92	154	24.3	17.7	22.3	3.7	**68.1**	ND	10	7	ND	5	8	3	ND	ND	**30**	**33**		
11d	9811-411	184.10.Eff-23d	103	1.90	145	23.5	17.2	21.6	3.5	**65.8**	ND	10	6	ND	5	7	3	ND	ND	**29**	**31**		
12	9811-397	184.10.Eff-25	118	2.06	155	27.1	17.1	22.8	3.1	**70.0**	ND	11	7	ND	5	8	3	ND	ND	**31**	**34**		
13	9811-399	184.10.Eff-27	133	2.18																			
Effluent C		**EBCT:** 20 min	**Carbon Type:** Bituminous			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9811-413	184.20.Eff-1	2	0.13	4	ND	ND	ND	1.2	**1.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**ND**	**ND**		
2	9811-415	184.20.Eff-3	40	0.35	18	ND	6.1	2.0	7.3	**15.4**	ND	ND	ND	ND	2	ND	ND	ND	ND	**2**	**2**		
3	9811-416	184.20.Eff-4	47	0.54	33	1.1	9.4	3.6	9.0	**23.1**	ND	10	ND	ND	3	2	ND	ND	ND	**15**	**15**		
4	9811-419	184.20.Eff-7	58	0.75	46	2.1	13.0	6.4	9.5	**30.9**	ND	7	ND	ND	4	3	ND	ND	ND	**14**	**14**		
4d	9811-443	184.20.Eff-7d	58	0.75	44	2.0	12.4	5.8	9.6	**29.8**	ND	7	ND	ND	4	3	ND	ND	ND	**13**	**13**		
5	9811-422	184.20.Eff-10	74	0.90	55	3.5	15.8	9.1	9.6	**37.9**	ND	5	ND	ND	5	4	ND	ND	ND	**14**	**14**		
6	9811-424	184.20.Eff-12	86	1.00	66	5.0	17.5	11.5	8.8	**42.9**	ND	6	ND	ND	5	5	1	ND	ND	**16**	**17**		
7	9811-428	184.20.Eff-16	113	1.21	87	8.8	19.3	15.3	7.5	**51.0**	ND	4	6	ND	5	5	1	ND	ND	**21**	**22**		
7d	9811-448	184.20.Eff-16d	113	1.21	83	8.3	18.6	14.8	7.4	**49.1**	ND	4	6	ND	5	5	1	ND	ND	**20**	**22**		
8	9811-432	184.20.Eff-20	142	1.36	99	10.6	17.4	15.9	5.2	**49.1**	ND	5	6	ND	6	6	2	ND	ND	**23**	**26**		
9	9811-433	184.20.Eff-21	173	1.56	102	13.2	17.1	16.6	4.4	**51.2**	ND	6	5	ND	6	6	2	ND	ND	**23**	**25**		
10	9811-435	184.20.Eff-23	200	1.65	126	19.1	16.7	19.9	4.0	**59.7**	ND	7	6	ND	5	6	3	ND	ND	**24**	**26**		
10d	9811-451	184.20.Eff-23d	200	1.65	123	17.8	16.7	18.5	3.6	**56.6**	ND	7	6	ND	5	6	2	ND	ND	**24**	**26**		
11	9811-436	184.20.Eff-24	229	1.88	135	19.0	14.8	18.2	3.3	**55.3**	ND	9	6	ND	4	7	3	ND	ND	**26**	**28**		
12	9811-437	184.20.Eff-25	258	2.05	149	23.1	14.8	20.0	3.3	**61.2**	ND	10	6	ND	4	7	3	ND	ND	**27**	**30**		

ND: Non-detect. Blank Results: Either analysis was not performed or result did not meet ICR QC requirements.

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #4

Client: City of Topeka **Study#:** 184

No.	Sample ID	Client Sample ID	Start Date/Time		End Date/Time		Stop T (days)	Run L (days)	F-S L (days)	TOC (mg/L)	UV254 (1/cm)	Temp (ºC)	pH	SDS Chlorination Conditions* Dose (mg/L)	Res. (mg/L)	Dem (mg/L)	Temp (ºC)	pH	Time hrs	Alk. (mg/L)	Hard-Tot (mg/L as CaCO3)	Hard-CA	Turb. (ntu)
13	9811-438	184.20.Eff-26	12/11/98	5:17	12/11/98	12:22		21.72	273	2.10		22.0	8.5										
Influent A		**EBCT:**	**Carbon Type:**			**Influent pH:**	9		**Scaling Factor:**	12.6													
1	9811-453	184.Inf.A-1	11/19/98	16:45	11/19/98	16:45		0.05	1											52	100	62	
2	9811-454	184.Inf.A-2	11/30/98	11:15	11/30/98	11:15		10.82	136											53	101	63	
Influent B		**EBCT:**	**Carbon Type:**			**Influent pH:**	9		**Scaling Factor:**	12.6													
1	9811-455	184.Inf.B-1	11/19/98	16:40	11/19/98	16:40		0.05	1	2.98	0.065	19.6	9.0	3.39	0.86	2.53	11.0	9.21	48.0				0.15
2	9811-456	184.Inf.B-2	11/21/98	13:30	11/21/98	13:30		1.92	24	2.84		17.4	9.0										
3	9811-457	184.Inf.B-3	11/25/98	13:10	11/25/98	13:10		5.90	74	2.85		18.0	9.1										
4	9811-458	184.Inf.B-4	11/30/98	11:10	11/30/98	11:10		10.82	136	2.86	0.064	18.0	9.0	3.25	0.68	2.57	11.1	9.24	48.1				0.10
5	9811-459	184.Inf.B-5	12/6/98	14:50	12/6/98	14:50		16.97	213	2.81		19.2	9.0										
6	9811-460	184.Inf.B-6	12/10/98	10:30	12/10/98	10:30		20.79	261	2.79	0.064	18.3	9.0	3.30	0.91	2.39	11.2	9.26	48.6				0.10
PreStudy		**EBCT:**	**Carbon Type:**			**Influent pH:**			**Scaling Factor:**														
1	9811-319	Topeka. Settled	11/16/98	10:00	11/16/98	10:00				3.29													
2	9811-338	Top.Settled.Drum	11/17/98	9:45	11/17/98	9:45				2.75													
3	9811-337	Top.Raw	11/17/98	10:30	11/17/98	10:30				4.87													
4	9811-348	Top.Filtered.S&H	11/19/98	0:00	11/19/98	0:00				2.80													
5	9811-347	Top.Settled on Arrival	11/19/98	0:00	11/19/98	0:00				2.83													

***Target SDS Chlorination Conditions**

Free Cl2 Residual: 0.80 mg/L **pH:** 9.2 **Temperature:** 11.0 ºC **Holding time:** 48.0 hrs

Study Comments

Summers & Hooper, Inc.

RSSCT Sampling Summary Report

Study title: ICR RSSCT #4

Client: City of Topeka **Study#:** 184

#	SamplesID	ClientSampleID	F-S L (days)	TOC (mg/L)	TOX (µg Cl-/L)	Trihalomethanes (µg/L) CF	BDCM	DBCM	BF	TTHM	Haloacetic Acids (µg/L) MCAA	DCAA	TCAA	MBAA	DBAA	BCAA	BDCAA	DBCAA	TBAA	HAA6	HAA9	NH3-N (mg/L)	Brom (µg/L)
13	9811-438	184.20.Eff-26	273	2.10																			
Influent A		**EBCT:**	**Carbon Type:**			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9811-453	184.Inf.A-1	1																			ND	81
2	9811-454	184.Inf.A-2	136																			ND	78
Influent B		**EBCT:**	**Carbon Type:**			**Influent pH:** 9			**Scaling Factor:** 12.6														
1	9811-455	184.Inf.B-1	1	2.98	263	51.6	13.4	29.0	1.6	**95.6**	ND	21	10	ND	3	9	4	ND	ND	**42**	**46**		
2	9811-456	184.Inf.B-2	24	2.84																			
3	9811-457	184.Inf.B-3	74	2.85																			
4	9811-458	184.Inf.B-4	136	2.86	246	59.2	14.4	31.6	1.8	**107.0**	ND	21	11	ND	3	9	4	ND	ND	**45**	**49**		
5	9811-459	184.Inf.B-5	213	2.81																			
6	9811-460	184.Inf.B-6	261	2.79	249	48.3	12.3	25.2	1.7	**87.4**	ND	20	8	ND	3	8	4	ND	ND	**39**	**43**		
PreStudy		**EBCT:**	**Carbon Type:**			**Influent pH:**			**Scaling Factor:**														
1	9811-319	Topeka. Settled		3.29																			
2	9811-338	Top.Settled.Drum		2.75																			
3	9811-337	Top.Raw		4.87																			
4	9811-348	Top.Filtered.S&H		2.80																			
5	9811-347	Top.Settled on Arrival		2.83																			

Summers & Hooper, Inc.
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Laboratory Report

Client:

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study Title: ICR RSSCT #1

Study #: 108

Reviewed By: _____
Stuart M. Hooper

Date Reviewed: 7/13/99

Electronic copies of the results and quality control data are available upon request.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237
Phone: (513) 679-2200
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Laboratory Test Results

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 108
Study Title: ICR RSSCT #1

Sample ID: Raw Screening **S&H ID:** 9802-124 **Date Sampled:** 2/9/98 8:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1	TOC-ICR	TOC	5.56	mg/L	SM 5310 C	1	0.50	2/9/98		2/10/98	7-0-187
2	TOC-ICR	TOC (Dupl)	5.76	mg/L	SM 5310 C	1	0.50	2/9/98		2/10/98	7-0-187
			5.66	**mg/L**	**3.5 % RPD**						

Sample ID: Settled Screening **S&H ID:** 9802-125 **Date Sampled:** 2/9/98 8:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
3	TOC-ICR	TOC	3.13	mg/L	SM 5310 C	1	0.50	2/9/98		2/10/98	7-0-187
4	TOC-ICR	TOC	3.30	mg/L	SM 5310 C	1	0.50	2/9/98		2/12/98	7-0-189
5	TOC-ICR	TOC (Dupl)	3.13	mg/L	SM 5310 C	1	0.50	2/9/98		2/10/98	7-0-187
6	TOC-ICR	TOC (Dupl)	3.38	mg/L	SM 5310 C	1	0.50	2/9/98		2/12/98	7-0-189
			3.23	**mg/L**	**3.9 % RPD**						

Sample ID: 2/10 Settled **S&H ID:** 9802-143 **Date Sampled:** 2/10/98 7:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
7	TOC-ICR	TOC	3.36	mg/L	SM 5310 C	1	0.50	2/10/98		2/12/98	7-0-189
8	TOC-ICR	TOC (Dupl)	3.30	mg/L	SM 5310 C	1	0.50	2/10/98		2/12/98	7-0-189
			3.33	**mg/L**	**1.8 % RPD**						

Sample ID: 2/12 Barrel **S&H ID:** 9802-144 **Date Sampled:** 2/12/98 12:05:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
9	TOC-ICR	TOC	3.38	mg/L	SM 5310 C	1	0.50	2/12/98		2/12/98	7-0-189
10	TOC-ICR	TOC (Dupl)	3.37	mg/L	SM 5310 C	1	0.50	2/12/98		2/12/98	7-0-189
			3.38	**mg/L**	**0.3 % RPD**						

Sample ID: 2/12 Filtered **S&H ID:** 9802-145 **Date Sampled:** 2/12/98 12:40:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
11	TOC-ICR	TOC	3.28	mg/L	SM 5310 C	1	0.50	2/12/98		2/12/98	7-0-189
12	TOC-ICR	TOC (Dupl)	3.27	mg/L	SM 5310 C	1	0.50	2/12/98		2/12/98	7-0-189
			3.27	**mg/L**	**0.3 % RPD**						

Sample ID: 108.INF.A-1 **S&H ID:** 9802-148 **Date Sampled:** 2/12/98 6:40:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
13	ALK	Alkalinity	41	mg/L	SM 2320 B	1	5	2/12/98		2/13/98	1-0-14
14	ALK	Alkalinity (Dupl)	41	mg/L	SM 2320 B	1	5	2/12/98		2/13/98	1-0-14

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

			41	**mg/L**	**0.0 % RPD**						
15	NH3	Ammonia Nitrogen	0.10	mg/L	EPA 350.1	1	0.05	2/12/98		2/26/98	MW73654
16	BR	Bromide	0.086	mg/L	EPA 300.0 A	1	0.020	2/12/98		2/24/98	MW73580
17	CaHard	Calcium Hardness	70	mg/L CaCO3	SM 3500-Ca D	1	10	2/12/98		2/13/98	33-0-14
18	CaHard	Calcium Hardness (Dupl)	69	mg/L CaCO3	SM 3500-Ca D	1	10	2/12/98		2/13/98	33-0-14
			70	**mg/L CaCO3**	**1.4 % RPD**						
19	TotHard	Total Hardness	80	mg/L CaCO3	SM 2340 C	1	5	2/12/98		2/13/98	3-0-14
20	TotHard	Total Hardness (Dupl)	82	mg/L CaCO3	SM 2340 C	1	5	2/12/98		2/13/98	3-0-14
			81	**mg/L CaCO3**	**2.5 % RPD**						

Sample ID: 108.INF.B-1 **S&H ID:** 9802-149 **Date Sampled:** 2/12/98 6:45:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
21	Cl2Dose	Chlorine Dose	3.71	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
22	Cl2Res	Chlorine Residual	0.86	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
23	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	102.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
24	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
25	HAA-ICR	Bromochloroacetic acid	7.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
26	HAA-ICR	Bromodichloroacetic acid	4.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
27	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
28	HAA-ICR	Dibromoacetic acid	3.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
29	HAA-ICR	Dichloroacetic acid	14.6	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
30	HAA-ICR	Monobromoacetic acid	1.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
31	HAA-ICR	Monochloroacetic acid	3.6	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
32	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
33	HAA-ICR	Trichloroacetic acid	7.4	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
34	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
35	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
36	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/12/98		2/12/98	n/a
37	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
38	TEMP	Temperature	12.5	ºC	SM 2550 B	1	n/a	2/12/98		2/12/98	n/a
39	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
40	TOC-ICR	TOC	3.24	mg/L	SM 5310 C	1	0.50	2/12/98		2/13/98	7-0-190
41	TOC-ICR	TOC (Dupl)	3.27	mg/L	SM 5310 C	1	0.50	2/12/98		2/13/98	7-0-190
			3.25	**mg/L**	**0.9 % RPD**						
42	TOX-ICR	TOX	222	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
43	TOX-ICR	TOX (Dupl)	215	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
			219	**µg Cl-/L**	**3.2 % RPD**						
44	THM-ICR	1,2,3-Trichloropropane (Surrogate)	89.6	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

45	THM-ICR	Bromodichloromethane	29.2	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
46	THM-ICR	Bromoform	2.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
47	THM-ICR	Chloroform	39.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
48	THM-ICR	Dibromochloromethane	15.7	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
49	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	2/12/98		2/13/98	9-0-7
50	UV-ICR	UV	0.060	1/cm	SM 5910 B	1	0.009	2/12/98		2/13/98	8-0-131
51	UV-ICR	UV (Dupl)	0.060	1/cm	SM 5910 B	1	0.009	2/12/98		2/13/98	8-0-131
			0.060	**1/cm**	**0.0 % RPD**						

Sample ID: 108.10.Eff-1 **S&H ID:** 9802-150 **Date Sampled:** 2/13/98 8:03:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
52	Cl2Dose	Chlorine Dose	2.13	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
53	Cl2Res	Chlorine Residual	0.79	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
54	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	99.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
55	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
56	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
57	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
58	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
59	HAA-ICR	Dibromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
60	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
61	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
62	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
63	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
64	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
65	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
66	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
67	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/13/98		2/13/98	n/a
68	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
69	TEMP	Temperature	20.3	ºC	SM 2550 B	1	n/a	2/13/98		2/13/98	n/a
70	TIME	Cl2 Incubation Time	47.7	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
71	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	2/13/98		2/13/98	7-0-190
72	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	2/13/98		2/13/98	7-0-190
			ND	**mg/L**							
73	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
74	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
			ND	**µg Cl-/L**							
75	THM-ICR	1,2,3-Trichloropropane (Surrogate)	99.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

76	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
77	THM-ICR	Bromoform	2.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
78	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
79	THM-ICR	Dibromochloromethane	1.3	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
80	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/13/98	8-0-131
81	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/13/98	8-0-131
			ND	**1/cm**							

Sample ID: 108.20.Eff-1 **S&H ID:** 9802-151 **Date Sampled:** 2/13/98 8:03:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
82	Cl2Dose	Chlorine Dose	2.21	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
83	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
84	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	106.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
85	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
86	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
87	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
88	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
89	HAA-ICR	Dibromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
90	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
91	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
92	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
93	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
94	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
95	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
96	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
97	pH	pH	9.3	Unit	SM 4500-H+ B	1	n/a	2/13/98		2/13/98	n/a
98	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
99	TEMP	Temperature	20.1	ºC	SM 2550 B	1	n/a	2/13/98		2/13/98	n/a
100	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
101	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	2/13/98		2/13/98	7-0-190
102	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	2/13/98		2/13/98	7-0-190
			ND	**mg/L**							
103	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
104	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
			ND	**µg Cl-/L**							
105	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.0	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
106	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
107	THM-ICR	Bromoform	1.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

108	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
109	THM-ICR	Dibromochloromethane	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
110	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/13/98	8-0-131
111	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/13/98	8-0-131
			ND	**1/cm**							

Sample ID: 108.10.Eff-2 **S&H ID:** 9802-160 **Date Sampled:** 2/13/98 2:30:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
112	Cl2Dose	Chlorine Dose	2.30	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
113	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
114	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	107.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
115	HAA-ICR	2-Bromopropionic acid (Surrogate)	94.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
116	HAA-ICR	Bromochloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
117	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
118	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
119	HAA-ICR	Dibromoacetic acid	1.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
120	HAA-ICR	Dichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
121	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
122	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
123	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
124	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
125	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
126	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
127	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	2/13/98		2/13/98	n/a
128	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
129	TEMP	Temperature	20.8	ºC	SM 2550 B	1	n/a	2/13/98		2/13/98	n/a
130	TIME	Cl2 Incubation Time	47.7	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
131	TOC-ICR	TOC	0.53	mg/L	SM 5310 C	1	0.50	2/13/98		2/13/98	7-0-190
132	TOC-ICR	TOC (Dupl)	0.53	mg/L	SM 5310 C	1	0.50	2/13/98		2/13/98	7-0-190
			0.53	**mg/L**	**0.0 % RPD**						
133	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
134	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
			ND	**µg Cl-/L**							
135	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
136	THM-ICR	Bromodichloromethane	1.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
137	THM-ICR	Bromoform	5.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
138	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
139	THM-ICR	Dibromochloromethane	4.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

140	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/13/98	8-0-131
141	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/13/98	8-0-131
			ND	**1/cm**							

Sample ID: 108.10.Eff-3 **S&H ID:** 9802-173 **Date Sampled:** 2/13/98 6:09:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
142	Cl2Dose	Chlorine Dose	2.39	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
143	Cl2Res	Chlorine Residual	0.86	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
144	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	108.0	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
145	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.0	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
146	HAA-ICR	Bromochloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
147	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
148	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
149	HAA-ICR	Dibromoacetic acid	2.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
150	HAA-ICR	Dichloroacetic acid	4.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
151	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
152	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
153	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
154	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
155	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
156	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
157	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	2/13/98		2/13/98	n/a
158	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
159	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	2/13/98		2/13/98	n/a
160	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
161	TOC-ICR	TOC	0.71	mg/L	SM 5310 C	1	0.50	2/13/98		2/14/98	7-0-191
162	TOC-ICR	TOC (Dupl)	0.79	mg/L	SM 5310 C	1	0.50	2/13/98		2/14/98	7-0-191
			0.75	**mg/L**	**10.7 % RPD**						
163	TOX-ICR	TOX	27	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
164	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
			25	**µg Cl-/L**							
165	THM-ICR	1,2,3-Trichloropropane (Surrogate)	88.4	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
166	THM-ICR	Bromodichloromethane	3.1	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
167	THM-ICR	Bromoform	7.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
168	THM-ICR	Chloroform	1.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
169	THM-ICR	Dibromochloromethane	7.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
170	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/15/98	8-0-132
171	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	2/13/98		2/15/98	8-0-132

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

ND 1/cm

Sample ID: 108.10.Eff-4 **S&H ID:** 9802-174 **Date Sampled:** 2/13/98 9:40:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
172	Cl2Dose	Chlorine Dose	2.43	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
173	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
174	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	109.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
175	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
176	HAA-ICR	Bromochloroacetic acid	2.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
177	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
178	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
179	HAA-ICR	Dibromoacetic acid	2.9	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
180	HAA-ICR	Dichloroacetic acid	5.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
181	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
182	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
183	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
184	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
185	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
186	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
187	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	2/13/98		2/13/98	n/a
188	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
189	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	2/13/98		2/13/98	n/a
190	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
191	TOC-ICR	TOC	0.83	mg/L	SM 5310 C	1	0.50	2/13/98		2/14/98	7-0-191
192	TOC-ICR	TOC (Dupl)	0.86	mg/L	SM 5310 C	1	0.50	2/13/98		2/14/98	7-0-191
			0.84	**mg/L**	**3.6 % RPD**						
193	TOX-ICR	TOX	32	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
194	TOX-ICR	TOX (Dupl)	33	µg Cl-/L	SM 5320 B	1	25	2/13/98		2/19/98	12-0-95
			33	**µg Cl-/L**	**3.0 % RPD**						
195	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.8	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
196	THM-ICR	Bromodichloromethane	4.7	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
197	THM-ICR	Bromoform	8.8	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
198	THM-ICR	Chloroform	2.3	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
199	THM-ICR	Dibromochloromethane	9.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
200	UV-ICR	UV	0.010	1/cm	SM 5910 B	1	0.009	2/13/98		2/15/98	8-0-132
201	UV-ICR	UV (Dupl)	0.010	1/cm	SM 5910 B	1	0.009	2/13/98		2/15/98	8-0-132
			0.010	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Sample ID: 108.10.Eff-5 **S&H ID:** 9802-175 **Date Sampled:** 2/14/98 8:21:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
202	Cl2Dose	Chlorine Dose	2.54	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
203	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
204	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	114.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
205	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
206	HAA-ICR	Bromochloroacetic acid	3.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
207	HAA-ICR	Bromodichloroacetic acid	1.4	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
208	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
209	HAA-ICR	Dibromoacetic acid	3.4	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
210	HAA-ICR	Dichloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
211	HAA-ICR	Monobromoacetic acid	1.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
212	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/27/98	0-89-0
213	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/27/98	0-89-0
214	HAA-ICR	Trichloroacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/27/98	0-89-0
215	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
216	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
217	pH	pH	7.1	Unit	SM 4500-H+ B	1	n/a	2/14/98		2/14/98	n/a
218	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
219	TEMP	Temperature	20.7	ºC	SM 2550 B	1	n/a	2/14/98		2/14/98	n/a
220	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
221	TOC-ICR	TOC	1.11	mg/L	SM 5310 C	1	0.50	2/14/98		2/14/98	7-0-191
222	TOC-ICR	TOC (Dupl)	1.12	mg/L	SM 5310 C	1	0.50	2/14/98		2/14/98	7-0-191
			1.12	**mg/L**	**0.9 % RPD**						
223	TOX-ICR	TOX	49	µg Cl-/L	SM 5320 B	1	25	2/14/98		2/19/98	12-0-95
224	TOX-ICR	TOX (Dupl)	48	µg Cl-/L	SM 5320 B	2	25	2/14/98		2/19/98	12-0-95
			49	**µg Cl-/L**	**2.0 % RPD**						
225	THM-ICR	1,2,3-Trichloropropane (Surrogate)	105.6	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
226	THM-ICR	Bromodichloromethane	7.7	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
227	THM-ICR	Bromoform	10.2	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
228	THM-ICR	Chloroform	3.7	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
229	THM-ICR	Dibromochloromethane	13.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
230	UV-ICR	UV	0.014	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
231	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
			0.014	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Sample ID: 108.10.Eff-5d **S&H ID:** 9802-176 **Date Sampled:** 2/14/98 8:21:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
232	Cl2Dose	Chlorine Dose	2.53	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
233	Cl2Res	Chlorine Residual	0.79	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
234	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	109.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
235	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
236	HAA-ICR	Bromochloroacetic acid	3.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
237	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
238	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
239	HAA-ICR	Dibromoacetic acid	3.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
240	HAA-ICR	Dichloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
241	HAA-ICR	Monobromoacetic acid	1.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
242	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
243	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
244	HAA-ICR	Trichloroacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
245	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
246	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
247	pH	pH	7.5	Unit	SM 4500-H+ B	1	n/a	2/14/98		2/14/98	n/a
248	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
249	TEMP	Temperature	20.8	ºC	SM 2550 B	1	n/a	2/14/98		2/14/98	n/a
250	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
251	TOC-ICR	TOC	1.11	mg/L	SM 5310 C	1	0.50	2/14/98		2/14/98	7-0-191
252	TOC-ICR	TOC (Dupl)	1.08	mg/L	SM 5310 C	1	0.50	2/14/98		2/14/98	7-0-191
			1.10	**mg/L**	**2.7 % RPD**						
253	TOX-ICR	TOX	47	µg Cl-/L	SM 5320 B	2	25	2/14/98		2/19/98	12-0-95
254	TOX-ICR	TOX (Dupl)	50	µg Cl-/L	SM 5320 B	1	25	2/14/98		2/19/98	12-0-95
			49	**µg Cl-/L**	**6.1 % RPD**						
255	THM-ICR	1,2,3-Trichloropropane (Surrogate)	107.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
256	THM-ICR	Bromodichloromethane	8.1	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
257	THM-ICR	Bromoform	10.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
258	THM-ICR	Chloroform	3.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
259	THM-ICR	Dibromochloromethane	13.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
260	UV-ICR	UV	0.014	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
261	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
			0.014	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Sample ID: 108.10.Eff-6 **S&H ID:** 9802-180 **Date Sampled:** 2/14/98 11:52:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
262	Cl2Dose	Chlorine Dose	2.63	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
263	Cl2Res	Chlorine Residual	0.83	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
264	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	109.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
265	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.4	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
266	HAA-ICR	Bromochloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
267	HAA-ICR	Bromodichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
268	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
269	HAA-ICR	Dibromoacetic acid	3.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
270	HAA-ICR	Dichloroacetic acid	6.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
271	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
272	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
273	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
274	HAA-ICR	Trichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
275	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
276	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
277	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	2/14/98		2/14/98	n/a
278	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
279	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	2/14/98		2/14/98	n/a
280	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
281	TOC-ICR	TOC	1.34	mg/L	SM 5310 C	1	0.50	2/14/98		2/14/98	7-0-191
282	TOC-ICR	TOC (Dupl)	1.36	mg/L	SM 5310 C	1	0.50	2/14/98		2/14/98	7-0-191
			1.35	**mg/L**	**1.5 % RPD**						
283	TOX-ICR	TOX	76	µg Cl-/L	SM 5320 B	1	25	2/14/98		2/20/98	12-0-96
284	TOX-ICR	TOX (Dupl)	74	µg Cl-/L	SM 5320 B	1	25	2/14/98		2/20/98	12-0-96
			75	**µg Cl-/L**	**2.7 % RPD**						
285	THM-ICR	1,2,3-Trichloropropane (Surrogate)	105.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
286	THM-ICR	1,2,3-Trichloropropane (Surrogate) (Lab Dupl)	105.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
			105.2	**%**	**0.0 % RPD**						
287	THM-ICR	Bromodichloromethane	10.8	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
288	THM-ICR	Bromodichloromethane (Lab Dupl)	10.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
			10.9	**µg/L**	**0.9 % RPD**						
289	THM-ICR	Bromoform	10.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
290	THM-ICR	Bromoform (Lab Dupl)	10.2	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
			10.1	**µg/L**	**2.0 % RPD**						
291	THM-ICR	Chloroform	5.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
292	THM-ICR	Chloroform (Lab Dupl)	5.8	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

			5.7	**µg/L**	**3.5 % RPD**						
293	THM-ICR	Dibromochloromethane	15.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
294	THM-ICR	Dibromochloromethane (Lab Dupl)	16.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
			16.3	**µg/L**	**4.3 % RPD**						
295	UV-ICR	UV	0.017	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
296	UV-ICR	UV (Dupl)	0.017	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
			0.017	**1/cm**	**0.0 % RPD**						

Sample ID: 108.10.Eff-9 **S&H ID:** 9802-183 **Date Sampled:** 2/15/98 1:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
297	Cl2Dose	Chlorine Dose	2.69	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
298	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
299	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	110.4	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
300	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
301	HAA-ICR	Bromochloroacetic acid	4.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
302	HAA-ICR	Bromodichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
303	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
304	HAA-ICR	Dibromoacetic acid	4.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
305	HAA-ICR	Dichloroacetic acid	6.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
306	HAA-ICR	Monobromoacetic acid	1.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
307	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
308	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
309	HAA-ICR	Trichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
310	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
311	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
312	pH	pH	7.3	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
313	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
314	TEMP	Temperature	20.8	ºC	SM 2550 B	1	n/a	2/15/98		2/15/98	n/a
315	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
316	TOC-ICR	TOC	1.48	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
317	TOC-ICR	TOC (Dupl)	1.49	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			1.48	**mg/L**	**0.7 % RPD**						
318	TOX-ICR	TOX	78	µg Cl-/L	SM 5320 B	1	25	2/15/98		2/20/98	12-0-96
319	TOX-ICR	TOX (Dupl)	83	µg Cl-/L	SM 5320 B	1	25	2/15/98		2/20/98	12-0-96
			81	**µg Cl-/L**	**6.2 % RPD**						
320	THM-ICR	1,2,3-Trichloropropane (Surrogate)	106.8	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
321	THM-ICR	Bromodichloromethane	14.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
322	THM-ICR	Bromoform	9.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

323	THM-ICR	Chloroform	7.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
324	THM-ICR	Dibromochloromethane	19.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
325	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	2/15/98		2/15/98	8-0-132
326	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	2/15/98		2/15/98	8-0-132
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-4 **S&H ID:** 9802-185 **Date Sampled:** 2/14/98 6:43:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
327	Cl2Dose	Chlorine Dose	2.30	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
328	Cl2Res	Chlorine Residual	0.89	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
329	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	115.6	%	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
330	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
331	HAA-ICR	Bromochloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
332	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
333	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/14/98	2/27/98	2/28/98	0-89-0
334	HAA-ICR	Dibromoacetic acid	2.0	µg/L	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
335	HAA-ICR	Dichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
336	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
337	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/14/98	2/27/98	2/28/98	0-89-0
338	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/14/98	2/27/98	2/28/98	0-89-0
339	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/14/98	2/27/98	2/28/98	0-89-0
340	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
341	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
342	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	2/14/98		2/14/98	n/a
343	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
344	TEMP	Temperature	22.5	ºC	SM 2550 B	1	n/a	2/14/98		2/14/98	n/a
345	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
346	TOC-ICR	TOC	0.51	mg/L	SM 5310 C	1	0.50	2/14/98		2/16/98	7-0-192
347	TOC-ICR	TOC (Dupl)	0.53	mg/L	SM 5310 C	1	0.50	2/14/98		2/16/98	7-0-192
			0.52	**mg/L**	**3.8 % RPD**						
348	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	2/14/98		2/20/98	12-0-96
349	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	2/14/98		2/20/98	12-0-96
			ND	**µg Cl-/L**							
350	THM-ICR	1,2,3-Trichloropropane (Surrogate)	114.0	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
351	THM-ICR	Bromodichloromethane	1.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
352	THM-ICR	Bromoform	6.7	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
353	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
354	THM-ICR	Dibromochloromethane	5.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

355	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
356	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	2/14/98		2/15/98	8-0-132
			ND	**1/cm**							

Sample ID: 108.20.Eff-6 **S&H ID:** 9802-187 **Date Sampled:** 2/15/98 5:13:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
357	Cl2Dose	Chlorine Dose	2.37	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
358	Cl2Res	Chlorine Residual	0.88	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
359	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	109.6	%	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
360	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.8	%	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
361	HAA-ICR	Bromochloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
362	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
363	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/15/98	2/27/98	2/28/98	0-89-0
364	HAA-ICR	Dibromoacetic acid	2.6	µg/L	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
365	HAA-ICR	Dichloroacetic acid	6.0	µg/L	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
366	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
367	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/15/98	2/27/98	2/28/98	0-89-0
368	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/15/98	2/27/98	2/28/98	0-89-0
369	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/15/98	2/27/98	2/28/98	0-89-0
370	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
371	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
372	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
373	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
374	TEMP	Temperature	21.0	ºC	SM 2550 B	1	n/a	2/15/98		2/15/98	n/a
375	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
376	TOC-ICR	TOC	0.69	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
377	TOC-ICR	TOC (Dupl)	0.73	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			0.71	**mg/L**	**5.6 % RPD**						
378	TOX-ICR	TOX	28	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
379	TOX-ICR	TOX (Dupl)	31	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
			30	**µg Cl-/L**	**10.0 % RPD**						
380	THM-ICR	1,2,3-Trichloropropane (Surrogate)	106.0	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
381	THM-ICR	Bromodichloromethane	3.1	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
382	THM-ICR	Bromoform	8.1	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
383	THM-ICR	Chloroform	1.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
384	THM-ICR	Dibromochloromethane	7.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
385	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
386	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

ND 1/cm

Sample ID: 108.10.Eff-11 **S&H ID:** 9802-192 **Date Sampled:** 2/15/98 11:52:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
387	Cl2Dose	Chlorine Dose	2.76	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
388	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
389	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	111.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
390	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard) (Lab Dupl)	117.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			114.6	**%**	**5.2 % RPD**						
391	HAA-ICR	2-Bromopropionic acid (Surrogate)	92.4	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
392	HAA-ICR	2-Bromopropionic acid (Surrogate) (Lab Dupl)	92.4	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			92.4	**%**	**0.0 % RPD**						
393	HAA-ICR	Bromochloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
394	HAA-ICR	Bromochloroacetic acid (Lab Dupl)	4.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			4.0	**µg/L**	**10.0 % RPD**						
395	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
396	HAA-ICR	Bromodichloroacetic acid (Lab Dupl)	1.8	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			1.8	**µg/L**	**0.0 % RPD**						
397	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
398	HAA-ICR	Chlorodibromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
			ND	**µg/L**							
399	HAA-ICR	Dibromoacetic acid	3.4	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
400	HAA-ICR	Dibromoacetic acid (Lab Dupl)	3.8	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			3.6	**µg/L**	**11.1 % RPD**						
401	HAA-ICR	Dichloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
402	HAA-ICR	Dichloroacetic acid (Lab Dupl)	5.9	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			5.7	**µg/L**	**7.0 % RPD**						
403	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
404	HAA-ICR	Monobromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			ND	**µg/L**							
405	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
406	HAA-ICR	Monochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
			ND	**µg/L**							
407	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
408	HAA-ICR	Tribromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
			ND	**µg/L**							

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

409	HAA-ICR	Trichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
410	HAA-ICR	Trichloroacetic acid (Lab Dupl)	3.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
			2.9	**µg/L**	**10.3 % RPD**						
411	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
412	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
413	pH	pH	8.0	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
414	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
415	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	2/15/98		2/15/98	n/a
416	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
417	TOC-ICR	TOC	1.66	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
418	TOC-ICR	TOC (Dupl)	1.66	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			1.66	**mg/L**	**0.0 % RPD**						
419	TOX-ICR	TOX	95	µg Cl-/L	SM 5320 B	1	25	2/15/98		2/20/98	12-0-96
420	TOX-ICR	TOX (Dupl)	89	µg Cl-/L	SM 5320 B	1	25	2/15/98		2/20/98	12-0-96
			92	**µg Cl-/L**	**6.5 % RPD**						
421	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.4	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
422	THM-ICR	Bromodichloromethane	18.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
423	THM-ICR	Bromoform	9.7	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
424	THM-ICR	Chloroform	11.2	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
425	THM-ICR	Dibromochloromethane	22.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
426	UV-ICR	UV	0.024	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
427	UV-ICR	UV (Dupl)	0.025	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
			0.025	**1/cm**	**4.0 % RPD**						

Sample ID: 108.10.Eff-11d **S&H ID:** 9802-193 **Date Sampled:** 2/15/98 11:52:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
428	Cl2Dose	Chlorine Dose	2.75	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
429	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
430	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	113.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
431	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
432	HAA-ICR	Bromochloroacetic acid	5.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
433	HAA-ICR	Bromodichloroacetic acid	2.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
434	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
435	HAA-ICR	Dibromoacetic acid	4.6	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
436	HAA-ICR	Dichloroacetic acid	6.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
437	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
438	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
439	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

440	HAA-ICR	Trichloroacetic acid	3.6	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
441	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
442	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
443	pH	pH	8.0	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
444	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
445	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	2/15/98		2/15/98	n/a
446	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
447	TOC-ICR	TOC	1.68	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
448	TOC-ICR	TOC (Dupl)	1.59	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			1.64	**mg/L**	**5.5 % RPD**						
449	TOX-ICR	TOX	100	µg Cl-/L	SM 5320 B	1	25	2/15/98		2/20/98	12-0-96
450	TOX-ICR	TOX (Dupl)	105	µg Cl-/L	SM 5320 B	1	25	2/15/98		2/20/98	12-0-96
			103	**µg Cl-/L**	**4.9 % RPD**						
451	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
452	THM-ICR	Bromodichloromethane	16.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
453	THM-ICR	Bromoform	8.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
454	THM-ICR	Chloroform	9.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
455	THM-ICR	Dibromochloromethane	20.2	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
456	UV-ICR	UV	0.024	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
457	UV-ICR	UV (Dupl)	0.024	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
			0.024	**1/cm**	**0.0 % RPD**						

Sample ID: 108.INF.B-2 **S&H ID:** 9802-194 **Date Sampled:** 2/15/98 1:50:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
458	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
459	TEMP	Temperature	17.6	ºC	SM 2550 B	1	n/a	2/15/98		2/15/98	n/a
460	TOC-ICR	TOC	3.17	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
461	TOC-ICR	TOC (Dupl)	3.17	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			3.17	**mg/L**	**0.0 % RPD**						

Sample ID: 108.20.Eff-8 **S&H ID:** 9802-197 **Date Sampled:** 2/15/98 7:10:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
462	Cl2Dose	Chlorine Dose	2.45	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
463	Cl2Res	Chlorine Residual	0.84	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
464	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	113.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
465	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
466	HAA-ICR	Bromochloroacetic acid	2.4	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

467	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
468	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
469	HAA-ICR	Dibromoacetic acid	2.9	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
470	HAA-ICR	Dichloroacetic acid	5.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
471	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
472	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
473	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
474	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
475	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
476	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
477	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
478	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
479	TEMP	Temperature	22.5	ºC	SM 2550 B	1	n/a	2/15/98		2/15/98	n/a
480	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
481	TOC-ICR	TOC	0.87	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
482	TOC-ICR	TOC (Dupl)	0.91	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			0.89	**mg/L**	**4.5 % RPD**						
483	TOX-ICR	TOX	41	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
484	TOX-ICR	TOX (Dupl)	38	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
			40	**µg Cl-/L**	**7.5 % RPD**						
485	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.8	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
486	THM-ICR	Bromodichloromethane	5.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
487	THM-ICR	Bromoform	9.8	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
488	THM-ICR	Chloroform	2.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
489	THM-ICR	Dibromochloromethane	11.2	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
490	UV-ICR	UV	0.011	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
491	UV-ICR	UV (Dupl)	0.011	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
			0.011	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-10 **S&H ID:** 9802-199 **Date Sampled:** 2/16/98 9:06:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
492	Cl2Dose	Chlorine Dose	2.51	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
493	Cl2Res	Chlorine Residual	0.83	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
494	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	114.0	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
495	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.2	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
496	HAA-ICR	Bromochloroacetic acid	3.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
497	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
498	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

499	HAA-ICR	Dibromoacetic acid	3.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
500	HAA-ICR	Dichloroacetic acid	5.1	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
501	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
502	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
503	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
504	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
505	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
506	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
507	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	2/16/98		2/16/98	n/a
508	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
509	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	2/16/98		2/16/98	n/a
510	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
511	TOC-ICR	TOC	1.05	mg/L	SM 5310 C	1	0.50	2/16/98		2/16/98	7-0-192
512	TOC-ICR	TOC (Dupl)	1.04	mg/L	SM 5310 C	1	0.50	2/16/98		2/16/98	7-0-192
			1.04	**mg/L**	**1.0 % RPD**						
513	TOX-ICR	TOX	48	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
514	TOX-ICR	TOX (Dupl)	48	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
			48	**µg Cl-/L**	**0.0 % RPD**						
515	THM-ICR	1,2,3-Trichloropropane (Surrogate)	91.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
516	THM-ICR	Bromodichloromethane	6.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
517	THM-ICR	Bromoform	9.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
518	THM-ICR	Chloroform	2.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
519	THM-ICR	Dibromochloromethane	13.6	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
520	UV-ICR	UV	0.014	1/cm	SM 5910 B	1	0.009	2/16/98		2/16/98	8-0-133
521	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	2/16/98		2/16/98	8-0-133
			0.014	**1/cm**	**0.0 % RPD**						

Sample ID: 108.10.Eff-14 **S&H ID:** 9802-201 **Date Sampled:** 2/16/98 3:04:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
522	Cl2Dose	Chlorine Dose	2.82	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
523	Cl2Res	Chlorine Residual	0.80	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
524	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	111.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
525	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.4	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
526	HAA-ICR	Bromochloroacetic acid	5.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
527	HAA-ICR	Bromodichloroacetic acid	2.3	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
528	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
529	HAA-ICR	Dibromoacetic acid	4.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
530	HAA-ICR	Dichloroacetic acid	7.5	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

531	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
532	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
533	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
534	HAA-ICR	Trichloroacetic acid	3.7	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
535	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
536	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
537	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	2/16/98		2/16/98	n/a
538	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
539	TEMP	Temperature	21.0	ºC	SM 2550 B	1	n/a	2/16/98		2/16/98	n/a
540	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
541	TOC-ICR	TOC	1.81	mg/L	SM 5310 C	1	0.50	2/16/98		2/16/98	7-0-192
542	TOC-ICR	TOC (Dupl)	1.82	mg/L	SM 5310 C	1	0.50	2/16/98		2/16/98	7-0-192
			1.81	**mg/L**	**0.6 % RPD**						
543	TOX-ICR	TOX	104	µg Cl-/L	SM 5320 B	1	25	2/16/98		2/20/98	12-0-96
544	TOX-ICR	TOX (Dupl)	106	µg Cl-/L	SM 5320 B	1	25	2/16/98		2/20/98	12-0-96
			105	**µg Cl-/L**	**1.9 % RPD**						
545	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.2	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
546	THM-ICR	Bromodichloromethane	17.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
547	THM-ICR	Bromoform	6.5	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
548	THM-ICR	Chloroform	11.4	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
549	THM-ICR	Dibromochloromethane	18.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
550	UV-ICR	UV	0.029	1/cm	SM 5910 B	1	0.009	2/16/98		2/16/98	8-0-133
551	UV-ICR	UV (Dupl)	0.029	1/cm	SM 5910 B	1	0.009	2/16/98		2/16/98	8-0-133
			0.029	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-8d **S&H ID:** 9802-203 **Date Sampled:** 2/15/98 7:10:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
552	Cl2Dose	Chlorine Dose	2.45	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/17/98		2/17/98	n/a
553	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/17/98		2/19/98	n/a
554	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	112.4	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
555	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.6	%	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
556	HAA-ICR	Bromochloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
557	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
558	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0
559	HAA-ICR	Dibromoacetic acid	3.2	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
560	HAA-ICR	Dichloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
561	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
562	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/19/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

563	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/19/98	2/27/98	2/28/98	0-89-0
564	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/19/98	2/27/98	2/28/98	0-89-0
565	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/19/98	n/a
566	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
567	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	2/15/98		2/15/98	n/a
568	TEMP	Cl2 Temperature	3.6	ºC	SM 2550 B	1	n/a	2/17/98		2/19/98	n/a
569	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/17/98		2/19/98	n/a
570	TOC-ICR	TOC	0.91	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
571	TOC-ICR	TOC (Dupl)	0.89	mg/L	SM 5310 C	1	0.50	2/15/98		2/16/98	7-0-192
			0.90	**mg/L**	**2.2 % RPD**						
572	TOX-ICR	TOX	38	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
573	TOX-ICR	TOX (Dupl)	40	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/24/98	12-0-97
			39	**µg Cl-/L**	**5.1 % RPD**						
574	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.0	%	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
575	THM-ICR	Bromodichloromethane	4.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
576	THM-ICR	Bromoform	9.1	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
577	THM-ICR	Chloroform	2.0	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
578	THM-ICR	Dibromochloromethane	10.9	µg/L	EPA 551.1	1	1.0	2/19/98	2/23/98	2/23/98	0-88-0
579	UV-ICR	UV	0.012	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
580	UV-ICR	UV (Dupl)	0.012	1/cm	SM 5910 B	1	0.009	2/15/98		2/16/98	8-0-133
			0.012	**1/cm**	**0.0 % RPD**						

Sample ID: 108.10.Eff-17 **S&H ID:** 9802-211 **Date Sampled:** 2/16/98 8:16:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
581	Cl2Dose	Chlorine Dose	2.94	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
582	Cl2Res	Chlorine Residual	0.90	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
583	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	112.4	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
584	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
585	HAA-ICR	Bromochloroacetic acid	5.2	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
586	HAA-ICR	Bromodichloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
587	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
588	HAA-ICR	Dibromoacetic acid	3.9	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
589	HAA-ICR	Dichloroacetic acid	8.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
590	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
591	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
592	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
593	HAA-ICR	Trichloroacetic acid	4.2	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
594	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

595	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
596	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	2/16/98		2/16/98	n/a
597	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
598	TEMP	Temperature	23.0	ºC	SM 2550 B	1	n/a	2/16/98		2/16/98	n/a
599	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
600	TOC-ICR	TOC	2.03	mg/L	SM 5310 C	1	0.50	2/16/98		2/17/98	7-0-193
601	TOC-ICR	TOC (Dupl)	2.04	mg/L	SM 5310 C	1	0.50	2/16/98		2/17/98	7-0-193
			2.04	**mg/L**	**0.5 % RPD**						
602	TOX-ICR	TOX	121	µg Cl-/L	SM 5320 B	1	25	2/21/98		2/24/98	12-0-97
603	TOX-ICR	TOX (Dupl)	119	µg Cl-/L	SM 5320 B	1	25	2/21/98		2/24/98	12-0-97
			120	**µg Cl-/L**	**1.7 % RPD**						
604	THM-ICR	1,2,3-Trichloropropane (Surrogate)	99.2	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
605	THM-ICR	Bromodichloromethane	19.3	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
606	THM-ICR	Bromoform	5.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
607	THM-ICR	Chloroform	13.8	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
608	THM-ICR	Dibromochloromethane	18.7	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
609	UV-ICR	UV	0.034	1/cm	SM 5910 B	1	0.009	2/16/98		2/18/98	8-0-134
610	UV-ICR	UV (Dupl)	0.033	1/cm	SM 5910 B	1	0.009	2/16/98		2/18/98	8-0-134
			0.034	**1/cm**	**2.9 % RPD**						

Sample ID: 108.10.Eff-17d **S&H ID:** 9802-212 **Date Sampled:** 2/16/98 8:16:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
611	Cl2Dose	Chlorine Dose	2.93	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
612	Cl2Res	Chlorine Residual	0.86	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
613	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	110.4	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
614	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
615	HAA-ICR	Bromochloroacetic acid	5.6	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
616	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
617	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
618	HAA-ICR	Dibromoacetic acid	4.3	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
619	HAA-ICR	Dichloroacetic acid	7.8	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
620	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
621	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
622	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
623	HAA-ICR	Trichloroacetic acid	4.3	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
624	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a
625	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
626	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	2/16/98		2/16/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

627	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
628	TEMP	Temperature	22.9	ºC	SM 2550 B	1	n/a	2/16/98		2/16/98	n/a
629	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
630	TOC-ICR	TOC	2.02	mg/L	SM 5310 C	1	0.50	2/16/98		2/17/98	7-0-193
631	TOC-ICR	TOC (Dupl)	2.02	mg/L	SM 5310 C	1	0.50	2/16/98		2/17/98	7-0-193
			2.02	**mg/L**	**0.0 % RPD**						
632	TOX-ICR	TOX	120	µg Cl-/L	SM 5320 B	1	25	2/21/98		2/24/98	12-0-97
633	TOX-ICR	TOX (Dupl)	112	µg Cl-/L	SM 5320 B	1	25	2/21/98		2/24/98	12-0-97
			116	**µg Cl-/L**	**6.9 % RPD**						
634	THM-ICR	1,2,3-Trichloropropane (Surrogate)	102.4	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
635	THM-ICR	Bromodichloromethane	18.9	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
636	THM-ICR	Bromoform	5.7	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
637	THM-ICR	Chloroform	13.7	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
638	THM-ICR	Dibromochloromethane	18.8	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
639	UV-ICR	UV	0.033	1/cm	SM 5910 B	1	0.009	2/16/98		2/18/98	8-0-134
640	UV-ICR	UV (Dupl)	0.033	1/cm	SM 5910 B	1	0.009	2/16/98		2/18/98	8-0-134
			0.033	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-11 **S&H ID:** 9802-214 **Date Sampled:** 2/16/98 11:02:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
641	Cl2Dose	Chlorine Dose	2.55	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
642	Cl2Res	Chlorine Residual	0.94	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
643	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	111.6	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
644	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.4	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
645	HAA-ICR	Bromochloroacetic acid	3.5	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
646	HAA-ICR	Bromodichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
647	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
648	HAA-ICR	Dibromoacetic acid	3.7	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
649	HAA-ICR	Dichloroacetic acid	5.3	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
650	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
651	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
652	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
653	HAA-ICR	Trichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
654	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a
655	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
656	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	2/16/98		2/16/98	n/a
657	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

658	TEMP	Temperature	22.0	ºC	SM 2550 B	1	n/a	2/16/98		2/16/98	n/a
659	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
660	TOC-ICR	TOC	1.19	mg/L	SM 5310 C	1	0.50	2/16/98		2/17/98	7-0-193
661	TOC-ICR	TOC (Dupl)	1.21	mg/L	SM 5310 C	1	0.50	2/16/98		2/17/98	7-0-193
			1.20	**mg/L**	**1.7 % RPD**						
662	TOX-ICR	TOX	53	µg Cl-/L	SM 5320 B	1	25	2/16/98		2/26/98	12-0-98
663	TOX-ICR	TOX (Dupl)	54	µg Cl-/L	SM 5320 B	1	25	2/16/98		2/26/98	12-0-98
			54	**µg Cl-/L**	**1.9 % RPD**						
664	THM-ICR	1,2,3-Trichloropropane (Surrogate)	106.8	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
665	THM-ICR	Bromodichloromethane	9.3	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
666	THM-ICR	Bromoform	10.3	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
667	THM-ICR	Chloroform	4.1	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
668	THM-ICR	Dibromochloromethane	15.5	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
669	UV-ICR	UV	0.018	1/cm	SM 5910 B	1	0.009	2/16/98		2/18/98	8-0-134
670	UV-ICR	UV (Dupl)	0.017	1/cm	SM 5910 B	1	0.009	2/16/98		2/18/98	8-0-134
			0.018	**1/cm**	**5.6 % RPD**						

Sample ID: 108.INF.B-3 **S&H ID:** 9802-222 **Date Sampled:** 2/17/98 1:08:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
671	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
672	TEMP	Temperature	17.3	ºC	SM 2550 B	1	n/a	2/17/98		2/17/98	n/a
673	TOC-ICR	TOC	3.07	mg/L	SM 5310 C	1	0.50	2/17/98		2/17/98	7-0-193
674	TOC-ICR	TOC (Dupl)	3.10	mg/L	SM 5310 C	1	0.50	2/17/98		2/17/98	7-0-193
			3.09	**mg/L**	**1.0 % RPD**						

Sample ID: 108.20.Eff-13 **S&H ID:** 9802-228 **Date Sampled:** 2/17/98 7:41:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
675	Cl2Dose	Chlorine Dose	2.60	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
676	Cl2Res	Chlorine Residual	0.88	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
677	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	112.8	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
678	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
679	HAA-ICR	Bromochloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
680	HAA-ICR	Bromodichloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
681	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
682	HAA-ICR	Dibromoacetic acid	3.9	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
683	HAA-ICR	Dichloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
684	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
685	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

686	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
687	HAA-ICR	Trichloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
688	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a
689	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
690	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
691	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
692	TEMP	Temperature	23.1	ºC	SM 2550 B	1	n/a	2/17/98		2/17/98	n/a
693	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
694	TOC-ICR	TOC	1.26	mg/L	SM 5310 C	1	0.50	2/17/98		2/18/98	7-0-194
695	TOC-ICR	TOC (Dupl)	1.36	mg/L	SM 5310 C	1	0.50	2/17/98		2/18/98	7-0-194
			1.31	**mg/L**	**7.6 % RPD**						
696	TOX-ICR	TOX	68	µg Cl-/L	SM 5320 B	1	25	2/17/98		2/26/98	12-0-98
697	TOX-ICR	TOX (Dupl)	75	µg Cl-/L	SM 5320 B	1	25	2/17/98		2/26/98	12-0-98
			72	**µg Cl-/L**	**9.7 % RPD**						
698	THM-ICR	1,2,3-Trichloropropane (Surrogate)	106.4	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
699	THM-ICR	Bromodichloromethane	12.5	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
700	THM-ICR	Bromoform	10.2	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
701	THM-ICR	Chloroform	6.0	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
702	THM-ICR	Dibromochloromethane	18.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
703	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	2/17/98		2/18/98	8-0-134
704	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	2/17/98		2/18/98	8-0-134
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-13d **S&H ID:** 9802-229 **Date Sampled:** 2/17/98 7:41:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
705	Cl2Dose	Chlorine Dose	2.60	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
706	Cl2Res	Chlorine Residual	0.90	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
707	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	113.6	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
708	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.6	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
709	HAA-ICR	Bromochloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
710	HAA-ICR	Bromodichloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
711	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
712	HAA-ICR	Dibromoacetic acid	4.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
713	HAA-ICR	Dichloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
714	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
715	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
716	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
717	HAA-ICR	Trichloroacetic acid	3.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

718	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a
719	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
720	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	2/17/98		2/17/98	n/a
721	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
722	TEMP	Temperature	23.2	ºC	SM 2550 B	1	n/a	2/17/98		2/17/98	n/a
723	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
724	TOC-ICR	TOC	1.31	mg/L	SM 5310 C	1	0.50	2/17/98		2/18/98	7-0-194
725	TOC-ICR	TOC (Dupl)	1.29	mg/L	SM 5310 C	1	0.50	2/17/98		2/18/98	7-0-194
			1.30	**mg/L**	**1.5 % RPD**						
726	TOX-ICR	TOX	70	µg Cl-/L	SM 5320 B	1	25	2/17/98		2/26/98	12-0-98
727	TOX-ICR	TOX (Dupl)	70	µg Cl-/L	SM 5320 B	1	25	2/17/98		2/26/98	12-0-98
			70	**µg Cl-/L**	**0.0 % RPD**						
728	THM-ICR	1,2,3-Trichloropropane (Surrogate)	105.6	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
729	THM-ICR	Bromodichloromethane	11.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
730	THM-ICR	Bromoform	9.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
731	THM-ICR	Chloroform	5.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
732	THM-ICR	Dibromochloromethane	18.2	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
733	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	2/17/98		2/18/98	8-0-134
734	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	2/17/98		2/18/98	8-0-134
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 108.10.Eff-22 **S&H ID:** 9802-233 **Date Sampled:** 2/18/98 1:36:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
735	Cl2Dose	Chlorine Dose	3.01	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
736	Cl2Res	Chlorine Residual	0.87	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
737	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	111.2	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
738	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
739	HAA-ICR	Bromochloroacetic acid	5.3	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
740	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
741	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
742	HAA-ICR	Dibromoacetic acid	3.6	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
743	HAA-ICR	Dichloroacetic acid	8.5	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
744	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
745	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
746	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
747	HAA-ICR	Trichloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
748	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

749	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
750	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	2/18/98		2/18/98	n/a
751	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
752	TEMP	Temperature	21.8	ºC	SM 2550 B	1	n/a	2/18/98		2/18/98	n/a
753	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
754	TOC-ICR	TOC	2.16	mg/L	SM 5310 C	1	0.50	2/18/98		2/18/98	7-0-194
755	TOC-ICR	TOC (Dupl)	2.18	mg/L	SM 5310 C	1	0.50	2/18/98		2/18/98	7-0-194
			2.17	**mg/L**	**0.9 % RPD**						
756	TOX-ICR	TOX	141	µg Cl-/L	SM 5320 B	1	25	2/18/98		2/26/98	12-0-98
757	TOX-ICR	TOX (Dupl)	146	µg Cl-/L	SM 5320 B	1	25	2/18/98		2/26/98	12-0-98
			144	**µg Cl-/L**	**3.5 % RPD**						
758	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.8	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
759	THM-ICR	Bromodichloromethane	25.1	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
760	THM-ICR	Bromoform	5.5	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
761	THM-ICR	Chloroform	21.4	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
762	THM-ICR	Dibromochloromethane	22.0	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
763	UV-ICR	UV	0.038	1/cm	SM 5910 B	1	0.009	2/18/98		2/18/98	8-0-134
764	UV-ICR	UV (Dupl)	0.038	1/cm	SM 5910 B	1	0.009	2/18/98		2/18/98	8-0-134
			0.038	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-15 **S&H ID:** 9802-235 **Date Sampled:** 2/18/98 4:43:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
765	Cl2Dose	Chlorine Dose	2.70	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
766	Cl2Res	Chlorine Residual	0.91	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
767	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	110.8	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
768	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.4	%	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
769	HAA-ICR	Bromochloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
770	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
771	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
772	HAA-ICR	Dibromoacetic acid	3.8	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
773	HAA-ICR	Dichloroacetic acid	5.6	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
774	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
775	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	2/27/98	2/28/98	0-89-0
776	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	2/27/98	2/28/98	0-89-0
777	HAA-ICR	Trichloroacetic acid	4.2	µg/L	EPA 552.2	1	1.0	2/21/98	2/27/98	2/28/98	0-89-0
778	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a
779	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
780	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	2/18/98		2/18/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

781	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
782	TEMP	Temperature	22.0	ºC	SM 2550 B	1	n/a	2/18/98		2/18/98	n/a
783	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
784	TOC-ICR	TOC	1.51	mg/L	SM 5310 C	1	0.50	2/18/98		2/19/98	7-0-195
785	TOC-ICR	TOC (Dupl)	1.51	mg/L	SM 5310 C	1	0.50	2/18/98		2/19/98	7-0-195
			1.51	**mg/L**	**0.0 % RPD**						
786	TOX-ICR	TOX	74	µg Cl-/L	SM 5320 B	1	25	2/18/98		2/26/98	12-0-98
787	TOX-ICR	TOX (Dupl)	79	µg Cl-/L	SM 5320 B	1	25	2/18/98		2/26/98	12-0-98
			77	**µg Cl-/L**	**6.5 % RPD**						
788	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.4	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
789	THM-ICR	Bromodichloromethane	13.8	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
790	THM-ICR	Bromoform	9.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
791	THM-ICR	Chloroform	7.2	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
792	THM-ICR	Dibromochloromethane	19.4	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
793	UV-ICR	UV	0.023	1/cm	SM 5910 B	1	0.009	2/18/98		2/20/98	8-0-135
794	UV-ICR	UV (Dupl)	0.023	1/cm	SM 5910 B	1	0.009	2/18/98		2/20/98	8-0-135
			0.023	**1/cm**	**0.0 % RPD**						

Sample ID: 108.10.Eff-23 **S&H ID:** 9802-239 **Date Sampled:** 2/19/98 10:12:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
795	Cl2Dose	Chlorine Dose	3.09	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/19/98		2/19/98	n/a
796	Cl2Res	Chlorine Residual	0.82	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/19/98		2/21/98	n/a
797	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	117.2	%	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
798	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.6	%	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
799	HAA-ICR	Bromochloroacetic acid	7.0	µg/L	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
800	HAA-ICR	Bromodichloroacetic acid	4.2	µg/L	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
801	HAA-ICR	Chlorodibromoacetic acid	2.5	µg/L	EPA 552.2	1	2.0	2/21/98	3/2/98	3/2/98	0-90-0
802	HAA-ICR	Dibromoacetic acid	4.7	µg/L	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
803	HAA-ICR	Dichloroacetic acid	10.1	µg/L	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
804	HAA-ICR	Monobromoacetic acid	1.2	µg/L	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
805	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/21/98	3/2/98	3/2/98	0-90-0
806	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/21/98	3/2/98	3/2/98	0-90-0
807	HAA-ICR	Trichloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	2/21/98	3/2/98	3/2/98	0-90-0
808	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/21/98	n/a
809	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
810	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	2/19/98		2/19/98	n/a
811	TEMP	Cl2 Temperature	3.2	ºC	SM 2550 B	1	n/a	2/19/98		2/21/98	n/a
812	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	2/19/98		2/19/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

813	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/19/98		2/21/98	n/a
814	TOC-ICR	TOC	2.34	mg/L	SM 5310 C	1	0.50	2/19/98		2/19/98	7-0-195
815	TOC-ICR	TOC (Dupl)	2.38	mg/L	SM 5310 C	1	0.50	2/19/98		2/19/98	7-0-195
			2.36	**mg/L**	**1.7 % RPD**						
816	TOX-ICR	TOX	151	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/26/98	12-0-98
817	TOX-ICR	TOX (Dupl)	140	µg Cl-/L	SM 5320 B	1	25	2/19/98		2/26/98	12-0-98
			146	**µg Cl-/L**	**7.5 % RPD**						
818	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.4	%	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
819	THM-ICR	Bromodichloromethane	23.6	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
820	THM-ICR	Bromoform	5.0	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
821	THM-ICR	Chloroform	20.9	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
822	THM-ICR	Dibromochloromethane	20.1	µg/L	EPA 551.1	1	1.0	2/21/98	2/23/98	2/23/98	0-88-0
823	UV-ICR	UV	0.040	1/cm	SM 5910 B	1	0.009	2/19/98		2/20/98	8-0-135
824	UV-ICR	UV (Dupl)	0.040	1/cm	SM 5910 B	1	0.009	2/19/98		2/20/98	8-0-135
			0.040	**1/cm**	**0.0 % RPD**						

Sample ID: 108.INF.B-4 **S&H ID:** 9802-249 **Date Sampled:** 2/20/98 9:20:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
825	Cl2Dose	Chlorine Dose	3.65	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/23/98		2/23/98	n/a
826	Cl2Res	Chlorine Residual	0.86	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/23/98		2/25/98	n/a
827	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	116.0	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
828	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
829	HAA-ICR	Bromochloroacetic acid	7.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
830	HAA-ICR	Bromodichloroacetic acid	4.3	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
831	HAA-ICR	Chlorodibromoacetic acid	2.0	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
832	HAA-ICR	Dibromoacetic acid	3.4	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
833	HAA-ICR	Dichloroacetic acid	14.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
834	HAA-ICR	Monobromoacetic acid	1.0	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
835	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
836	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/25/98	3/2/98	3/2/98	0-90-0
837	HAA-ICR	Trichloroacetic acid	8.3	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
838	pH	Cl2 pH - Final	9.3	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/25/98	n/a
839	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/23/98	n/a
840	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/20/98		2/20/98	n/a
841	TEMP	Cl2 Temperature	3.0	ºC	SM 2550 B	1	n/a	2/23/98		2/25/98	n/a
842	TEMP	Temperature	17.4	ºC	SM 2550 B	1	n/a	2/20/98		2/20/98	n/a
843	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/23/98		2/25/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

844	TOC-ICR	TOC	3.10	mg/L	SM 5310 C	1	0.50	2/20/98		2/20/98	7-0-196
845	TOC-ICR	TOC (Dupl)	3.17	mg/L	SM 5310 C	1	0.50	2/20/98		2/20/98	7-0-196
			3.13	**mg/L**	**2.2 % RPD**						
846	TOX-ICR	TOX	207	µg Cl-/L	SM 5320 B	1	25	2/20/98		3/4/98	12-0-99
847	TOX-ICR	TOX (Dupl)	202	µg Cl-/L	SM 5320 B	1	25	2/20/98		3/4/98	12-0-99
			205	**µg Cl-/L**	**2.4 % RPD**						
848	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.8	%	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
849	THM-ICR	Bromodichloromethane	32.4	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
850	THM-ICR	Bromoform	3.0	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
851	THM-ICR	Chloroform	46.1	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
852	THM-ICR	Dibromochloromethane	18.2	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
853	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	2/20/98		2/20/98	9-0-7
854	UV-ICR	UV	0.061	1/cm	SM 5910 B	1	0.009	2/20/98		2/20/98	8-0-135
855	UV-ICR	UV (Dupl)	0.061	1/cm	SM 5910 B	1	0.009	2/20/98		2/20/98	8-0-135
			0.061	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-19 **S&H ID:** 9802-250 **Date Sampled:** 2/20/98 10:01:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
856	Cl2Dose	Chlorine Dose	2.76	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/23/98		2/23/98	n/a
857	Cl2Res	Chlorine Residual	0.91	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/23/98		2/25/98	n/a
858	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	115.2	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
859	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard) (Lab Dupl)	115.2	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			115.2	**%**	**0.0 % RPD**						
860	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
861	HAA-ICR	2-Bromopropionic acid (Surrogate) (Lab Dupl)	99.2	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			100.0	**%**	**1.6 % RPD**						
862	HAA-ICR	Bromochloroacetic acid	5.0	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
863	HAA-ICR	Bromochloroacetic acid (Lab Dupl)	4.3	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			4.7	**µg/L**	**14.9 % RPD**						
864	HAA-ICR	Bromodichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
865	HAA-ICR	Bromodichloroacetic acid (Lab Dupl)	2.4	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			2.5	**µg/L**	**4.0 % RPD**						
866	HAA-ICR	Chlorodibromoacetic acid	2.1	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
867	HAA-ICR	Chlorodibromoacetic acid (Lab Dupl)	2.0	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
			2.0	**µg/L**	**5.0 % RPD**						
868	HAA-ICR	Dibromoacetic acid	4.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

869	HAA-ICR	Dibromoacetic acid (Lab Dupl)	4.1	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			4.3	**µg/L**	**9.3 % RPD**						
870	HAA-ICR	Dichloroacetic acid	6.2	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
871	HAA-ICR	Dichloroacetic acid (Lab Dupl)	6.0	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			6.1	**µg/L**	**3.3 % RPD**						
872	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
873	HAA-ICR	Monobromoacetic acid (Lab Dupl)	1.0	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			ND	**µg/L**							
874	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
875	HAA-ICR	Monochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
			ND	**µg/L**							
876	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/25/98	3/2/98	3/2/98	0-90-0
877	HAA-ICR	Tribromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	4.0	2/25/98	3/2/98	3/2/98	0-90-0
			ND	**µg/L**							
878	HAA-ICR	Trichloroacetic acid	4.3	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
879	HAA-ICR	Trichloroacetic acid (Lab Dupl)	3.9	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
			4.1	**µg/L**	**9.8 % RPD**						
880	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/25/98	n/a
881	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/23/98	n/a
882	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	2/20/98		2/20/98	n/a
883	TEMP	Cl2 Temperature	3.0	ºC	SM 2550 B	1	n/a	2/23/98		2/25/98	n/a
884	TEMP	Temperature	21.1	ºC	SM 2550 B	1	n/a	2/20/98		2/20/98	n/a
885	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/23/98		2/25/98	n/a
886	TOC-ICR	TOC	1.78	mg/L	SM 5310 C	1	0.50	2/20/98		2/20/98	7-0-196
887	TOC-ICR	TOC (Dupl)	1.70	mg/L	SM 5310 C	1	0.50	2/20/98		2/20/98	7-0-196
			1.74	**mg/L**	**4.6 % RPD**						
888	TOX-ICR	TOX	86	µg Cl-/L	SM 5320 B	1	25	2/20/98		3/4/98	12-0-99
889	TOX-ICR	TOX (Dupl)	83	µg Cl-/L	SM 5320 B	1	25	2/20/98		3/4/98	12-0-99
			85	**µg Cl-/L**	**3.5 % RPD**						
890	THM-ICR	1,2,3-Trichloropropane (Surrogate)	86.8	%	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
891	THM-ICR	Bromodichloromethane	17.8	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
892	THM-ICR	Bromoform	8.0	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
893	THM-ICR	Chloroform	10.5	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
894	THM-ICR	Dibromochloromethane	20.8	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
895	UV-ICR	UV	0.027	1/cm	SM 5910 B	1	0.009	2/20/98		2/20/98	8-0-135
896	UV-ICR	UV (Dupl)	0.027	1/cm	SM 5910 B	1	0.009	2/20/98		2/20/98	8-0-135
			0.027	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Sample ID: 108.10.Eff-24 **S&H ID:** 9802-257 **Date Sampled:** 2/20/98 11:26:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
897	pH	pH	9.1	Unit	SM 4500-H+ B	1	n/a	2/20/98		2/20/98	n/a
898	TEMP	Temperature	21.1	ºC	SM 2550 B	1	n/a	2/20/98		2/20/98	n/a
899	TOC-ICR	TOC	2.48	mg/L	SM 5310 C	1	0.50	2/20/98		2/20/98	7-0-196
900	TOC-ICR	TOC (Dupl)	2.48	mg/L	SM 5310 C	1	0.50	2/20/98		2/20/98	7-0-196
			2.48	**mg/L**	**0.0 % RPD**						

Sample ID: 108.20.Eff-21 **S&H ID:** 9802-262 **Date Sampled:** 2/21/98 11:14:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
901	Cl2Dose	Chlorine Dose	2.81	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/23/98		2/23/98	n/a
902	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/23/98		2/25/98	n/a
903	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	99.2	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
904	HAA-ICR	2-Bromopropionic acid (Surrogate)	107.6	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
905	HAA-ICR	Bromochloroacetic acid	6.1	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
906	HAA-ICR	Bromodichloroacetic acid	3.2	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
907	HAA-ICR	Chlorodibromoacetic acid	2.3	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/3/98	0-90-0
908	HAA-ICR	Dibromoacetic acid	5.3	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
909	HAA-ICR	Dichloroacetic acid	7.1	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
910	HAA-ICR	Monobromoacetic acid	1.1	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
911	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/3/98	0-90-0
912	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/25/98	3/2/98	3/3/98	0-90-0
913	HAA-ICR	Trichloroacetic acid	4.7	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/3/98	0-90-0
914	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/25/98	n/a
915	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/23/98	n/a
916	pH	pH	7.7	Unit	SM 4500-H+ B	1	n/a	2/21/98		2/21/98	n/a
917	TEMP	Cl2 Temperature	3.0	ºC	SM 2550 B	1	n/a	2/23/98		2/25/98	n/a
918	TEMP	Temperature	21.1	ºC	SM 2550 B	1	n/a	2/21/98		2/21/98	n/a
919	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/23/98		2/25/98	n/a
920	TOC-ICR	TOC	1.85	mg/L	SM 5310 C	1	0.50	2/21/98		2/22/98	7-0-197
921	TOC-ICR	TOC (Dupl)	1.87	mg/L	SM 5310 C	1	0.50	2/21/98		2/22/98	7-0-197
			1.86	**mg/L**	**1.1 % RPD**						
922	TOX-ICR	TOX	101	µg Cl-/L	SM 5320 B	1	25	2/21/98		3/4/98	12-0-99
923	TOX-ICR	TOX (Dupl)	95	µg Cl-/L	SM 5320 B	1	25	2/21/98		3/4/98	12-0-99
			98	**µg Cl-/L**	**6.1 % RPD**						
924	THM-ICR	1,2,3-Trichloropropane (Surrogate)	88.4	%	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
925	THM-ICR	1,2,3-Trichloropropane (Surrogate) (Lab Dupl)	92.4	%	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

			90.4	**%**	**4.4 % RPD**						
926	THM-ICR	Bromodichloromethane	20.6	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
927	THM-ICR	Bromodichloromethane (Lab Dupl)	20.2	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
			20.4	**µg/L**	**2.0 % RPD**						
928	THM-ICR	Bromoform	7.6	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
929	THM-ICR	Bromoform (Lab Dupl)	6.9	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
			7.3	**µg/L**	**9.6 % RPD**						
930	THM-ICR	Chloroform	13.7	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
931	THM-ICR	Chloroform (Lab Dupl)	13.4	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
			13.6	**µg/L**	**2.2 % RPD**						
932	THM-ICR	Dibromochloromethane	22.3	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
933	THM-ICR	Dibromochloromethane (Lab Dupl)	21.6	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
			22.0	**µg/L**	**3.2 % RPD**						
934	UV-ICR	UV	0.030	1/cm	SM 5910 B	1	0.009	2/21/98		2/23/98	8-0-136
935	UV-ICR	UV (Dupl)	0.030	1/cm	SM 5910 B	1	0.009	2/21/98		2/23/98	8-0-136
			0.030	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-21d **S&H ID:** 9802-263 **Date Sampled:** 2/21/98 11:14:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
936	Cl2Dose	Chlorine Dose	2.83	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/23/98		2/23/98	n/a
937	Cl2Res	Chlorine Residual	0.87	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/23/98		2/25/98	n/a
938	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	110.8	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
939	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
940	HAA-ICR	Bromochloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
941	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
942	HAA-ICR	Chlorodibromoacetic acid	2.2	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
943	HAA-ICR	Dibromoacetic acid	4.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
944	HAA-ICR	Dichloroacetic acid	6.5	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
945	HAA-ICR	Monobromoacetic acid	1.1	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
946	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	2/25/98	3/2/98	3/2/98	0-90-0
947	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	2/25/98	3/2/98	3/2/98	0-90-0
948	HAA-ICR	Trichloroacetic acid	4.1	µg/L	EPA 552.2	1	1.0	2/25/98	3/2/98	3/2/98	0-90-0
949	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/25/98	n/a
950	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/23/98	n/a
951	pH	pH	7.8	Unit	SM 4500-H+ B	1	n/a	2/21/98		2/21/98	n/a
952	TEMP	Cl2 Temperature	3.0	ºC	SM 2550 B	1	n/a	2/23/98		2/25/98	n/a
953	TEMP	Temperature	21.0	ºC	SM 2550 B	1	n/a	2/21/98		2/21/98	n/a
954	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	2/23/98		2/25/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

955	TOC-ICR	TOC	1.91	mg/L	SM 5310 C	1	0.50	2/21/98		2/22/98	7-0-197
956	TOC-ICR	TOC (Dupl)	1.91	mg/L	SM 5310 C	1	0.50	2/21/98		2/22/98	7-0-197
			1.91	**mg/L**	**0.0 % RPD**						
957	TOX-ICR	TOX	97	µg Cl-/L	SM 5320 B	1	25	2/21/98		3/4/98	12-0-99
958	TOX-ICR	TOX (Dupl)	98	µg Cl-/L	SM 5320 B	1	25	2/21/98		3/4/98	12-0-99
			98	**µg Cl-/L**	**1.0 % RPD**						
959	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.4	%	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
960	THM-ICR	Bromodichloromethane	20.2	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
961	THM-ICR	Bromoform	7.0	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
962	THM-ICR	Chloroform	13.2	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
963	THM-ICR	Dibromochloromethane	21.5	µg/L	EPA 551.1	1	1.0	2/25/98	3/5/98	3/5/98	0-92-0
964	UV-ICR	UV	0.032	1/cm	SM 5910 B	1	0.009	2/21/98		2/23/98	8-0-136
965	UV-ICR	UV (Dupl)	0.031	1/cm	SM 5910 B	1	0.009	2/21/98		2/23/98	8-0-136
			0.032	**1/cm**	**3.1 % RPD**						

Sample ID: 108.INF.A-2 **S&H ID:** 9802-268 **Date Sampled:** 2/23/98 11:10:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
966	ALK	Alkalinity	45	mg/L	SM 2320 B	1	5	2/23/98		2/23/98	1-0-14
967	ALK	Alkalinity (Dupl)	46	mg/L	SM 2320 B	1	5	2/23/98		2/23/98	1-0-14
			46	**mg/L**	**2.2 % RPD**						
968	NH3	Ammonia Nitrogen	0.12	mg/L	EPA 350.1	1	0.05	2/23/98		3/14/98	MW74462
969	BR	Bromide	0.081	mg/L	EPA 300.0 A	1	0.020	2/23/98		3/6/98	MW74078
970	CaHard	Calcium Hardness	76	mg/L CaCO3	SM 3500-Ca D	1	10	2/23/98		2/23/98	33-0-14
971	CaHard	Calcium Hardness (Dupl)	74	mg/L CaCO3	SM 3500-Ca D	1	10	2/23/98		2/23/98	33-0-14
			75	**mg/L CaCO3**	**2.7 % RPD**						
972	TotHard	Total Hardness	85	mg/L CaCO3	SM 2340 C	1	5	2/23/98		2/23/98	3-0-14
973	TotHard	Total Hardness (Dupl)	85	mg/L CaCO3	SM 2340 C	1	5	2/23/98		2/23/98	3-0-14
			85	**mg/L CaCO3**	**0.0 % RPD**						

Sample ID: 108.20.Eff-24 **S&H ID:** 9802-281 **Date Sampled:** 2/23/98 10:18:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
974	Cl2Dose	Chlorine Dose	2.89	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/27/98		2/27/98	n/a
975	Cl2Res	Chlorine Residual	0.76	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/27/98		3/1/98	n/a
976	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	117.6	%	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
977	HAA-ICR	2-Bromopropionic acid (Surrogate)	85.6	%	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
978	HAA-ICR	Bromochloroacetic acid	5.3	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
979	HAA-ICR	Bromodichloroacetic acid	2.9	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
980	HAA-ICR	Chlorodibromoacetic acid	2.1	µg/L	EPA 552.2	1	2.0	3/1/98	3/2/98	3/2/98	0-90-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

981	HAA-ICR	Dibromoacetic acid	4.2	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
982	HAA-ICR	Dichloroacetic acid	5.1	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
983	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
984	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	3/1/98	3/2/98	3/2/98	0-90-0
985	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	3/1/98	3/2/98	3/2/98	0-90-0
986	HAA-ICR	Trichloroacetic acid	4.0	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
987	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		3/1/98	n/a
988	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		2/27/98	n/a
989	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	2/23/98		2/23/98	n/a
990	TEMP	Cl2 Temperature	3.3	ºC	SM 2550 B	1	n/a	2/27/98		3/1/98	n/a
991	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	2/23/98		2/23/98	n/a
992	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/27/98		3/1/98	n/a
993	TOC-ICR	TOC	2.11	mg/L	SM 5310 C	1	0.50	2/23/98		2/24/98	7-0-198
994	TOC-ICR	TOC	2.06	mg/L	SM 5310 C	1	0.50	2/23/98		2/27/98	7-0-201
995	TOC-ICR	TOC (Dupl)	2.10	mg/L	SM 5310 C	1	0.50	2/23/98		2/24/98	7-0-198
996	TOC-ICR	TOC (Dupl)	2.07	mg/L	SM 5310 C	1	0.50	2/23/98		2/27/98	7-0-201
			2.09	**mg/L**	**1.1 % RPD**						
997	TOX-ICR	TOX	110	µg Cl-/L	SM 5320 B	1	25	2/23/98		3/4/98	12-0-99
998	TOX-ICR	TOX (Dupl)	110	µg Cl-/L	SM 5320 B	1	25	2/23/98		3/4/98	12-0-99
			110	**µg Cl-/L**	**0.0 % RPD**						
999	THM-ICR	1,2,3-Trichloropropane (Surrogate)	90.4	%	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1000	THM-ICR	Bromodichloromethane	21.3	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1001	THM-ICR	Bromoform	6.1	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1002	THM-ICR	Chloroform	15.4	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1003	THM-ICR	Dibromochloromethane	20.8	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1004	UV-ICR	UV	0.034	1/cm	SM 5910 B	1	0.009	2/23/98		2/25/98	8-0-137
1005	UV-ICR	UV (Dupl)	0.034	1/cm	SM 5910 B	1	0.009	2/23/98		2/25/98	8-0-137
			0.034	**1/cm**	**0.0 % RPD**						

Sample ID: 108.INF.B-5 **S&H ID:** 9802-282 **Date Sampled:** 2/24/98 9:15:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1006	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/24/98		2/24/98	n/a
1007	TEMP	Temperature	18.2	ºC	SM 2550 B	1	n/a	2/24/98		2/24/98	n/a
1008	TOC-ICR	TOC	3.23	mg/L	SM 5310 C	1	0.50	2/24/98		2/24/98	7-0-198
1009	TOC-ICR	TOC (Dupl)	3.27	mg/L	SM 5310 C	1	0.50	2/24/98			7-0-198
			3.25	**mg/L**	**1.2 % RPD**						

Sample ID: 108.20.Eff-31 **S&H ID:** 9802-306 **Date Sampled:** 2/27/98 6:13:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

1010	Cl2Dose	Chlorine Dose	2.98	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/27/98		2/27/98	n/a
1011	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/27/98		3/1/98	n/a
1012	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	111.2	%	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1013	HAA-ICR	2-Bromopropionic acid (Surrogate)	101.2	%	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1014	HAA-ICR	Bromochloroacetic acid	5.4	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1015	HAA-ICR	Bromodichloroacetic acid	3.3	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1016	HAA-ICR	Chlorodibromoacetic acid	2.3	µg/L	EPA 552.2	1	2.0	3/1/98	3/2/98	3/2/98	0-90-0
1017	HAA-ICR	Dibromoacetic acid	3.8	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1018	HAA-ICR	Dichloroacetic acid	6.1	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1019	HAA-ICR	Monobromoacetic acid	1.1	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1020	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	3/1/98	3/2/98	3/2/98	0-90-0
1021	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	3/1/98	3/2/98	3/2/98	0-90-0
1022	HAA-ICR	Trichloroacetic acid	4.5	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1023	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		3/1/98	n/a
1024	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		2/27/98	n/a
1025	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	2/27/98		2/27/98	n/a
1026	TEMP	Cl2 Temperature	3.3	ºC	SM 2550 B	1	n/a	2/27/98		3/1/98	n/a
1027	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	2/27/98		2/27/98	n/a
1028	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/27/98		3/1/98	n/a
1029	TOC-ICR	TOC	2.21	mg/L	SM 5310 C	1	0.50	2/27/98		2/27/98	7-0-201
1030	TOC-ICR	TOC (Dupl)	2.34	mg/L	SM 5310 C	1	0.50	2/27/98		2/27/98	7-0-201
			2.27	**mg/L**	**5.7 % RPD**						
1031	TOX-ICR	TOX	127	µg Cl-/L	SM 5320 B	1	25	2/27/98		3/4/98	12-0-99
1032	TOX-ICR	TOX (Dupl)	118	µg Cl-/L	SM 5320 B	1	25	2/27/98		3/4/98	12-0-99
			123	**µg Cl-/L**	**7.3 % RPD**						
1033	THM-ICR	1,2,3-Trichloropropane (Surrogate)	102.4	%	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1034	THM-ICR	Bromodichloromethane	24.2	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1035	THM-ICR	Bromoform	5.6	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1036	THM-ICR	Chloroform	19.6	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1037	THM-ICR	Dibromochloromethane	20.9	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1038	UV-ICR	UV	0.036	1/cm	SM 5910 B	1	0.009	2/27/98		2/27/98	8-0-138
1039	UV-ICR	UV (Dupl)	0.037	1/cm	SM 5910 B	1	0.009	2/27/98		2/27/98	8-0-138
			0.036	**1/cm**	**2.8 % RPD**						

Sample ID: 108.INF.B-6 **S&H ID:** 9802-307 **Date Sampled:** 2/27/98 8:25:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1040	Cl2Dose	Chlorine Dose	3.55	mg/L as Cl2	SM 4500-Cl B	1	n/a	2/27/98		2/27/98	n/a
1041	Cl2Res	Chlorine Residual	0.76	mg/L as Cl2	SM 4500-Cl F	1	0.10	2/27/98		3/1/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

1042	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	103.2	%	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1043	HAA-ICR	2-Bromopropionic acid (Surrogate)	106.0	%	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1044	HAA-ICR	Bromochloroacetic acid	7.1	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1045	HAA-ICR	Bromodichloroacetic acid	4.3	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1046	HAA-ICR	Chlorodibromoacetic acid	2.0	µg/L	EPA 552.2	1	2.0	3/1/98	3/2/98	3/2/98	0-90-0
1047	HAA-ICR	Dibromoacetic acid	3.2	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1048	HAA-ICR	Dichloroacetic acid	13.9	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1049	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1050	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	3/1/98	3/2/98	3/2/98	0-90-0
1051	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	3/1/98	3/2/98	3/2/98	0-90-0
1052	HAA-ICR	Trichloroacetic acid	7.2	µg/L	EPA 552.2	1	1.0	3/1/98	3/2/98	3/2/98	0-90-0
1053	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		3/1/98	n/a
1054	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		2/27/98	n/a
1055	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	2/27/98		2/27/98	n/a
1056	TEMP	Cl2 Temperature	3.3	ºC	SM 2550 B	1	n/a	2/27/98		3/1/98	n/a
1057	TEMP	Temperature	19.3	ºC	SM 2550 B	1	n/a	2/27/98		2/27/98	n/a
1058	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	2/27/98		3/1/98	n/a
1059	TOC-ICR	TOC	3.14	mg/L	SM 5310 C	1	0.50	2/27/98		2/27/98	7-0-201
1060	TOC-ICR	TOC (Dupl)	3.19	mg/L	SM 5310 C	1	0.50	2/27/98		2/27/98	7-0-201
			3.17	**mg/L**	**1.6 % RPD**						
1061	TOX-ICR	TOX	203	µg Cl-/L	SM 5320 B	1	25	2/27/98		3/4/98	12-0-99
1062	TOX-ICR	TOX (Dupl)	200	µg Cl-/L	SM 5320 B	1	25	2/27/98		3/4/98	12-0-99
			202	**µg Cl-/L**	**1.5 % RPD**						
1063	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.2	%	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1064	THM-ICR	Bromodichloromethane	32.4	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1065	THM-ICR	Bromoform	2.9	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1066	THM-ICR	Chloroform	43.4	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1067	THM-ICR	Dibromochloromethane	18.0	µg/L	EPA 551.1	1	1.0	3/1/98	3/5/98	3/5/98	0-92-0
1068	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	2/27/98		2/27/98	9-0-7
1069	UV-ICR	UV	0.060	1/cm	SM 5910 B	1	0.009	2/27/98		2/27/98	8-0-138
1070	UV-ICR	UV (Dupl)	0.060	1/cm	SM 5910 B	1	0.009	2/27/98		2/27/98	8-0-138
			0.060	**1/cm**	**0.0 % RPD**						

Sample ID: 108.20.Eff-35 **S&H ID:** 9803-2 **Date Sampled:** 3/1/98 9:24:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1071	pH	pH	9.2	Unit	SM 4500-H+ B	1	n/a	3/1/98		3/1/98	n/a
1072	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	3/1/98		3/1/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

1073	TOC-ICR	TOC	2.36	mg/L	SM 5310 C	1	0.50	3/1/98	3/1/98	7-0-202
1074	TOC-ICR	TOC (Dupl)	2.32	mg/L	SM 5310 C	1	0.50	3/1/98	3/1/98	7-0-202
			2.34	**mg/L**	**1.7 % RPD**					

Sample ID: 108.20.Eff-37 **S&H ID:** 9803-5 **Date Sampled:** 3/3/98 10:14:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1075	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	3/3/98		3/3/98	n/a
1076	TEMP	Temperature	21.6	ºC	SM 2550 B	1	n/a	3/3/98		3/3/98	n/a
1077	TOC-ICR	TOC	2.33	mg/L	SM 5310 C	1	0.50	3/3/98		3/3/98	7-0-203
1078	TOC-ICR	TOC (Dupl)	2.35	mg/L	SM 5310 C	1	0.50	3/3/98		3/3/98	7-0-203
			2.34	**mg/L**	**0.9 % RPD**						

End of laboratory test results

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
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Quality Control Report

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 108
Study Title: ICR RSSCT #1

Analysis: ALK (Alkalinity) **Method:** SM 2320 B

QC Batch ID: 1-0-14

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	100	96	mg/L	96%		02/13/98	9802-148	5		
Matrix Spike (Dupl)	Matrix Spike	100	96	mg/L	96%		02/13/98	9802-148	5		
		100	**96**	**mg/L**	**96%**	**0.0 %**					
Method Blank	Method Blank		ND*	mg/L			02/13/98	9802-153	5		
Standard	Standard	100	99	mg/L	99%		02/13/98	9802-152	5		
Standard (Dupl)	Standard	100	100	mg/L	100%		02/13/98	9802-152	5		
		100	**99**	**mg/L**	**99%**	**1.0 %**					
Matrix Spike	Matrix Spike	100	97	mg/L	97%		02/23/98	9802-268	5		
Matrix Spike (Dupl)	Matrix Spike	100	98	mg/L	98%		02/23/98	9802-268	5		
		100	**98**	**mg/L**	**98%**	**1.0 %**					
Method Blank	Method Blank		ND*	mg/L			02/23/98	9802-275	5		
Standard	Standard	100	99	mg/L	99%		02/23/98	9802-274	5		
Standard (Dupl)	Standard	100	98	mg/L	98%		02/23/98	9802-274	5		
		100	**98**	**mg/L**	**98%**	**1.0 %**					

Analysis: TotHard (Total Hardness) **Method:** SM 2340 C

QC Batch ID: 3-0-14

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	92	88	mg/L CaCO3	95%		02/13/98	9802-148	5		
Matrix Spike (Dupl)	Matrix Spike	92	91	mg/L CaCO3	99%		02/13/98	9802-148	5		
		92	**90**	**mg/L CaCO3**	**98%**	**3.3 %**					
Method Blank	Method Blank		ND*	mg/L CaCO3			02/13/98	9802-155	5		
Standard	Standard	100	98	mg/L CaCO3	98%		02/13/98	9802-154	5	90-110%	
Standard (Dupl)	Standard	100	98	mg/L CaCO3	98%		02/13/98	9802-154	5	90-110%	
		100	**98**	**mg/L CaCO3**	**98%**	**0.0 %**				90-110%	10%
Matrix Spike	Matrix Spike	91	91	mg/L CaCO3	100%		02/23/98	9802-268	5		
Matrix Spike (Dupl)	Matrix Spike	91	91	mg/L CaCO3	100%		02/23/98	9802-268	5		
		91	**91**	**mg/L CaCO3**	**100%**	**0.0 %**					
Method Blank	Method Blank		ND*	mg/L CaCO3			02/23/98	9802-277	5		
Standard	Standard	100	96	mg/L CaCO3	96%		02/23/98	9802-276	5	90-110%	
Standard (Dupl)	Standard	100	98	mg/L CaCO3	98%		02/23/98	9802-276	5	90-110%	
		100	**97**	**mg/L CaCO3**	**97%**	**2.1 %**				90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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6 Knollcrest Drive
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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-187

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.94	mg/L	98%		9803-199	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.03	mg/L	101%		9803-199	0.5		
		4.00	**3.98**	**mg/L**	**100%**	**2.0 %**				
Method Blank	Method Blank		ND*	mg/L			9802-126	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-126	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9801-121	0.5	50-150%	
		0.50	**0.50**	**mg/L**	**100%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.78	mg/L	94%		9802-76	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.76	mg/L	94%		9802-76	0.5	90-110%	
		4.00	**3.77**	**mg/L**	**94%**	**0.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-189

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.29	mg/L	107%		9802-141	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.38	mg/L	110%		9802-141	0.5		
		4.00	**4.34**	**mg/L**	**109%**	**2.1 %**				
Method Blank	Method Blank		ND*	mg/L			9802-146	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-146	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.48	mg/L	96%		9801-121	0.5	50-150%	
		0.50	**0.50**	**mg/L**	**100%**	**8.0 %**			50-150%	20%
Standard	Standard	4.00	4.05	mg/L	101%		9802-76	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.08	mg/L	102%		9802-76	0.5	90-110%	
		4.00	**4.06**	**mg/L**	**101%**	**0.7 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-190

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.29	mg/L	107%		9802-151	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.31	mg/L	108%		9802-151	0.5		
		4.00	**4.30**	**mg/L**	**108%**	**0.2 %**				
Method Blank	Method Blank		ND*	mg/L			9802-161	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-161	0.5		
			ND*	**mg/L**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

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City of Topeka

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Standard	Standard	0.50	0.47	mg/L	94%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.48	mg/L	96%		9801-121	0.5	50-150%	
		0.50	**0.47**	**mg/L**	**94%**	**2.1 %**			50-150%	20%
Standard	Standard	4.00	4.09	mg/L	102%		9802-76	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.15	mg/L	104%		9802-76	0.5	90-110%	
		4.00	**4.12**	**mg/L**	**103%**	**1.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-191

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.07	mg/L	102%		9802-175	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.11	mg/L	103%		9802-175	0.5		
		4.00	**4.09**	**mg/L**	**102%**	**0.7 %**				
Method Blank	Method Blank		ND*	mg/L			9802-172	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-172	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.44	mg/L	88%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.47	mg/L	94%		9801-121	0.5	50-150%	
		0.50	**0.46**	**mg/L**	**92%**	**6.5 %**			50-150%	20%
Standard	Standard	4.00	4.18	mg/L	104%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.12	mg/L	103%		9802-169	0.5	90-110%	
		4.00	**4.15**	**mg/L**	**104%**	**1.4 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-192

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.21	mg/L	105%		9802-197	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.15	mg/L	104%		9802-197	0.5		
		4.00	**4.18**	**mg/L**	**104%**	**1.4 %**				
Method Blank	Method Blank		ND*	mg/L			9802-196	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-196	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.49	mg/L	98%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.49	mg/L	98%		9801-121	0.5	50-150%	
		0.50	**0.49**	**mg/L**	**98%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.05	mg/L	101%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.03	mg/L	101%		9802-169	0.5	90-110%	
		4.00	**4.04**	**mg/L**	**101%**	**0.5 %**			90-110%	10%
Standard	Standard	10.00	9.99	mg/L	100%		9802-171	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.22	mg/L	102%		9802-171	0.5	90-110%	
		10.00	**10.10**	**mg/L**	**101%**	**2.3 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-193

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.31	mg/L	108%		9802-213	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.35	mg/L	109%		9802-213	0.5		
		4.00	**4.33**	**mg/L**	**108%**	**0.7 %**				
Method Blank	Method Blank		ND*	mg/L			9802-215	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-215	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9801-121	0.5	50-150%	
		0.50	**0.50**	**mg/L**	**100%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.18	mg/L	104%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.01	mg/L	100%		9802-169	0.5	90-110%	
		4.00	**4.10**	**mg/L**	**102%**	**4.1 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-194

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.49	mg/L	112%		9802-226	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.53	mg/L	113%		9802-226	0.5		
		4.00	**4.51**	**mg/L**	**113%**	**0.9 %**				
Method Blank	Method Blank		ND*	mg/L			9802-223	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-223	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.44	mg/L	88%		9801-121	0.5	50-150%	
		0.50	**0.48**	**mg/L**	**96%**	**12.5 %**			50-150%	20%
Standard	Standard	4.00	3.90	mg/L	97%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.95	mg/L	99%		9802-169	0.5	90-110%	
		4.00	**3.93**	**mg/L**	**98%**	**1.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-195

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.24	mg/L	106%		9802-236	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.12	mg/L	103%		9802-236	0.5		
		4.00	**4.18**	**mg/L**	**104%**	**2.9 %**				
Method Blank	Method Blank		ND*	mg/L			9802-240	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-240	0.5		
			ND*	**mg/L**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Standard	Standard	0.50	0.47	mg/L	94%		9801-121	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.48	mg/L	96%		9801-121	0.5	50-150%	
		0.50	**0.48**	**mg/L**	**96%**	**2.1 %**			50-150%	20%
Standard	Standard	4.00	4.01	mg/L	100%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.11	mg/L	103%		9802-169	0.5	90-110%	
		4.00	**4.06**	**mg/L**	**101%**	**2.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-196

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.21	mg/L	105%		9802-248	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.38	mg/L	110%		9802-248	0.5		
		4.00	**4.29**	**mg/L**	**107%**	**4.2 %**				
Method Blank	Method Blank		ND*	mg/L			9802-251	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-251	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9802-246	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9802-246	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.05	mg/L	101%		9802-169	0.5	90-110%	
		4.00	**4.00**	**mg/L**	**100%**	**2.7 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-197

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.02	mg/L	100%		9802-259	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.08	mg/L	102%		9802-259	0.5		
		4.00	**4.05**	**mg/L**	**101%**	**1.5 %**				
Method Blank	Method Blank		ND*	mg/L			9802-261	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-261	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.55	mg/L	110%		9802-246	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9802-246	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.02	mg/L	100%		9802-169	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.97	mg/L	99%		9802-169	0.5	90-110%	
		4.00	**4.00**	**mg/L**	**100%**	**1.2 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-198

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.33	mg/L	108%		9802-281	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.38	mg/L	110%		9802-281	0.5		
		4.00	**4.35**	**mg/L**	**109%**	**1.4 %**				
Method Blank	Method Blank		ND*	mg/L			9802-283	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-283	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9802-246	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9802-246	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.15	mg/L	104%		9802-266	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.29	mg/L	107%		9802-266	0.5	90-110%	
		4.00	**4.22**	**mg/L**	**105%**	**3.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-201

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.80	mg/L	95%		9802-305	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.91	mg/L	98%		9802-305	0.5		
		4.00	**3.86**	**mg/L**	**96%**	**2.8 %**				
Method Blank	Method Blank		ND*	mg/L			9802-304	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9802-304	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.46	mg/L	92%		9802-246	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.48	mg/L	96%		9802-246	0.5	50-150%	
		0.50	**0.47**	**mg/L**	**94%**	**4.3 %**			50-150%	20%
Standard	Standard	4.00	4.26	mg/L	106%		9802-266	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.22	mg/L	105%		9802-266	0.5	90-110%	
		4.00	**4.24**	**mg/L**	**106%**	**0.9 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-202

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.96	mg/L	99%		9803-2	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.01	mg/L	100%		9803-2	0.5		
		4.00	**3.99**	**mg/L**	**100%**	**1.5 %**				
Method Blank	Method Blank		ND*	mg/L			9803-1	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9803-1	0.5		
			ND*	**mg/L**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.50	0.51	mg/L	102%		9802-246	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9802-246	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.92	mg/L	98%		9802-266	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.99	mg/L	100%		9802-266	0.5	90-110%	
		4.00	**3.96**	**mg/L**	**99%**	**1.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-203

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.99	mg/L	100%		9803-5	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.15	mg/L	104%		9803-5	0.5		
		4.00	**4.07**	**mg/L**	**102%**	**3.7 %**				
Method Blank	Method Blank		ND*	mg/L			9803-6	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9803-6	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.58	mg/L	116%		9802-246	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.56	mg/L	112%		9802-246	0.5	50-150%	
		0.50	**0.57**	**mg/L**	**114%**	**3.5 %**			50-150%	20%
Standard	Standard	4.00	4.15	mg/L	104%		9802-266	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.08	mg/L	102%		9802-266	0.5	90-110%	
		4.00	**4.11**	**mg/L**	**103%**	**1.7 %**			90-110%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-131

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9802-166	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-166	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-166	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-166	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.085	1/cm	97%		9802-92	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9802-92	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-132

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-189	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-189	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-189	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-189	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.085	1/cm	97%		9802-92	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.086	1/cm	98%		9802-92	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**1.2 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-133

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-204	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-204	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-204	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-204	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.086	1/cm	98%		9802-92	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.086	1/cm	98%		9802-92	0.009	85-115%	
		0.088	**0.086**	**1/cm**	**98%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-134

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-234	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-234	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-234	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-234	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-91	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.087	1/cm	99%		9802-92	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.087	1/cm	99%		9802-92	0.009	85-115%	
		0.088	**0.087**	**1/cm**	**99%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-135

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-252	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-252	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-252	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-252	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.009	1/cm	100%		9802-91	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.009	1/cm	100%		9802-91	0.009	75-125%	
		0.009	**0.009**	**1/cm**	**100%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9802-92	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.089	1/cm	101%		9802-92	0.009	85-115%	
		0.088	**0.089**	**1/cm**	**101%**	**1.1 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-136

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-269	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-269	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-269	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-269	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.009	1/cm	100%		9802-247	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-247	0.009	75-125%	
		0.009	**0.009**	**1/cm**	**100%**	**11.1 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9802-267	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.089	1/cm	101%		9802-267	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**1.1 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-137

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-295	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-295	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-295	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-295	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9802-247	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-247	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.087	1/cm	99%		9802-267	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.088	1/cm	100%		9802-267	0.009	85-115%	
		0.088	**0.087**	**1/cm**	**99%**	**1.1 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-138

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9802-308	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-308	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9802-308	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9802-308	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9802-247	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9802-247	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.086	1/cm	98%		9802-267	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.086	1/cm	98%		9802-267	0.009	85-115%	
		0.088	**0.086**	**1/cm**	**98%**	**0.0 %**			85-115%	10%

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-7

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	4.51	4.54	ntu	101%		01/12/98	9902-79	0.05		
Standard	Standard	4.51	4.53	ntu	100%		01/20/98	9902-79	0.05		
Standard	Standard	4.51	4.56	ntu	101%		01/29/98	9902-79	0.05		
Standard	Standard	4.51	4.55	ntu	101%		02/05/98	9902-79	0.05		
Standard	Standard	4.51	4.56	ntu	101%		02/13/98	9902-79	0.05		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	4.51	4.54	ntu	101%	02/20/98	9902-79	0.05
Standard	Standard	4.51	4.54	ntu	101%	02/27/98	9902-79	0.05
Standard	Standard	4.51	4.56	ntu	101%	03/06/98	9902-79	0.05

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-95

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous (Dupl)	Standard	25	26	µg Cl-/L	104%		9802-243	25	75-125%	
Standard - TCP Aqueous	Standard	200	190	µg Cl-/L	95%		9802-244	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9802-242	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-96

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	219	µg Cl-/L	110%		9802-201	25		
Matrix Spike (Dupl)	Matrix Spike	200	199	µg Cl-/L	100%		9802-201	25		
		200	**209**	**µg Cl-/L**	**104%**	**9.6 %**				
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9802-255	25	75-125%	
Standard - TCP Aqueous	Standard	200	190	µg Cl-/L	95%		9802-256	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9802-254	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-97

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9802-286	25	75-125%	
Standard - TCP Aqueous	Standard	200	204	µg Cl-/L	102%		9802-287	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9802-285	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-98

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	180	µg Cl-/L	90%		9802-239	25		
Matrix Spike (Dupl)	Matrix Spike	200	168	µg Cl-/L	84%		9802-239	25		
		200	**174**	**µg Cl-/L**	**87%**	**6.9 %**				
Standard - TCP Aqueous	Standard	25	27	µg Cl-/L	108%		9802-302	25	75-125%	
Standard - TCP Aqueous	Standard	200	180	µg Cl-/L	90%		9802-303	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9802-301	25		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-99

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9803-14	25	75-125%	
Standard - TCP Aqueous	Standard	200	198	µg Cl-/L	99%		9803-15	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9803-13	25		

Analysis: CaHard (Calcium Hardness) **Method:** SM 3500-Ca D

QC Batch ID: 33-0-14

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	93	92	mg/L CaCO3	99%		02/13/98	9802-148	10		
Matrix Spike (Dupl)	Matrix Spike	93	92	mg/L CaCO3	99%		02/13/98	9802-148	10		
		93	**92**	**mg/L CaCO3**	**99%**	**0.0 %**					
Method Blank	Method Blank		ND*	mg/L CaCO3			02/13/98	9802-159	10		
Standard	Standard	100	97	mg/L CaCO3	97%		02/13/98	9802-158	10	90-110%	
Standard (Dupl)	Standard	100	99	mg/L CaCO3	99%		02/13/98	9802-158	10	90-110%	
		100	**98**	**mg/L CaCO3**	**98%**	**2.0 %**				90-110%	10%
Matrix Spike	Matrix Spike	93	93	mg/L CaCO3	101%		02/23/98	9802-268	10		
Matrix Spike (Dupl)	Matrix Spike	93	89	mg/L CaCO3	96%		02/23/98	9802-268	10		
		93	**91**	**mg/L CaCO3**	**98%**	**4.4 %**					
Method Blank	Method Blank		ND*	mg/L CaCO3			02/23/98	9802-279	10		
Standard	Standard	100	96	mg/L CaCO3	96%		02/23/98	9802-278	10	90-110%	
Standard (Dupl)	Standard	100	97	mg/L CaCO3	97%		02/23/98	9802-278	10	90-110%	
		100	**97**	**mg/L CaCO3**	**97%**	**1.0 %**				90-110%	10%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-88-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	10.8	10.9	µg/L		0.9%	9802-180	1		
Bromodichloromethane	Matrix Spike	40.0	44.0	µg/L	110%		9802-233	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9802-270	1		
Bromodichloromethane	Secondary Source Std	20.0	23.5	µg/L	118%		9802-271	1	70-130%	
Bromodichloromethane	Standard	20.0	20.7	µg/L	103%		9802-272	1	80-120%	
Bromodichloromethane	Standard	20.0	21.0	µg/L	105%		9802-272	1	80-120%	
Bromodichloromethane	Standard	40.0	42.9	µg/L	107%		9802-273	1	80-120%	
Bromoform	Duplicate	10.0	10.2	µg/L		2.0%	9802-180	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Bromoform	Matrix Spike	40.0	40.8	µg/L	102%		9802-233	1	
Bromoform	Method Blank		ND*	µg/L			9802-270	1	
Bromoform	Secondary Source Std	20.0	20.4	µg/L	102%		9802-271	1	70-130%
Bromoform	Standard	20.0	21.1	µg/L	106%		9802-272	1	80-120%
Bromoform	Standard	20.0	21.4	µg/L	107%		9802-272	1	80-120%
Bromoform	Standard	40.0	41.6	µg/L	104%		9802-273	1	80-120%
Chloroform	Duplicate	5.6	5.8	µg/L		3.5%	9802-180	1	
Chloroform	Matrix Spike	40.0	44.7	µg/L	112%		9802-233	1	
Chloroform	Method Blank		ND*	µg/L			9802-270	1	
Chloroform	Secondary Source Std	20.0	22.7	µg/L	114%		9802-271	1	70-130%
Chloroform	Standard	20.0	19.9	µg/L	99%		9802-272	1	80-120%
Chloroform	Standard	20.0	20.4	µg/L	102%		9802-272	1	80-120%
Chloroform	Standard	40.0	41.0	µg/L	102%		9802-273	1	80-120%
Dibromochloromethane	Duplicate	15.9	16.6	µg/L		4.3%	9802-180	1	
Dibromochloromethane	Matrix Spike	40.0	44.4	µg/L	111%		9802-233	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9802-270	1	
Dibromochloromethane	Secondary Source Std	20.0	22.8	µg/L	114%		9802-271	1	70-130%
Dibromochloromethane	Standard	20.0	21.6	µg/L	108%		9802-272	1	80-120%
Dibromochloromethane	Standard	20.0	21.7	µg/L	109%		9802-272	1	80-120%
Dibromochloromethane	Standard	40.0	43.5	µg/L	109%		9802-273	1	80-120%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-92-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	20.6	20.2	µg/L		2.0%	9802-262	1		
Bromodichloromethane	Matrix Spike	80.0	75.6	µg/L	94%		9802-307	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9803-20	1		
Bromodichloromethane	Standard	20.0	20.9	µg/L	104%		9802-272	1	80-120%	
Bromodichloromethane	Standard	40.0	45.2	µg/L	113%		9803-21	1	80-120%	
Bromodichloromethane	Standard	40.0	45.6	µg/L	114%		9803-21	1	80-120%	
Bromoform	Duplicate	7.6	6.9	µg/L		9.7%	9802-262	1		
Bromoform	Matrix Spike	80.0	82.3	µg/L	103%		9802-307	1		
Bromoform	Method Blank		ND*	µg/L			9803-20	1		
Bromoform	Standard	20.0	19.8	µg/L	99%		9802-272	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

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Bromoform	Standard	40.0	42.9	µg/L	107%		9803-21	1	80-120%
Bromoform	Standard	40.0	43.3	µg/L	108%		9803-21	1	80-120%
Chloroform	Duplicate	13.7	13.4	µg/L		2.2%	9802-262	1	
Chloroform	Matrix Spike	80.0	76.6	µg/L	96%		9802-307	1	
Chloroform	Method Blank		ND*	µg/L			9803-20	1	
Chloroform	Standard	20.0	20.0	µg/L	100%		9802-272	1	80-120%
Chloroform	Standard	40.0	45.3	µg/L	113%		9803-21	1	80-120%
Chloroform	Standard	40.0	44.2	µg/L	111%		9803-21	1	80-120%
Dibromochloromethane	Duplicate	22.3	21.6	µg/L		3.2%	9802-262	1	
Dibromochloromethane	Matrix Spike	80.0	76.6	µg/L	96%		9802-307	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9803-20	1	
Dibromochloromethane	Standard	20.0	23.0	µg/L	115%		9802-272	1	80-120%
Dibromochloromethane	Standard	40.0	45.6	µg/L	114%		9803-21	1	80-120%
Dibromochloromethane	Standard	40.0	45.4	µg/L	114%		9803-21	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-89-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	3.8	4.2	µg/L		10.0%	9802-192	1		
Bromochloroacetic acid	Matrix Spike	40.0	37.9	µg/L	95%		9802-228	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9802-309	1		
Bromochloroacetic acid	Secondary Source Std	20.0	19.1	µg/L	96%		9802-310	1	70-130%	
Bromochloroacetic acid	Standard	20.0	19.3	µg/L	97%		9802-311	1	80-120%	
Bromochloroacetic acid	Standard	20.0	18.1	µg/L	91%		9802-311	1	80-120%	
Bromochloroacetic acid	Standard	40.0	37.3	µg/L	93%		9802-312	1	80-120%	
Bromodichloroacetic acid	Duplicate	1.8	1.8	µg/L		0.0%	9802-192	1		
Bromodichloroacetic acid	Matrix Spike	40.0	37.9	µg/L	95%		9802-228	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9802-309	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9802-310	1		
Bromodichloroacetic acid	Standard	20.0	18.2	µg/L	91%		9802-311	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	19.1	µg/L	96%		9802-311	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	37.1	µg/L	93%		9802-312	1	80-120%	
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9802-192	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	40.2	µg/L	101%		9802-228	2		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9802-309	2	
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9802-310	2	
Chlorodibromoacetic acid	Standard	20.0	17.7	µg/L	89%		9802-311	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	20.0	µg/L	100%		9802-311	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	37.2	µg/L	93%		9802-312	2	80-120%
Dibromoacetic acid	Duplicate	3.4	3.8	µg/L		11.1%	9802-192	1	
Dibromoacetic acid	Matrix Spike	40.0	36.1	µg/L	90%		9802-228	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9802-309	1	
Dibromoacetic acid	Secondary Source Std	20.0	18.9	µg/L	94%		9802-310	1	70-130%
Dibromoacetic acid	Standard	20.0	18.8	µg/L	94%		9802-311	1	80-120%
Dibromoacetic acid	Standard	20.0	18.7	µg/L	93%		9802-311	1	80-120%
Dibromoacetic acid	Standard	40.0	35.4	µg/L	89%		9802-312	1	80-120%
Dichloroacetic acid	Duplicate	5.5	5.9	µg/L		7.0%	9802-192	1	
Dichloroacetic acid	Matrix Spike	40.0	37.5	µg/L	94%		9802-228	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9802-309	1	
Dichloroacetic acid	Secondary Source Std	20.0	19.0	µg/L	95%		9802-310	1	70-130%
Dichloroacetic acid	Standard	20.0	18.4	µg/L	92%		9802-311	1	80-120%
Dichloroacetic acid	Standard	20.0	16.9	µg/L	84%		9802-311	1	80-120%
Dichloroacetic acid	Standard	40.0	35.8	µg/L	89%		9802-312	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9802-192	1	
Monobromoacetic acid	Matrix Spike	40.0	38.5	µg/L	96%		9802-228	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9802-309	1	
Monobromoacetic acid	Secondary Source Std	20.0	18.0	µg/L	90%		9802-310	1	70-130%
Monobromoacetic acid	Standard	20.0	19.5	µg/L	97%		9802-311	1	80-120%
Monobromoacetic acid	Standard	20.0	17.7	µg/L	89%		9802-311	1	80-120%
Monobromoacetic acid	Standard	40.0	37.6	µg/L	94%		9802-312	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9802-192	2	
Monochloroacetic acid	Matrix Spike	40.0	39.7	µg/L	99%		9802-228	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9802-309	2	
Monochloroacetic acid	Secondary Source Std	20.0	18.5	µg/L	93%		9802-310	2	70-130%
Monochloroacetic acid	Standard	20.0	18.0	µg/L	90%		9802-311	2	80-120%
Monochloroacetic acid	Standard	20.0	20.4	µg/L	102%		9802-311	2	80-120%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Monochloroacetic acid	Standard	40.0	41.2	µg/L	103%		9802-312	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9802-192	4	
Tribromoacetic acid	Matrix Spike	40.0	42.1	µg/L	105%		9802-228	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9802-309	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9802-310	4	
Tribromoacetic acid	Standard	20.0	19.0	µg/L	95%		9802-311	4	80-120%
Tribromoacetic acid	Standard	20.0	20.0	µg/L	100%		9802-311	4	80-120%
Tribromoacetic acid	Standard	40.0	37.5	µg/L	94%		9802-312	4	80-120%
Trichloroacetic acid	Duplicate	2.7	3.0	µg/L		10.5%	9802-192	1	
Trichloroacetic acid	Matrix Spike	40.0	36.9	µg/L	92%		9802-228	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9802-309	1	
Trichloroacetic acid	Secondary Source Std	20.0	18.4	µg/L	92%		9802-310	1	70-130%
Trichloroacetic acid	Standard	20.0	19.5	µg/L	97%		9802-311	1	80-120%
Trichloroacetic acid	Standard	20.0	18.8	µg/L	94%		9802-311	1	80-120%
Trichloroacetic acid	Standard	40.0	36.1	µg/L	90%		9802-312	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-90-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromochloroacetic acid	Duplicate	5.0	4.3	µg/L		15.1%	9802-250	1		
Bromochloroacetic acid	Matrix Spike	40.0	38.4	µg/L	96%		9802-281	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9803-8	1		
Bromochloroacetic acid	Standard	20.0	19.0	µg/L	95%		9803-9	1	80-120%	
Bromochloroacetic acid	Standard	20.0	18.4	µg/L	92%		9803-9	1	80-120%	
Bromochloroacetic acid	Standard	40.0	35.3	µg/L	88%		9802-312	1	80-120%	
Bromochloroacetic acid	Standard	40.0	37.6	µg/L	94%		9802-312	1	80-120%	
Bromodichloroacetic acid	Duplicate	2.5	2.4	µg/L		4.1%	9802-250	1		
Bromodichloroacetic acid	Matrix Spike	40.0	40.3	µg/L	101%		9802-281	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9803-8	1		
Bromodichloroacetic acid	Standard	20.0	18.9	µg/L	94%		9803-9	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	17.9	µg/L	89%		9803-9	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	36.1	µg/L	90%		9802-312	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	38.6	µg/L	97%		9802-312	1	80-120%	
Chlorodibromoacetic acid	Duplicate	2.1	ND	µg/L		NA	9802-250	2		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

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Chlorodibromoacetic acid	Matrix Spike	40.0	41.1	µg/L	103%		9802-281	2	
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9803-8	2	
Chlorodibromoacetic acid	Standard	20.0	16.9	µg/L	84%		9803-9	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	19.8	µg/L	99%		9803-9	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	37.6	µg/L	94%		9802-312	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	40.5	µg/L	101%		9802-312	2	80-120%
Dibromoacetic acid	Duplicate	4.5	4.1	µg/L		9.3%	9802-250	1	
Dibromoacetic acid	Matrix Spike	40.0	37.9	µg/L	95%		9802-281	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9803-8	1	
Dibromoacetic acid	Standard	20.0	18.4	µg/L	92%		9803-9	1	80-120%
Dibromoacetic acid	Standard	20.0	18.0	µg/L	90%		9803-9	1	80-120%
Dibromoacetic acid	Standard	40.0	34.4	µg/L	86%		9802-312	1	80-120%
Dibromoacetic acid	Standard	40.0	37.2	µg/L	93%		9802-312	1	80-120%
Dichloroacetic acid	Duplicate	6.2	6.0	µg/L		3.3%	9802-250	1	
Dichloroacetic acid	Matrix Spike	40.0	37.3	µg/L	93%		9802-281	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9803-8	1	
Dichloroacetic acid	Standard	20.0	18.4	µg/L	92%		9803-9	1	80-120%
Dichloroacetic acid	Standard	20.0	18.4	µg/L	92%		9803-9	1	80-120%
Dichloroacetic acid	Standard	40.0	35.1	µg/L	88%		9802-312	1	80-120%
Dichloroacetic acid	Standard	40.0	36.3	µg/L	91%		9802-312	1	80-120%
Monobromoacetic acid	Duplicate	0.0	1.0	µg/L		200.0	9802-250	1	
Monobromoacetic acid	Matrix Spike	40.0	36.0	µg/L	90%		9802-281	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9803-8	1	
Monobromoacetic acid	Standard	20.0	17.0	µg/L	85%		9803-9	1	80-120%
Monobromoacetic acid	Standard	20.0	17.7	µg/L	89%		9803-9	1	80-120%
Monobromoacetic acid	Standard	40.0	39.2	µg/L	98%		9802-312	1	80-120%
Monobromoacetic acid	Standard	40.0	38.8	µg/L	97%		9802-312	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9802-250	2	
Monochloroacetic acid	Matrix Spike	40.0	39.6	µg/L	99%		9802-281	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9803-8	2	
Monochloroacetic acid	Standard	20.0	17.2	µg/L	86%		9803-9	2	80-120%
Monochloroacetic acid	Standard	20.0	19.4	µg/L	97%		9803-9	2	80-120%
Monochloroacetic acid	Standard	40.0	41.7	µg/L	104%		9802-312	2	80-120%
Monochloroacetic acid	Standard	40.0	37.8	µg/L	94%		9802-312	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9802-250	4	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

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Tribromoacetic acid	Matrix Spike	40.0	46.6	µg/L	117%		9802-281	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9803-8	4	
Tribromoacetic acid	Standard	20.0	17.3	µg/L	86%		9803-9	4	80-120%
Tribromoacetic acid	Standard	20.0	18.3	µg/L	92%		9803-9	4	80-120%
Tribromoacetic acid	Standard	40.0	39.3	µg/L	98%		9802-312	4	80-120%
Tribromoacetic acid	Standard	40.0	40.9	µg/L	102%		9802-312	4	80-120%
Trichloroacetic acid	Duplicate	4.3	3.9	µg/L		9.8%	9802-250	1	
Trichloroacetic acid	Matrix Spike	40.0	41.7	µg/L	104%		9802-281	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9803-8	1	
Trichloroacetic acid	Standard	20.0	19.8	µg/L	99%		9803-9	1	80-120%
Trichloroacetic acid	Standard	20.0	19.2	µg/L	96%		9803-9	1	80-120%
Trichloroacetic acid	Standard	40.0	34.5	µg/L	86%		9802-312	1	80-120%
Trichloroacetic acid	Standard	40.0	37.1	µg/L	93%		9802-312	1	80-120%

End of quality control report

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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QC Results from Montgomery Watson Laboratories

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Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Study#: 108
Study Title: ICR RSSCT #1

Phone: 785-368-3882 Fax: 785-368-3869

QC Batch ID: 73580 **Report #:** 40615

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.021	105.0%		(50 - 150)
LCS2	Bromide	0.1	0.11	110.0%		(90 - 110)
MBLK	Bromide	ND	ND			(70 - 130)
MS	Bromide	0.1	0.1	100.0%		(70 - 130)
MSD	Bromide	0.1	0.1	100.0%		(70 - 130)

QC Batch ID: 73654 **Report #:** 40615

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	1.02	102.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	1.02	102.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			
MS	Ammonia Nitrogen	1	1.15	115.0%		(80 - 120)
MSD	Ammonia Nitrogen	1	1.15	115.0%		(80 - 120)

QC Batch ID: 74078 **Report #:** 40932

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.02	100.0%		(50 - 150)
LCS2	Bromide	0.1	0.107	107.0%		(90 - 110)
MBLK	Bromide	ND	ND			(70 - 130)
MS	Bromide	0.3	0.291	97.0%		(70 - 130)
MSD	Bromide	0.3	0.291	97.0%		(70 - 130)

QC Batch ID: 74462 **Report #:** 40932

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	1.01	101.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	1.02	102.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			
MS	Ammonia Nitrogen	1	1.07	107.0%		(80 - 120)

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

QC Results from Montgomery Watson Laboratories

Mr. Bruce Northup
City of Topeka

Study#: 108
Study Title: ICR RSSCT #1

MSD	Ammonia Nitrogen	1	1.07	107.0%	(80 - 120)

End of MW QC report

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

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Comments

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 108
Study Title: ICR RSSCT #1

Study comments

Sample 9802-203: Sample was split from 9802-197 after 9802-197 had cooled to 4ºC. Sampling temperature is unavailable.

Analysis comments

Analysis: Turbidity
Method: SM 2130 B

Reported turbidity data has been rounded following the requirements of SM 2130 B, reproduced in the table below (Standard Methods, 1995). Note that the reported digits are not necessarily significant.

Turbidity Range	Report to Nearest
0-1.0	0.05
1-10	0.1
10-40	1
40-100	5
100-400	10
400-1000	50
> 1000	100

End of comments

Summers & Hooper, Inc.
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Laboratory Report

Client:

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study Title: ICR RSSCT #2

Study #: 118

Reviewed By: _____
Stuart M. Hooper

Date Reviewed: 7/13/99

Electronic copies of the results and quality control data are available upon request.

Summers & Hooper, Inc.
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Laboratory Test Results

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
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Phone: 785-368-3882 Fax: 785-368-3869

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.Settled.Day 1 **S&H ID:** 9805-477 **Date Sampled:** 5/26/98 9:00:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1	TOC-ICR	TOC	2.75	mg/L	SM 5310 C	1	0.50	5/26/98		5/27/98	7-0-283
2	TOC-ICR	TOC (Dupl)	2.73	mg/L	SM 5310 C	1	0.50	5/26/98		5/27/98	7-0-283
			2.74	**mg/L**	**0.7 % RPD**						

Sample ID: 118.Settled. Day 2 **S&H ID:** 9805-500 **Date Sampled:** 5/27/98 8:15:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
3	TOC-ICR	TOC	2.84	mg/L	SM 5310 C	1	0.50	5/27/98		5/30/98	7-0-284
4	TOC-ICR	TOC (Dupl)	2.84	mg/L	SM 5310 C	1	0.50	5/27/98		5/30/98	7-0-284
			2.84	**mg/L**	**0.0 % RPD**						

Sample ID: 118.Filtered. Day 2 **S&H ID:** 9805-501 **Date Sampled:** 5/27/98 1:00:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
5	TOC-ICR	TOC	4.02	mg/L	SM 5310 C	1	0.50	5/27/98		5/30/98	7-0-284
6	TOC-ICR	TOC (Dupl)	4.02	mg/L	SM 5310 C	1	0.50	5/27/98		5/30/98	7-0-284
			4.02	**mg/L**	**0.0 % RPD**						

Sample ID: 118.Set. On Arrival **S&H ID:** 9805-505 **Date Sampled:** 5/29/98 3:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
7	TOC-ICR	TOC	2.66	mg/L	SM 5310 C	1	0.50	5/29/98		5/30/98	7-0-284
8	TOC-ICR	TOC (Dupl)	2.66	mg/L	SM 5310 C	1	0.50	5/29/98		5/30/98	7-0-284
			2.66	**mg/L**	**0.0 % RPD**						

Sample ID: 118.Filtered S&H **S&H ID:** 9805-506 **Date Sampled:** 5/29/98 3:20:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
9	TOC-ICR	TOC	2.47	mg/L	SM 5310 C	1	0.50	5/29/98		5/30/98	7-0-284
10	TOC-ICR	TOC (Dupl)	2.51	mg/L	SM 5310 C	1	0.50	5/29/98		5/30/98	7-0-284
			2.49	**mg/L**	**1.6 % RPD**						

Sample ID: 118.10.Eff-1 **S&H ID:** 9806-5 **Date Sampled:** 6/2/98 12:17:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
11	Cl2Dose	Chlorine Dose	2.00	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
12	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

13	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.8	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
14	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
15	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
16	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
17	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
18	HAA-ICR	Dibromoacetic acid	1.2	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
19	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
20	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
21	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
22	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
23	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
24	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
25	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
26	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/2/98		6/2/98	n/a
27	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
28	TEMP	Temperature	22.5	ºC	SM 2550 B	1	n/a	6/2/98		6/2/98	n/a
29	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
30	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	6/2/98		6/2/98	7-0-285
31	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	6/2/98		6/2/98	7-0-285
			ND	**mg/L**							
32	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
33	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			ND	**µg Cl-/L**							
34	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.6	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
35	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
36	THM-ICR	Bromoform	6.8	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
37	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
38	THM-ICR	Dibromochloromethane	3.3	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
39	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/2/98		6/3/98	8-0-192
40	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/2/98		6/3/98	8-0-192
			ND	**1/cm**							

Sample ID: 118.10.Eff-3 **S&H ID:** 9806-7 **Date Sampled:** 6/2/98 6:56:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
41	Cl2Dose	Chlorine Dose	2.09	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
42	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
43	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

44	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
45	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
46	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
47	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
48	HAA-ICR	Dibromoacetic acid	2.4	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
49	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
50	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
51	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
52	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
53	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
54	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
55	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
56	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/2/98		6/2/98	n/a
57	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
58	TEMP	Temperature	23.1	ºC	SM 2550 B	1	n/a	6/2/98		6/2/98	n/a
59	TIME	Cl2 Incubation Time	48.4	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
60	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	6/2/98		6/3/98	7-0-286
61	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	6/2/98		6/3/98	7-0-286
			ND	**mg/L**							
62	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
63	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			ND	**µg Cl-/L**							
64	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.2	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
65	THM-ICR	Bromodichloromethane	1.7	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
66	THM-ICR	Bromoform	16.0	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
67	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
68	THM-ICR	Dibromochloromethane	6.3	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
69	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/2/98		6/3/98	8-0-192
70	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/2/98		6/3/98	8-0-192
			ND	**1/cm**							

Sample ID: 118.10.Eff-5 **S&H ID:** 9806-9 **Date Sampled:** 6/3/98 5:46:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
71	Cl2Dose	Chlorine Dose	2.20	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
72	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
73	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	93.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
74	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

75	HAA-ICR	Bromochloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
76	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
77	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
78	HAA-ICR	Dibromoacetic acid	4.0	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
79	HAA-ICR	Dichloroacetic acid	7.8	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
80	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
81	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
82	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
83	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
84	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
85	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
86	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/3/98		6/3/98	n/a
87	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
88	TEMP	Temperature	21.6	ºC	SM 2550 B	1	n/a	6/3/98		6/3/98	n/a
89	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
90	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	6/3/98		6/3/98	7-0-286
91	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	6/3/98		6/3/98	7-0-286
			ND	**mg/L**							
92	TOX-ICR	TOX	32	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
93	TOX-ICR	TOX (Dupl)	37	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			35	**µg Cl-/L**	**14.3 % RPD**						
94	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.2	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
95	THM-ICR	Bromodichloromethane	3.0	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
96	THM-ICR	Bromoform	23.3	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
97	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
98	THM-ICR	Dibromochloromethane	10.6	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
99	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/3/98		6/3/98	8-0-192
100	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/3/98		6/3/98	8-0-192
			ND	**1/cm**							

Sample ID: 118.10.Eff-6 **S&H ID:** 9806-10 **Date Sampled:** 6/3/98 9:27:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
101	Cl2Dose	Chlorine Dose	2.29	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
102	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
103	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.2	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
104	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard) (Lab Dupl)	97.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			97.4	**%**	**0.4 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

105	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.8	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
106	HAA-ICR	2-Bromopropionic acid (Surrogate) (Lab Dupl)	96.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			96.6	**%**	**0.4 % RPD**						
107	HAA-ICR	Bromochloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
108	HAA-ICR	Bromochloroacetic acid (Lab Dupl)	2.3	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			2.3	**µg/L**	**4.3 % RPD**						
109	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
110	HAA-ICR	Bromodichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			ND	**µg/L**							
111	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
112	HAA-ICR	Chlorodibromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
			ND	**µg/L**							
113	HAA-ICR	Dibromoacetic acid	4.1	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
114	HAA-ICR	Dibromoacetic acid (Lab Dupl)	4.1	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			4.1	**µg/L**	**0.0 % RPD**						
115	HAA-ICR	Dichloroacetic acid	8.1	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
116	HAA-ICR	Dichloroacetic acid (Lab Dupl)	7.8	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			7.9	**µg/L**	**3.8 % RPD**						
117	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
118	HAA-ICR	Monobromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			ND	**µg/L**							
119	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
120	HAA-ICR	Monochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
			ND	**µg/L**							
121	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
122	HAA-ICR	Tribromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
			ND	**µg/L**							
123	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
124	HAA-ICR	Trichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
			ND	**µg/L**							
125	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
126	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
127	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/3/98		6/3/98	n/a
128	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
129	TEMP	Temperature	22.7	ºC	SM 2550 B	1	n/a	6/3/98		6/3/98	n/a
130	TIME	Cl2 Incubation Time	48.4	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
131	TOC-ICR	TOC	0.58	mg/L	SM 5310 C	1	0.50	6/3/98		6/3/98	7-0-286
132	TOC-ICR	TOC (Dupl)	0.59	mg/L	SM 5310 C	1	0.50	6/3/98		6/3/98	7-0-286

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

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City of Topeka

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			0.58	**mg/L**	**1.7 % RPD**						
133	TOX-ICR	TOX	41	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
134	TOX-ICR	TOX (Dupl)	42	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			42	**µg Cl-/L**	**2.4 % RPD**						
135	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.2	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
136	THM-ICR	Bromodichloromethane	3.9	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
137	THM-ICR	Bromoform	28.2	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
138	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
139	THM-ICR	Dibromochloromethane	13.6	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
140	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/3/98		6/3/98	8-0-192
141	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/3/98		6/3/98	8-0-192
			ND	**1/cm**							

Sample ID: 118.10.Eff-8 **S&H ID:** 9806-12 **Date Sampled:** 6/4/98 1:05:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
142	Cl2Dose	Chlorine Dose	2.46	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
143	Cl2Res	Chlorine Residual	0.69	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
144	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	93.2	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
145	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
146	HAA-ICR	Bromochloroacetic acid	4.9	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
147	HAA-ICR	Bromodichloroacetic acid	1.0	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
148	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
149	HAA-ICR	Dibromoacetic acid	6.9	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
150	HAA-ICR	Dichloroacetic acid	7.1	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
151	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
152	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
153	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
154	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
155	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
156	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
157	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/4/98		6/4/98	n/a
158	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
159	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	6/4/98		6/4/98	n/a
160	TIME	Cl2 Incubation Time	48.4	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
161	TOC-ICR	TOC	0.81	mg/L	SM 5310 C	1	0.50	6/4/98		6/4/98	7-0-287
162	TOC-ICR	TOC (Dupl)	0.80	mg/L	SM 5310 C	1	0.50	6/4/98		6/4/98	7-0-287
			0.81	**mg/L**	**1.2 % RPD**						
163	TOX-ICR	TOX	63	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/15/98	12-0-147

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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164	TOX-ICR	TOX (Dupl)	62	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/15/98	12-0-147
			63	**µg Cl-/L**	**1.6 % RPD**						
165	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.2	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
166	THM-ICR	Bromodichloromethane	7.0	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
167	THM-ICR	Bromoform	31.2	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
168	THM-ICR	Chloroform	2.4	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
169	THM-ICR	Dibromochloromethane	19.8	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
170	UV-ICR	UV	0.011	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
171	UV-ICR	UV (Dupl)	0.010	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
			0.010	**1/cm**	**10.0 % RPD**						

Sample ID: 118.10.Eff-9 **S&H ID:** 9806-13 **Date Sampled:** 6/4/98 8:45:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
172	Cl2Dose	Chlorine Dose	2.54	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
173	Cl2Res	Chlorine Residual	0.73	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
174	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
175	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
176	HAA-ICR	Bromochloroacetic acid	4.6	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
177	HAA-ICR	Bromodichloroacetic acid	1.0	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
178	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
179	HAA-ICR	Dibromoacetic acid	6.7	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
180	HAA-ICR	Dichloroacetic acid	6.4	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
181	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
182	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/16/98	0-152-0
183	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/16/98	0-152-0
184	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/16/98	0-152-0
185	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
186	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
187	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/4/98		6/4/98	n/a
188	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
189	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	6/4/98		6/4/98	n/a
190	TIME	Cl2 Incubation Time	48.5	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
191	TOC-ICR	TOC	0.90	mg/L	SM 5310 C	1	0.50	6/4/98		6/4/98	7-0-287
192	TOC-ICR	TOC (Dupl)	0.93	mg/L	SM 5310 C	1	0.50	6/4/98		6/4/98	7-0-287
			0.92	**mg/L**	**3.3 % RPD**						
193	TOX-ICR	TOX	70	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/15/98	12-0-147
194	TOX-ICR	TOX (Dupl)	69	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/15/98	12-0-147
			70	**µg Cl-/L**	**1.4 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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195	THM-ICR	1,2,3-Trichloropropane (Surrogate)	96.0	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
196	THM-ICR	Bromodichloromethane	8.4	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
197	THM-ICR	Bromoform	31.8	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
198	THM-ICR	Chloroform	2.7	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
199	THM-ICR	Dibromochloromethane	22.6	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
200	UV-ICR	UV	0.012	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
201	UV-ICR	UV (Dupl)	0.012	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
			0.012	**1/cm**	**0.0 % RPD**						

Sample ID: 118.10.Eff-10 **S&H ID:** 9806-14 **Date Sampled:** 6/4/98 9:09:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
202	Cl2Dose	Chlorine Dose	2.80	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
203	Cl2Res	Chlorine Residual	1.18	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
204	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.4	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
205	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.0	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
206	HAA-ICR	Bromochloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
207	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
208	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
209	HAA-ICR	Dibromoacetic acid	8.1	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
210	HAA-ICR	Dichloroacetic acid	7.3	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
211	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
212	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
213	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
214	HAA-ICR	Trichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
215	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
216	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
217	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	6/4/98		6/4/98	n/a
218	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
219	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	6/4/98		6/4/98	n/a
220	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
221	TOC-ICR	TOC	1.07	mg/L	SM 5310 C	1	0.50	6/4/98		6/5/98	7-0-288
222	TOC-ICR	TOC (Dupl)	1.11	mg/L	SM 5310 C	1	0.50	6/4/98		6/5/98	7-0-288
			1.09	**mg/L**	**3.7 % RPD**						
223	TOX-ICR	TOX	86	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
224	TOX-ICR	TOX (Dupl)	90	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
			88	**µg Cl-/L**	**4.5 % RPD**						
225	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.6	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
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226	THM-ICR	Bromodichloromethane	13.4	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
227	THM-ICR	Bromoform	28.7	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
228	THM-ICR	Chloroform	4.6	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
229	THM-ICR	Dibromochloromethane	28.4	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
230	UV-ICR	UV	0.016	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
231	UV-ICR	UV (Dupl)	0.016	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
			0.016	**1/cm**	**0.0 % RPD**						

Sample ID: 118.10.Eff-12 **S&H ID:** 9806-16 **Date Sampled:** 6/5/98 11:38:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
232	Cl2Dose	Chlorine Dose	2.99	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
233	Cl2Res	Chlorine Residual	1.38	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
234	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	92.4	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
235	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
236	HAA-ICR	Bromochloroacetic acid	6.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
237	HAA-ICR	Bromodichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
238	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
239	HAA-ICR	Dibromoacetic acid	7.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
240	HAA-ICR	Dichloroacetic acid	7.6	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
241	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
242	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
243	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
244	HAA-ICR	Trichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
245	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
246	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
247	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	6/5/98		6/5/98	n/a
248	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
249	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	6/5/98		6/5/98	n/a
250	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
251	TOC-ICR	TOC	1.27	mg/L	SM 5310 C	1	0.50	6/5/98		6/5/98	7-0-288
252	TOC-ICR	TOC (Dupl)	1.30	mg/L	SM 5310 C	1	0.50	6/5/98		6/5/98	7-0-288
			1.29	**mg/L**	**2.3 % RPD**						
253	TOX-ICR	TOX	91	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
254	TOX-ICR	TOX (Dupl)	99	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
			95	**µg Cl-/L**	**8.4 % RPD**						
255	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.4	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
256	THM-ICR	Bromodichloromethane	17.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
257	THM-ICR	Bromoform	27.7	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

258	THM-ICR	Chloroform	6.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
259	THM-ICR	Dibromochloromethane	32.1	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
260	UV-ICR	UV	0.018	1/cm	SM 5910 B	1	0.009	6/5/98		6/5/98	8-0-193
261	UV-ICR	UV (Dupl)	0.018	1/cm	SM 5910 B	1	0.009	6/5/98		6/5/98	8-0-193
			0.018	**1/cm**	**0.0 % RPD**						

Sample ID: 118.10.Eff-13 **S&H ID:** 9806-17 **Date Sampled:** 6/5/98 10:48:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
262	Cl2Dose	Chlorine Dose	3.12	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
263	Cl2Res	Chlorine Residual	0.89	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
264	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	90.0	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
265	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
266	HAA-ICR	Bromochloroacetic acid	6.7	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
267	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
268	HAA-ICR	Chlorodibromoacetic acid	2.3	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
269	HAA-ICR	Dibromoacetic acid	9.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
270	HAA-ICR	Dichloroacetic acid	8.1	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
271	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
272	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
273	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
274	HAA-ICR	Trichloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
275	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
276	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
277	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	6/5/98		6/5/98	n/a
278	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
279	TEMP	Temperature	23.0	ºC	SM 2550 B	1	n/a	6/5/98		6/5/98	n/a
280	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
281	TOC-ICR	TOC	1.44	mg/L	SM 5310 C	1	0.50	6/10/98		6/6/98	7-0-289
282	TOC-ICR	TOC (Dupl)	1.39	mg/L	SM 5310 C	1	0.50	6/10/98		6/6/98	7-0-289
			1.42	**mg/L**	**3.5 % RPD**						
283	TOX-ICR	TOX	108	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
284	TOX-ICR	TOX (Dupl)	104	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
			106	**µg Cl-/L**	**3.8 % RPD**						
285	THM-ICR	1,2,3-Trichloropropane (Surrogate)	91.6	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
286	THM-ICR	Bromodichloromethane	19.1	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
287	THM-ICR	Bromoform	28.0	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
288	THM-ICR	Chloroform	7.7	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
289	THM-ICR	Dibromochloromethane	33.5	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

290	UV-ICR	UV	0.020	1/cm	SM 5910 B	1	0.009	6/5/98		6/7/98	8-0-194
291	UV-ICR	UV (Dupl)	0.019	1/cm	SM 5910 B	1	0.009	6/5/98		6/7/98	8-0-194
			0.020	**1/cm**	**5.0 % RPD**						

Sample ID: 118.10.Eff-16 **S&H ID:** 9806-20 **Date Sampled:** 6/6/98 5:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
292	Cl2Dose	Chlorine Dose	3.21	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
293	Cl2Res	Chlorine Residual	0.89	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
294	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	94.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
295	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
296	HAA-ICR	Bromochloroacetic acid	6.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
297	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
298	HAA-ICR	Chlorodibromoacetic acid	2.1	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
299	HAA-ICR	Dibromoacetic acid	8.6	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
300	HAA-ICR	Dichloroacetic acid	8.1	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
301	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
302	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
303	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
304	HAA-ICR	Trichloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
305	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
306	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
307	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
308	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
309	TEMP	Temperature	22.4	ºC	SM 2550 B	1	n/a	6/6/98		6/6/98	n/a
310	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
311	TOC-ICR	TOC	1.52	mg/L	SM 5310 C	1	0.50	6/6/98		6/6/98	7-0-289
312	TOC-ICR	TOC (Dupl)	1.51	mg/L	SM 5310 C	1	0.50	6/6/98		6/6/98	7-0-289
			1.52	**mg/L**	**0.7 % RPD**						
313	TOX-ICR	TOX	112	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
314	TOX-ICR	TOX (Dupl)	112	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
			112	**µg Cl-/L**	**0.0 % RPD**						
315	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.2	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
316	THM-ICR	Bromodichloromethane	23.1	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
317	THM-ICR	Bromoform	29.6	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
318	THM-ICR	Chloroform	9.8	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
319	THM-ICR	Dibromochloromethane	37.7	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
320	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	6/6/98		6/8/98	8-0-195
321	UV-ICR	UV (Dupl)	0.022	1/cm	SM 5910 B	1	0.009	6/6/98		6/8/98	8-0-195

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

			0.021	**1/cm**	**4.8 % RPD**						

Sample ID: 118.10.Eff-18 **S&H ID:** 9806-22 **Date Sampled:** 6/7/98 3:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
322	Cl2Dose	Chlorine Dose	3.36	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
323	Cl2Res	Chlorine Residual	0.87	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
324	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.2	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
325	HAA-ICR	2-Bromopropionic acid (Surrogate)	94.0	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
326	HAA-ICR	Bromochloroacetic acid	7.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
327	HAA-ICR	Bromodichloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
328	HAA-ICR	Chlorodibromoacetic acid	2.0	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
329	HAA-ICR	Dibromoacetic acid	8.3	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
330	HAA-ICR	Dichloroacetic acid	8.5	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
331	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
332	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
333	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
334	HAA-ICR	Trichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
335	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
336	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
337	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	6/7/98		6/7/98	n/a
338	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
339	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	6/7/98		6/7/98	n/a
340	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
341	TOC-ICR	TOC	1.63	mg/L	SM 5310 C	1	0.50	6/7/98		6/7/98	7-0-290
342	TOC-ICR	TOC (Dupl)	1.70	mg/L	SM 5310 C	1	0.50	6/7/98		6/7/98	7-0-290
			1.67	**mg/L**	**4.2 % RPD**						
343	TOX-ICR	TOX	122	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
344	TOX-ICR	TOX (Dupl)	124	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
			123	**µg Cl-/L**	**1.6 % RPD**						
345	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.4	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
346	THM-ICR	Bromodichloromethane	26.9	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
347	THM-ICR	Bromoform	28.0	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
348	THM-ICR	Chloroform	13.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
349	THM-ICR	Dibromochloromethane	39.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
350	UV-ICR	UV	0.025	1/cm	SM 5910 B	1	0.009	6/7/98		6/8/98	8-0-195
351	UV-ICR	UV (Dupl)	0.024	1/cm	SM 5910 B	1	0.009	6/7/98		6/8/98	8-0-195
			0.025	**1/cm**	**4.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.10.Eff-22 **S&H ID:** 9806-26 **Date Sampled:** 6/8/98 8:43:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
352	Cl2Dose	Chlorine Dose	3.45	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/14/98		6/14/98	n/a
353	Cl2Res	Chlorine Residual	0.88	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/14/98		6/16/98	n/a
354	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.8	%	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
355	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
356	HAA-ICR	Bromochloroacetic acid	8.9	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
357	HAA-ICR	Bromodichloroacetic acid	3.4	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
358	HAA-ICR	Chlorodibromoacetic acid	3.2	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	6/30/98	0-157-0
359	HAA-ICR	Dibromoacetic acid	11.3	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
360	HAA-ICR	Dichloroacetic acid	8.4	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
361	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
362	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	6/30/98	0-157-0
363	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/16/98	6/29/98	6/30/98	0-157-0
364	HAA-ICR	Trichloroacetic acid	3.1	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
365	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/16/98	n/a
366	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/14/98	n/a
367	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
368	TEMP	Cl2 Temperature	19.7	ºC	SM 2550 B	1	n/a	6/14/98		6/16/98	n/a
369	TEMP	Temperature	24.4	ºC	SM 2550 B	1	n/a	6/8/98		6/8/98	n/a
370	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	6/14/98		6/16/98	n/a
371	TOC-ICR	TOC	1.82	mg/L	SM 5310 C	1	0.50	6/8/98		6/9/98	7-0-292
372	TOC-ICR	TOC (Dupl)	1.84	mg/L	SM 5310 C	1	0.50	6/8/98		6/9/98	7-0-292
			1.83	**mg/L**	**1.1 % RPD**						
373	TOX-ICR	TOX	133	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/23/98	12-0-153
374	TOX-ICR	TOX (Dupl)	125	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/23/98	12-0-153
			129	**µg Cl-/L**	**6.2 % RPD**						
375	THM-ICR	1,2,3-Trichloropropane (Surrogate)	106.8	%	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
376	THM-ICR	Bromodichloromethane	26.1	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
377	THM-ICR	Bromoform	20.9	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
378	THM-ICR	Chloroform	13.1	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
379	THM-ICR	Dibromochloromethane	35.0	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
380	UV-ICR	UV	0.027	1/cm	SM 5910 B	1	0.009	6/8/98		6/9/98	8-0-196
381	UV-ICR	UV (Dupl)	0.026	1/cm	SM 5910 B	1	0.009	6/8/98		6/9/98	8-0-196
			0.026	**1/cm**	**3.8 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.10.Eff-24 **S&H ID:** 9806-28 **Date Sampled:** 6/10/98 1:53:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
382	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/10/98	n/a
383	TEMP	Temperature	23.4	ºC	SM 2550 B	1	n/a	6/10/98		6/10/98	n/a
384	TOC-ICR	TOC	1.87	mg/L	SM 5310 C	1	0.50	6/10/98		6/10/98	7-0-293
385	TOC-ICR	TOC (Dupl)	1.89	mg/L	SM 5310 C	1	0.50	6/10/98		6/10/98	7-0-293
			1.88	**mg/L**	**1.1 % RPD**						

Sample ID: 118.10.Eff-5d **S&H ID:** 9806-36 **Date Sampled:** 6/3/98 5:46:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
386	Cl2Dose	Chlorine Dose	2.20	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
387	Cl2Res	Chlorine Residual	0.78	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
388	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	91.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
389	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
390	HAA-ICR	Bromochloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
391	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
392	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/17/98	0-152-0
393	HAA-ICR	Dibromoacetic acid	3.8	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
394	HAA-ICR	Dichloroacetic acid	7.3	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
395	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
396	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/17/98	0-152-0
397	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/17/98	0-152-0
398	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
399	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
400	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
401	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/3/98		6/3/98	n/a
402	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
403	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	6/3/98		6/3/98	n/a
404	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
405	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	6/3/98		6/3/98	7-0-286
406	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	6/3/98		6/3/98	7-0-286
			ND	**mg/L**							
407	TOX-ICR	TOX	31	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
408	TOX-ICR	TOX (Dupl)	27	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			29	**µg Cl-/L**	**13.8 % RPD**						
409	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.0	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
410	THM-ICR	Bromodichloromethane	2.9	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

411	THM-ICR	Bromoform	21.2	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
412	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
413	THM-ICR	Dibromochloromethane	9.8	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
414	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/3/98		6/3/98	8-0-192
415	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/3/98		6/3/98	8-0-192
			ND	**1/cm**							

Sample ID: 118.10.Eff-10d **S&H ID:** 9806-38 **Date Sampled:** 6/4/98 9:09:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
416	Cl2Dose	Chlorine Dose	2.84	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
417	Cl2Res	Chlorine Residual	1.16	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
418	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	89.2	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
419	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
420	HAA-ICR	Bromochloroacetic acid	5.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
421	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
422	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
423	HAA-ICR	Dibromoacetic acid	6.6	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
424	HAA-ICR	Dichloroacetic acid	6.3	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
425	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
426	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
427	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
428	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
429	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
430	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
431	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/4/98		6/4/98	n/a
432	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
433	TEMP	Temperature	22.2	ºC	SM 2550 B	1	n/a	6/4/98		6/4/98	n/a
434	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
435	TOC-ICR	TOC	1.10	mg/L	SM 5310 C	1	0.50	6/4/98		6/5/98	7-0-288
436	TOC-ICR	TOC (Dupl)	1.13	mg/L	SM 5310 C	1	0.50	6/4/98		6/5/98	7-0-288
			1.12	**mg/L**	**2.7 % RPD**						
437	TOX-ICR	TOX	80	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
438	TOX-ICR	TOX (Dupl)	85	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
			83	**µg Cl-/L**	**6.0 % RPD**						
439	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.6	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
440	THM-ICR	Bromodichloromethane	13.3	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
441	THM-ICR	Bromoform	28.3	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
442	THM-ICR	Chloroform	4.4	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

443	THM-ICR	Dibromochloromethane	28.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
444	UV-ICR	UV	0.015	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
445	UV-ICR	UV (Dupl)	0.015	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
			0.015	**1/cm**	**0.0 % RPD**						

Sample ID: 118.10.Eff-16d **S&H ID:** 9806-41 **Date Sampled:** 6/6/98 5:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
446	Cl2Dose	Chlorine Dose	3.22	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
447	Cl2Res	Chlorine Residual	0.90	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
448	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.6	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
449	HAA-ICR	2-Bromopropionic acid (Surrogate)	91.6	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
450	HAA-ICR	Bromochloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
451	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
452	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
453	HAA-ICR	Dibromoacetic acid	7.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
454	HAA-ICR	Dichloroacetic acid	7.5	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
455	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
456	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
457	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
458	HAA-ICR	Trichloroacetic acid	1.4	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
459	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
460	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
461	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
462	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
463	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	6/6/98		6/6/98	n/a
464	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
465	TOC-ICR	TOC	1.52	mg/L	SM 5310 C	1	0.50	6/6/98		6/6/98	7-0-289
466	TOC-ICR	TOC (Dupl)	1.53	mg/L	SM 5310 C	1	0.50	6/6/98		6/6/98	7-0-289
			1.52	**mg/L**	**0.7 % RPD**						
467	TOX-ICR	TOX	116	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
468	TOX-ICR	TOX (Dupl)	119	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
			118	**µg Cl-/L**	**2.5 % RPD**						
469	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.2	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
470	THM-ICR	Bromodichloromethane	21.9	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
471	THM-ICR	Bromoform	26.1	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
472	THM-ICR	Chloroform	9.5	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
473	THM-ICR	Dibromochloromethane	34.3	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
474	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	6/6/98		6/8/98	8-0-195

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

475	UV-ICR	UV (Dupl)	0.022	1/cm	SM 5910 B	1	0.009	6/6/98		6/8/98	8-0-195
			0.021	**1/cm**	**4.8 % RPD**						

Sample ID: 118.20.Eff-1 **S&H ID:** 9806-45 **Date Sampled:** 6/1/98 10:53:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
476	Cl2Dose	Chlorine Dose	2.00	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
477	Cl2Res	Chlorine Residual	0.96	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
478	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.2	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
479	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
480	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
481	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
482	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/17/98	0-152-0
483	HAA-ICR	Dibromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
484	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
485	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
486	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/17/98	0-152-0
487	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/17/98	0-152-0
488	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
489	pH	Cl2 pH - Final	9.3	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
490	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
491	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	6/1/98		6/1/98	n/a
492	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
493	TEMP	Temperature	23.2	ºC	SM 2550 B	1	n/a	6/1/98		6/1/98	n/a
494	TIME	Cl2 Incubation Time	48.4	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
495	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	6/1/98		6/2/98	7-0-285
496	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	6/1/98		6/2/98	7-0-285
			ND	**mg/L**							
497	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
498	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			ND	**µg Cl-/L**							
499	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.2	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
500	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
501	THM-ICR	Bromoform	5.5	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
502	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
503	THM-ICR	Dibromochloromethane	2.5	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
504	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/1/98		6/3/98	8-0-192
505	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/1/98		6/3/98	8-0-192
			ND	**1/cm**							

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-6 **S&H ID:** 9806-50 **Date Sampled:** 6/4/98 10:31:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
506	Cl2Dose	Chlorine Dose	2.16	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
507	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
508	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	106.4	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
509	HAA-ICR	2-Bromopropionic acid (Surrogate)	104.4	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
510	HAA-ICR	Bromochloroacetic acid	1.4	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
511	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
512	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
513	HAA-ICR	Dibromoacetic acid	3.8	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
514	HAA-ICR	Dichloroacetic acid	8.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
515	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
516	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
517	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
518	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
519	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
520	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
521	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	6/4/98		6/4/98	n/a
522	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
523	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	6/4/98		6/4/98	n/a
524	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
525	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	6/4/98		6/5/98	7-0-288
526	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	6/4/98		6/5/98	7-0-288
			ND	**mg/L**							
527	TOX-ICR	TOX	37	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
528	TOX-ICR	TOX (Dupl)	37	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
			37	**µg Cl-/L**	**0.0 % RPD**						
529	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.6	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
530	THM-ICR	Bromodichloromethane	2.4	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
531	THM-ICR	Bromoform	19.4	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
532	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
533	THM-ICR	Dibromochloromethane	8.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/11/98	0-145-0
534	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
535	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/4/98		6/5/98	8-0-193
			ND	**1/cm**							

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-8 **S&H ID:** 9806-52 **Date Sampled:** 6/5/98 4:38:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
536	Cl2Dose	Chlorine Dose	2.36	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
537	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
538	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	106.0	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
539	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
540	HAA-ICR	Bromochloroacetic acid	3.0	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
541	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
542	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
543	HAA-ICR	Dibromoacetic acid	4.5	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
544	HAA-ICR	Dichloroacetic acid	7.8	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
545	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
546	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
547	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
548	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
549	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
550	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
551	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/5/98		6/5/98	n/a
552	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
553	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	6/5/98		6/5/98	n/a
554	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
555	TOC-ICR	TOC	0.62	mg/L	SM 5310 C	1	0.50	6/5/98		6/6/98	7-0-289
556	TOC-ICR	TOC (Dupl)	0.63	mg/L	SM 5310 C	1	0.50	6/5/98		6/6/98	7-0-289
			0.63	**mg/L**	**1.6 % RPD**						
557	TOX-ICR	TOX	41	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
558	TOX-ICR	TOX (Dupl)	48	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/15/98	12-0-147
			45	**µg Cl-/L**	**15.6 % RPD**						
559	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.0	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
560	THM-ICR	Bromodichloromethane	3.9	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
561	THM-ICR	Bromoform	24.5	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
562	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
563	THM-ICR	Dibromochloromethane	12.8	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
564	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/5/98		6/7/98	8-0-194
565	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/5/98		6/7/98	8-0-194
			ND	**1/cm**							

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-11 **S&H ID:** 9806-55 **Date Sampled:** 6/6/98 10:34:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
566	Cl2Dose	Chlorine Dose	2.47	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
567	Cl2Res	Chlorine Residual	0.78	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
568	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	106.0	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
569	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.2	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
570	HAA-ICR	Bromochloroacetic acid	4.1	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
571	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
572	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
573	HAA-ICR	Dibromoacetic acid	5.2	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
574	HAA-ICR	Dichloroacetic acid	6.3	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
575	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
576	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
577	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
578	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
579	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
580	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
581	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
582	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
583	TEMP	Temperature	20.4	ºC	SM 2550 B	1	n/a	6/6/98		6/6/98	n/a
584	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
585	TOC-ICR	TOC	0.75	mg/L	SM 5310 C	1	0.50	6/10/98		6/6/98	7-0-289
586	TOC-ICR	TOC (Dupl)	0.74	mg/L	SM 5310 C	1	0.50	6/10/98		6/6/98	7-0-289
			0.75	**mg/L**	**1.3 % RPD**						
587	TOX-ICR	TOX	55	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
588	TOX-ICR	TOX (Dupl)	56	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
			56	**µg Cl-/L**	**1.8 % RPD**						
589	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.0	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
590	THM-ICR	Bromodichloromethane	5.7	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
591	THM-ICR	Bromoform	27.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
592	THM-ICR	Chloroform	1.8	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
593	THM-ICR	Dibromochloromethane	16.4	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
594	UV-ICR	UV	0.009	1/cm	SM 5910 B	1	0.009	6/6/98		6/7/98	8-0-194
595	UV-ICR	UV (Dupl)	0.009	1/cm	SM 5910 B	1	0.009	6/6/98		6/7/98	8-0-194
			0.009	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-13 **S&H ID:** 9806-57 **Date Sampled:** 6/7/98 4:20:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
596	Cl2Dose	Chlorine Dose	2.59	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
597	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
598	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.4	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
599	HAA-ICR	2-Bromopropionic acid (Surrogate)	88.4	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
600	HAA-ICR	Bromochloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
601	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
602	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
603	HAA-ICR	Dibromoacetic acid	5.7	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
604	HAA-ICR	Dichloroacetic acid	5.6	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
605	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
606	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
607	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
608	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
609	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
610	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
611	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/7/98		6/7/98	n/a
612	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
613	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	6/7/98		6/7/98	n/a
614	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
615	TOC-ICR	TOC	0.87	mg/L	SM 5310 C	1	0.50	6/7/98		6/7/98	7-0-290
616	TOC-ICR	TOC (Dupl)	0.87	mg/L	SM 5310 C	1	0.50	6/7/98		6/7/98	7-0-290
			0.87	**mg/L**	**0.0 % RPD**						
617	TOX-ICR	TOX	67	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
618	TOX-ICR	TOX (Dupl)	63	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/17/98	12-0-149
			65	**µg Cl-/L**	**6.2 % RPD**						
619	THM-ICR	1,2,3-Trichloropropane (Surrogate)	102.8	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
620	THM-ICR	Bromodichloromethane	8.8	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
621	THM-ICR	Bromoform	32.3	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
622	THM-ICR	Chloroform	3.1	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
623	THM-ICR	Dibromochloromethane	22.7	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
624	UV-ICR	UV	0.012	1/cm	SM 5910 B	1	0.009	6/7/98		6/8/98	8-0-195
625	UV-ICR	UV (Dupl)	0.012	1/cm	SM 5910 B	1	0.009	6/7/98		6/8/98	8-0-195
			0.012	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-15 **S&H ID:** 9806-59 **Date Sampled:** 6/7/98 4:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
626	Cl2Dose	Chlorine Dose	2.69	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/10/98		6/10/98	n/a
627	Cl2Res	Chlorine Residual	0.74	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/10/98		6/12/98	n/a
628	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.0	%	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
629	HAA-ICR	2-Bromopropionic acid (Surrogate)	88.4	%	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
630	HAA-ICR	Bromochloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
631	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
632	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/12/98	6/16/98	6/17/98	0-152-0
633	HAA-ICR	Dibromoacetic acid	6.0	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
634	HAA-ICR	Dichloroacetic acid	5.0	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
635	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
636	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/12/98	6/16/98	6/17/98	0-152-0
637	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/12/98	6/16/98	6/17/98	0-152-0
638	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
639	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/12/98	n/a
640	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/10/98	n/a
641	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	6/7/98		6/7/98	n/a
642	TEMP	Cl2 Temperature	20.0	ºC	SM 2550 B	1	n/a	6/10/98		6/12/98	n/a
643	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	6/7/98		6/7/98	n/a
644	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	6/10/98		6/12/98	n/a
645	TOC-ICR	TOC	0.99	mg/L	SM 5310 C	1	0.50	6/7/98		6/7/98	7-0-290
646	TOC-ICR	TOC (Dupl)	0.97	mg/L	SM 5310 C	1	0.50	6/7/98		6/7/98	7-0-290
			0.98	**mg/L**	**2.0 % RPD**						
647	TOX-ICR	TOX	67	µg Cl-/L	SM 5320 B	1	25	6/12/98		6/18/98	12-0-150
648	TOX-ICR	TOX (Dupl)	69	µg Cl-/L	SM 5320 B	1	25	6/12/98		6/18/98	12-0-150
			68	**µg Cl-/L**	**2.9 % RPD**						
649	THM-ICR	1,2,3-Trichloropropane (Surrogate)	99.6	%	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
650	THM-ICR	Bromodichloromethane	8.8	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
651	THM-ICR	Bromoform	27.8	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
652	THM-ICR	Chloroform	2.6	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
653	THM-ICR	Dibromochloromethane	22.3	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
654	UV-ICR	UV	0.013	1/cm	SM 5910 B	1	0.009	6/7/98		6/8/98	8-0-195
655	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	6/7/98		6/8/98	8-0-195
			0.014	**1/cm**	**7.1 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-19 **S&H ID:** 9806-63 **Date Sampled:** 6/8/98 3:59:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
656	Cl2Dose	Chlorine Dose	2.85	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/10/98		6/10/98	n/a
657	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/10/98		6/12/98	n/a
658	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.8	%	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
659	HAA-ICR	2-Bromopropionic acid (Surrogate)	88.4	%	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
660	HAA-ICR	Bromochloroacetic acid	4.0	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
661	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
662	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/12/98	6/16/98	6/17/98	0-152-0
663	HAA-ICR	Dibromoacetic acid	6.2	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
664	HAA-ICR	Dichloroacetic acid	4.5	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
665	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
666	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/12/98	6/16/98	6/17/98	0-152-0
667	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/12/98	6/16/98	6/17/98	0-152-0
668	HAA-ICR	Trichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
669	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/12/98	n/a
670	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/10/98	n/a
671	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
672	TEMP	Cl2 Temperature	20.0	ºC	SM 2550 B	1	n/a	6/10/98		6/12/98	n/a
673	TEMP	Temperature	23.6	ºC	SM 2550 B	1	n/a	6/8/98		6/8/98	n/a
674	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	6/10/98		6/12/98	n/a
675	TOC-ICR	TOC	1.15	mg/L	SM 5310 C	1	0.50	6/8/98		6/9/98	7-0-292
676	TOC-ICR	TOC (Dupl)	1.13	mg/L	SM 5310 C	1	0.50	6/8/98		6/9/98	7-0-292
			1.14	**mg/L**	**1.8 % RPD**						
677	TOX-ICR	TOX	85	µg Cl-/L	SM 5320 B	1	25	6/12/98		6/19/98	12-0-151
678	TOX-ICR	TOX (Dupl)	83	µg Cl-/L	SM 5320 B	1	25	6/12/98		6/19/98	12-0-151
			84	**µg Cl-/L**	**2.4 % RPD**						
679	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.8	%	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
680	THM-ICR	Bromodichloromethane	11.1	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
681	THM-ICR	Bromoform	28.3	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
682	THM-ICR	Chloroform	3.5	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
683	THM-ICR	Dibromochloromethane	25.7	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
684	UV-ICR	UV	0.015	1/cm	SM 5910 B	1	0.009	6/8/98		6/9/98	8-0-196
685	UV-ICR	UV (Dupl)	0.015	1/cm	SM 5910 B	1	0.009	6/8/98		6/9/98	8-0-196
			0.015	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-27 **S&H ID:** 9806-71 **Date Sampled:** 6/11/98 3:42:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
686	Cl2Dose	Chlorine Dose	2.98	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/14/98		6/14/98	n/a
687	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/14/98		6/16/98	n/a
688	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	93.6	%	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
689	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.0	%	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
690	HAA-ICR	Bromochloroacetic acid	5.2	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
691	HAA-ICR	Bromodichloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
692	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	6/30/98	0-157-0
693	HAA-ICR	Dibromoacetic acid	9.1	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
694	HAA-ICR	Dichloroacetic acid	2.9	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
695	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
696	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	6/30/98	0-157-0
697	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/16/98	6/29/98	6/30/98	0-157-0
698	HAA-ICR	Trichloroacetic acid	2.0	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	6/30/98	0-157-0
699	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/16/98	n/a
700	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/14/98	n/a
701	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/11/98		6/11/98	n/a
702	TEMP	Cl2 Temperature	19.7	ºC	SM 2550 B	1	n/a	6/14/98		6/16/98	n/a
703	TEMP	Temperature	22.8	ºC	SM 2550 B	1	n/a	6/11/98		6/11/98	n/a
704	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	6/14/98		6/16/98	n/a
705	TOC-ICR	TOC	1.30	mg/L	SM 5310 C	1	0.50	6/11/98		6/11/98	7-0-294
706	TOC-ICR	TOC (Dupl)	1.32	mg/L	SM 5310 C	1	0.50	6/11/98		6/11/98	7-0-294
			1.31	**mg/L**	**1.5 % RPD**						
707	TOX-ICR	TOX	93	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/23/98	12-0-153
708	TOX-ICR	TOX (Dupl)	95	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/23/98	12-0-153
			94	**µg Cl-/L**	**2.1 % RPD**						
709	THM-ICR	1,2,3-Trichloropropane (Surrogate)	109.2	%	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
710	THM-ICR	Bromodichloromethane	14.7	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
711	THM-ICR	Bromoform	28.1	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
712	THM-ICR	Chloroform	5.2	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
713	THM-ICR	Dibromochloromethane	29.7	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
714	UV-ICR	UV	0.019	1/cm	SM 5910 B	1	0.009	6/11/98		6/11/98	8-0-198
715	UV-ICR	UV (Dupl)	0.019	1/cm	SM 5910 B	1	0.009	6/11/98		6/11/98	8-0-198
			0.019	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-29 **S&H ID:** 9806-73 **Date Sampled:** 6/13/98 3:22:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
716	Cl2Dose	Chlorine Dose	3.09	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/14/98		6/14/98	n/a
717	Cl2Res	Chlorine Residual	0.72	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/14/98		6/16/98	n/a
718	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	90.8	%	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
719	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
720	HAA-ICR	Bromochloroacetic acid	6.5	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
721	HAA-ICR	Bromodichloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
722	HAA-ICR	Chlorodibromoacetic acid	2.4	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	7/1/98	0-157-0
723	HAA-ICR	Dibromoacetic acid	10.6	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
724	HAA-ICR	Dichloroacetic acid	3.4	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
725	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
726	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	7/1/98	0-157-0
727	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/16/98	6/29/98	7/1/98	0-157-0
728	HAA-ICR	Trichloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
729	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/16/98	n/a
730	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/14/98	n/a
731	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/13/98		6/13/98	n/a
732	TEMP	Cl2 Temperature	19.7	ºC	SM 2550 B	1	n/a	6/14/98		6/16/98	n/a
733	TEMP	Temperature	23.0	ºC	SM 2550 B	1	n/a	6/13/98		6/13/98	n/a
734	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	6/14/98		6/16/98	n/a
735	TOC-ICR	TOC	1.42	mg/L	SM 5310 C	1	0.50	6/13/98		6/13/98	7-0-296
736	TOC-ICR	TOC (Dupl)	1.45	mg/L	SM 5310 C	1	0.50	6/13/98		6/13/98	7-0-296
			1.44	**mg/L**	**2.1 % RPD**						
737	TOX-ICR	TOX	101	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/24/98	12-0-154
738	TOX-ICR	TOX (Dupl)	100	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/24/98	12-0-154
			101	**µg Cl-/L**	**1.0 % RPD**						
739	THM-ICR	1,2,3-Trichloropropane (Surrogate)	102.8	%	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
740	THM-ICR	Bromodichloromethane	18.1	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
741	THM-ICR	Bromoform	26.4	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
742	THM-ICR	Chloroform	6.6	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
743	THM-ICR	Dibromochloromethane	32.4	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
744	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	6/13/98		6/13/98	8-0-200
745	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	6/13/98		6/13/98	8-0-200
			0.021	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-8d **S&H ID:** 9806-75 **Date Sampled:** 6/5/98 4:38:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
746	Cl2Dose	Chlorine Dose	2.37	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/8/98		6/8/98	n/a
747	Cl2Res	Chlorine Residual	0.72	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/8/98		6/10/98	n/a
748	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	108.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
749	HAA-ICR	2-Bromopropionic acid (Surrogate)	88.8	%	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
750	HAA-ICR	Bromochloroacetic acid	2.9	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
751	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
752	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
753	HAA-ICR	Dibromoacetic acid	4.4	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
754	HAA-ICR	Dichloroacetic acid	7.4	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
755	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
756	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/10/98	6/16/98	6/17/98	0-152-0
757	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/10/98	6/16/98	6/17/98	0-152-0
758	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/10/98	6/16/98	6/17/98	0-152-0
759	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/10/98	n/a
760	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
761	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/5/98		6/5/98	n/a
762	TEMP	Cl2 Temperature	19.6	ºC	SM 2550 B	1	n/a	6/8/98		6/10/98	n/a
763	TEMP	Temperature	22.4	ºC	SM 2550 B	1	n/a	6/5/98		6/5/98	n/a
764	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	6/8/98		6/10/98	n/a
765	TOC-ICR	TOC	0.63	mg/L	SM 5310 C	1	0.50	6/5/98		6/6/98	7-0-289
766	TOC-ICR	TOC (Dupl)	0.64	mg/L	SM 5310 C	1	0.50	6/5/98		6/6/98	7-0-289
			0.64	**mg/L**	**1.6 % RPD**						
767	TOX-ICR	TOX	42	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/18/98	12-0-150
768	TOX-ICR	TOX (Dupl)	44	µg Cl-/L	SM 5320 B	1	25	6/10/98		6/18/98	12-0-150
			43	**µg Cl-/L**	**4.7 % RPD**						
769	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.4	%	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
770	THM-ICR	Bromodichloromethane	4.2	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
771	THM-ICR	Bromoform	25.6	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
772	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
773	THM-ICR	Dibromochloromethane	13.6	µg/L	EPA 551.1	1	1.0	6/10/98	6/11/98	6/12/98	0-145-0
774	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	6/5/98		6/7/98	8-0-194
775	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	6/5/98		6/7/98	8-0-194
			ND	**1/cm**							

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-19d **S&H ID:** 9806-77 **Date Sampled:** 6/8/98 3:59:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
776	Cl2Dose	Chlorine Dose	2.85	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/10/98		6/10/98	n/a
777	Cl2Res	Chlorine Residual	0.76	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/10/98		6/12/98	n/a
778	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.8	%	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
779	HAA-ICR	2-Bromopropionic acid (Surrogate)	83.2	%	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
780	HAA-ICR	Bromochloroacetic acid	3.7	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
781	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
782	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/12/98	6/16/98	6/17/98	0-152-0
783	HAA-ICR	Dibromoacetic acid	5.6	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
784	HAA-ICR	Dichloroacetic acid	4.0	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
785	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
786	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/12/98	6/16/98	6/17/98	0-152-0
787	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/12/98	6/16/98	6/17/98	0-152-0
788	HAA-ICR	Trichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	6/12/98	6/16/98	6/17/98	0-152-0
789	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/12/98	n/a
790	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/10/98		6/10/98	n/a
791	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/8/98		6/8/98	n/a
792	TEMP	Cl2 Temperature	20.0	ºC	SM 2550 B	1	n/a	6/10/98		6/12/98	n/a
793	TEMP	Temperature	23.6	ºC	SM 2550 B	1	n/a	6/8/98		6/8/98	n/a
794	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	6/10/98		6/12/98	n/a
795	TOC-ICR	TOC	1.14	mg/L	SM 5310 C	1	0.50	6/8/98		6/9/98	7-0-292
796	TOC-ICR	TOC (Dupl)	1.13	mg/L	SM 5310 C	1	0.50	6/8/98		6/9/98	7-0-292
			1.13	**mg/L**	**0.9 % RPD**						
797	TOX-ICR	TOX	81	µg Cl-/L	SM 5320 B	1	25	6/12/98		6/19/98	12-0-151
798	TOX-ICR	TOX (Dupl)	78	µg Cl-/L	SM 5320 B	1	25	6/12/98		6/19/98	12-0-151
			80	**µg Cl-/L**	**3.7 % RPD**						
799	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.0	%	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
800	THM-ICR	Bromodichloromethane	10.9	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
801	THM-ICR	Bromoform	28.2	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
802	THM-ICR	Chloroform	3.6	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
803	THM-ICR	Dibromochloromethane	25.8	µg/L	EPA 551.1	1	1.0	6/12/98	6/22/98	6/22/98	0-153-0
804	UV-ICR	UV	0.015	1/cm	SM 5910 B	1	0.009	6/8/98		6/9/98	8-0-196
805	UV-ICR	UV (Dupl)	0.015	1/cm	SM 5910 B	1	0.009	6/8/98		6/9/98	8-0-196
			0.015	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.20.Eff-31d **S&H ID:** 9806-79 **Date Sampled:** 6/14/98 3:13:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
806	Cl2Dose	Chlorine Dose	3.19	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/17/98		6/17/98	n/a
807	Cl2Res	Chlorine Residual	0.69	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/17/98		6/19/98	n/a
808	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.0	%	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
809	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard) (Lab Dupl)	94.0	%	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			95.0	**%**	**2.1 % RPD**						
810	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
811	HAA-ICR	2-Bromopropionic acid (Surrogate) (Lab Dupl)	97.2	%	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			98.2	**%**	**2.0 % RPD**						
812	HAA-ICR	Bromochloroacetic acid	6.6	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
813	HAA-ICR	Bromochloroacetic acid (Lab Dupl)	5.6	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			6.1	**µg/L**	**16.4 % RPD**						
814	HAA-ICR	Bromodichloroacetic acid	2.1	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
815	HAA-ICR	Bromodichloroacetic acid (Lab Dupl)	1.7	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			1.9	**µg/L**	**21.1 % RPD**						
816	HAA-ICR	Chlorodibromoacetic acid	2.1	µg/L	EPA 552.2	1	2.0	6/19/98	6/29/98	7/1/98	0-157-0
817	HAA-ICR	Chlorodibromoacetic acid (Lab Dupl)	2.0	µg/L	EPA 552.2	1	2.0	6/19/98	6/29/98	7/1/98	0-157-0
			2.0	**µg/L**	**5.0 % RPD**						
818	HAA-ICR	Dibromoacetic acid	9.9	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
819	HAA-ICR	Dibromoacetic acid (Lab Dupl)	8.2	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			9.1	**µg/L**	**18.7 % RPD**						
820	HAA-ICR	Dichloroacetic acid	4.0	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
821	HAA-ICR	Dichloroacetic acid (Lab Dupl)	3.6	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			3.8	**µg/L**	**10.5 % RPD**						
822	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
823	HAA-ICR	Monobromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
			ND	**µg/L**							
824	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/19/98	6/29/98	7/1/98	0-157-0
825	HAA-ICR	Monochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	6/19/98	6/29/98	7/1/98	0-157-0
			ND	**µg/L**							
826	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/19/98	6/29/98	7/1/98	0-157-0
827	HAA-ICR	Tribromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	4.0	6/19/98	6/29/98	7/1/98	0-157-0
			ND	**µg/L**							
828	HAA-ICR	Trichloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
829	HAA-ICR	Trichloroacetic acid (Lab Dupl)	1.9	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

			2.0	**µg/L**	**15.0 % RPD**						
830	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/17/98		6/19/98	n/a
831	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/17/98		6/17/98	n/a
832	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/14/98	n/a
833	TEMP	Cl2 Temperature	20.0	ºC	SM 2550 B	1	n/a	6/17/98		6/19/98	n/a
834	TEMP	Temperature	23.4	ºC	SM 2550 B	1	n/a	6/14/98		6/14/98	n/a
835	TIME	Cl2 Incubation Time	48.8	hrs	n/a	1	n/a	6/17/98		6/19/98	n/a
836	TOC-ICR	TOC	1.51	mg/L	SM 5310 C	1	0.50	6/14/98		6/15/98	7-0-297
837	TOC-ICR	TOC (Dupl)	1.52	mg/L	SM 5310 C	1	0.50	6/14/98		6/15/98	7-0-297
			1.52	**mg/L**	**0.7 % RPD**						
838	TOX-ICR	TOX	110	µg Cl-/L	SM 5320 B	1	25	6/19/98		6/25/98	12-0-155
839	TOX-ICR	TOX (Dupl)	118	µg Cl-/L	SM 5320 B	1	25	6/19/98		6/25/98	12-0-155
			114	**µg Cl-/L**	**7.0 % RPD**						
840	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.2	%	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
841	THM-ICR	1,2,3-Trichloropropane (Surrogate) (Lab Dupl)	99.2	%	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
			101.2	**%**	**4.0 % RPD**						
842	THM-ICR	Bromodichloromethane	20.1	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
843	THM-ICR	Bromodichloromethane (Lab Dupl)	21.1	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
			20.6	**µg/L**	**4.9 % RPD**						
844	THM-ICR	Bromoform	24.6	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
845	THM-ICR	Bromoform (Lab Dupl)	25.9	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
			25.3	**µg/L**	**5.1 % RPD**						
846	THM-ICR	Chloroform	8.1	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
847	THM-ICR	Chloroform (Lab Dupl)	8.7	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
			8.4	**µg/L**	**7.1 % RPD**						
848	THM-ICR	Dibromochloromethane	32.8	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
849	THM-ICR	Dibromochloromethane (Lab Dupl)	34.4	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
			33.6	**µg/L**	**4.8 % RPD**						
850	UV-ICR	UV	0.023	1/cm	SM 5910 B	1	0.009	6/14/98		6/15/98	8-0-201
851	UV-ICR	UV (Dupl)	0.023	1/cm	SM 5910 B	1	0.009	6/14/98		6/15/98	8-0-201
			0.023	**1/cm**	**0.0 % RPD**						

Sample ID: 118.Inf.A-1 **S&H ID:** 9806-85 **Date Sampled:** 6/1/98 5:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
852	ALK	Alkalinity	38	mg/L	SM 2320 B	1	5	6/1/98		6/2/98	1-0-22
853	ALK	Alkalinity (Dupl)	37	mg/L	SM 2320 B	1	5	6/1/98		6/2/98	1-0-22
			38	**mg/L**	**2.6 % RPD**						
854	NH3	Ammonia Nitrogen	0.15	mg/L	EPA 350.1	1	0.05	6/1/98		6/16/98	MW79168
855	BR	Bromide	0.110	mg/L	EPA 300.0 A	2	0.040	6/1/98		6/25/98	MW79678
856	CaHardM	Calcium Hardness	125	mg/L CaCO3	EPA 200.7	1	5	6/1/98		6/22/98	MW n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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Study Title: ICR RSSCT #2

857	CaMW	Calcium, Total, ICAP	50	mg/L	EPA 200.7	1	1	6/1/98	6/18/98	6/18/98	MW79300
858	MgMW	Magnesium, Total, ICAP	10	mg/L	EPA 200.7	1	0	6/1/98	6/18/98	6/18/98	MW79302
859	TotHard	Total Hardness as CaCO3 by ICP	166	mg/L CaCO3	SM 2340B	1	7	6/1/98		6/22/98	MW n/a

Sample ID: 118.Inf.A-2 **S&H ID:** 9806-86 **Date Sampled:** 6/9/98 4:40:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
860	ALK	Alkalinity	37	mg/L	SM 2320 B	1	5	6/9/98		6/10/98	1-0-23
861	ALK	Alkalinity (Dupl)	39	mg/L	SM 2320 B	1	5	6/9/98		6/10/98	1-0-23
			38	**mg/L**	**5.3 % RPD**						
862	NH3	Ammonia Nitrogen	0.16	mg/L	EPA 350.1	1	0.05	6/9/98		6/16/98	MW79168
863	BR	Bromide	0.110	mg/L	EPA 300.0 A	2	0.040	6/9/98		6/23/98	MW79548
864	CaHardM	Calcium Hardness	125	mg/L CaCO3	EPA 200.7	1	5	6/9/98		6/18/98	MW n/a
865	CaMW	Calcium, Total, ICAP	50	mg/L	EPA 200.7	1	1	6/9/98	6/18/98	6/18/98	MW79300
866	MgMW	Magnesium, Total, ICAP	10	mg/L	EPA 200.7	1	0	6/9/98	6/18/98	6/18/98	MW79302
867	TotHard	Total Hardness as CaCO3 by ICP	166	mg/L CaCO3	SM 2340B	1	7	6/9/98		6/22/98	MW n/a

Sample ID: 118.Inf.B-1 **S&H ID:** 9806-87 **Date Sampled:** 6/1/98 5:20:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
868	Cl2Dose	Chlorine Dose	4.20	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/6/98		6/6/98	n/a
869	Cl2Res	Chlorine Residual	0.82	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/6/98		6/8/98	n/a
870	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	93.6	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
871	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.4	%	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
872	HAA-ICR	Bromochloroacetic acid	13.3	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
873	HAA-ICR	Bromodichloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
874	HAA-ICR	Chlorodibromoacetic acid	2.8	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/17/98	0-152-0
875	HAA-ICR	Dibromoacetic acid	9.7	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
876	HAA-ICR	Dichloroacetic acid	17.6	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
877	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
878	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/8/98	6/16/98	6/17/98	0-152-0
879	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/8/98	6/16/98	6/17/98	0-152-0
880	HAA-ICR	Trichloroacetic acid	3.3	µg/L	EPA 552.2	1	1.0	6/8/98	6/16/98	6/17/98	0-152-0
881	pH	Cl2 pH - Final	9.3	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/8/98	n/a
882	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/6/98		6/6/98	n/a
883	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	6/1/98		6/1/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

884	TEMP	Cl2 Temperature	20.2	ºC	SM 2550 B	1	n/a	6/6/98		6/8/98	n/a
885	TEMP	Temperature	16.3	ºC	SM 2550 B	1	n/a	6/1/98		6/1/98	n/a
886	TIME	Cl2 Incubation Time	48.5	hrs	n/a	1	n/a	6/6/98		6/8/98	n/a
887	TOC-ICR	TOC	2.56	mg/L	SM 5310 C	1	0.50	6/1/98		6/3/98	7-0-286
888	TOC-ICR	TOC (Dupl)	2.58	mg/L	SM 5310 C	1	0.50	6/1/98		6/3/98	7-0-286
			2.57	**mg/L**	**0.8 % RPD**						
889	TOX-ICR	TOX	223	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
890	TOX-ICR	TOX (Dupl)	216	µg Cl-/L	SM 5320 B	1	25	6/8/98		6/8/98	12-0-146
			220	**µg Cl-/L**	**3.2 % RPD**						
891	THM-ICR	1,2,3-Trichloropropane (Surrogate)	90.4	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
892	THM-ICR	1,2,3-Trichloropropane (Surrogate) (Lab Dupl)	94.4	%	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
			92.4	**%**	**4.3 % RPD**						
893	THM-ICR	Bromodichloromethane	50.1	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
894	THM-ICR	Bromodichloromethane (Lab Dupl)	45.9	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
			48.0	**µg/L**	**8.7 % RPD**						
895	THM-ICR	Bromoform	14.7	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
896	THM-ICR	Bromoform (Lab Dupl)	13.3	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
			14.0	**µg/L**	**10.0 % RPD**						
897	THM-ICR	Chloroform	52.9	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
898	THM-ICR	Chloroform (Lab Dupl)	48.4	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
			50.6	**µg/L**	**8.9 % RPD**						
899	THM-ICR	Dibromochloromethane	42.8	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
900	THM-ICR	Dibromochloromethane (Lab Dupl)	39.2	µg/L	EPA 551.1	1	1.0	6/8/98	6/11/98	6/11/98	0-145-0
			41.0	**µg/L**	**8.8 % RPD**						
901	TURB	Turbidity	0.10	ntu	SM 2130 B	1	0.05	6/1/98		6/1/98	9-0-11
902	UV-ICR	UV	0.046	1/cm	SM 5910 B	1	0.009	6/1/98		6/3/98	8-0-192
903	UV-ICR	UV (Dupl)	0.046	1/cm	SM 5910 B	1	0.009	6/1/98		6/3/98	8-0-192
			0.046	**1/cm**	**0.0 % RPD**						

Sample ID: 118.Inf.B-2 **S&H ID:** 9806-88 **Date Sampled:** 6/4/98 9:10:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
904	TOC-ICR	TOC	2.50	mg/L	SM 5310 C	1	0.50	6/4/98		6/4/98	7-0-287
905	TOC-ICR	TOC (Dupl)	2.57	mg/L	SM 5310 C	1	0.50	6/4/98		6/4/98	7-0-287
			2.54	**mg/L**	**2.8 % RPD**						

Sample ID: 118.Inf.B-3 **S&H ID:** 9806-89 **Date Sampled:** 6/6/98 9:05:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
906	TOC-ICR	TOC	2.56	mg/L	SM 5310 C	1	0.50	6/6/98		6/6/98	7-0-289
907	TOC-ICR	TOC (Dupl)	2.58	mg/L	SM 5310 C	1	0.50	6/6/98		6/6/98	7-0-289
			2.57	**mg/L**	**0.8 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.Inf.B-4 **S&H ID:** 9806-90 **Date Sampled:** 6/9/98 4:35:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
908	Cl2Dose	Chlorine Dose	4.14	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/14/98		6/14/98	n/a
909	Cl2Res	Chlorine Residual	0.76	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/14/98		6/16/98	n/a
910	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	90.8	%	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
911	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.4	%	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
912	HAA-ICR	Bromochloroacetic acid	11.0	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
913	HAA-ICR	Bromodichloroacetic acid	3.6	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
914	HAA-ICR	Chlorodibromoacetic acid	2.6	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	7/1/98	0-157-0
915	HAA-ICR	Dibromoacetic acid	9.2	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
916	HAA-ICR	Dichloroacetic acid	15.5	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
917	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
918	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/16/98	6/29/98	7/1/98	0-157-0
919	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/16/98	6/29/98	7/1/98	0-157-0
920	HAA-ICR	Trichloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	6/16/98	6/29/98	7/1/98	0-157-0
921	pH	Cl2 pH - Final	9.3	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/16/98	n/a
922	pH	Cl2 pH - Initial	9.3	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/14/98	n/a
923	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	6/9/98		6/9/98	n/a
924	TEMP	Cl2 Temperature	19.7	ºC	SM 2550 B	1	n/a	6/14/98		6/16/98	n/a
925	TEMP	Temperature	18.1	ºC	SM 2550 B	1	n/a	6/9/98		6/9/98	n/a
926	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	6/14/98		6/16/98	n/a
927	TOC-ICR	TOC	2.59	mg/L	SM 5310 C	1	0.50	6/9/98		6/10/98	7-0-293
928	TOC-ICR	TOC (Dupl)	2.62	mg/L	SM 5310 C	1	0.50	6/9/98		6/10/98	7-0-293
			2.61	**mg/L**	**1.1 % RPD**						
929	TOX-ICR	TOX	225	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/23/98	12-0-153
930	TOX-ICR	TOX (Dupl)	219	µg Cl-/L	SM 5320 B	1	25	6/16/98		6/23/98	12-0-153
			222	**µg Cl-/L**	**2.7 % RPD**						
931	THM-ICR	1,2,3-Trichloropropane (Surrogate)	105.2	%	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
932	THM-ICR	Bromodichloromethane	41.3	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
933	THM-ICR	Bromoform	12.0	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
934	THM-ICR	Chloroform	42.2	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
935	THM-ICR	Dibromochloromethane	36.5	µg/L	EPA 551.1	1	1.0	6/16/98	6/22/98	6/22/98	0-153-0
936	TURB	Turbidity	0.10	ntu	SM 2130 B	1	0.05	6/9/98		6/9/98	9-0-12
937	UV-ICR	UV	0.046	1/cm	SM 5910 B	1	0.009	6/9/98		6/10/98	8-0-197
938	UV-ICR	UV (Dupl)	0.045	1/cm	SM 5910 B	1	0.009	6/9/98		6/10/98	8-0-197
			0.045	**1/cm**	**2.2 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Sample ID: 118.Inf.B-5 **S&H ID:** 9806-91 **Date Sampled:** 6/12/98 11:00:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
939	TOC-ICR	TOC	2.55	mg/L	SM 5310 C	1	0.50	6/12/98		6/12/98	7-0-295
940	TOC-ICR	TOC (Dupl)	2.57	mg/L	SM 5310 C	1	0.50	6/12/98		6/12/98	7-0-295
			2.56	**mg/L**	**0.8 % RPD**						

Sample ID: 118.Inf.B-6 **S&H ID:** 9806-92 **Date Sampled:** 6/21/98 5:30:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
941	Cl2Dose	Chlorine Dose	4.18	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/22/98		6/22/98	n/a
942	Cl2Res	Chlorine Residual	0.40	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/22/98		6/24/98	n/a
943	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	94.4	%	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
944	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
945	HAA-ICR	Bromochloroacetic acid	11.5	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
946	HAA-ICR	Bromodichloroacetic acid	3.4	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
947	HAA-ICR	Chlorodibromoacetic acid	2.6	µg/L	EPA 552.2	1	2.0	6/24/98	6/29/98	7/1/98	0-157-0
948	HAA-ICR	Dibromoacetic acid	9.5	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
949	HAA-ICR	Dichloroacetic acid	13.1	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
950	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
951	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/24/98	6/29/98	7/1/98	0-157-0
952	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/24/98	6/29/98	7/1/98	0-157-0
953	HAA-ICR	Trichloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
954	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/22/98		6/24/98	n/a
955	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/22/98		6/22/98	n/a
956	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	6/21/98		6/21/98	n/a
957	TEMP	Cl2 Temperature	20.3	ºC	SM 2550 B	1	n/a	6/22/98		6/24/98	n/a
958	TEMP	Temperature	19.4	ºC	SM 2550 B	1	n/a	6/21/98		6/21/98	n/a
959	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	6/22/98		6/24/98	n/a
960	TOC-ICR	TOC	2.56	mg/L	SM 5310 C	1	0.50	6/21/98		6/21/98	7-0-302
961	TOC-ICR	TOC (Dupl)	2.56	mg/L	SM 5310 C	1	0.50	6/21/98		6/21/98	7-0-302
			2.56	**mg/L**	**0.0 % RPD**						
962	TOX-ICR	TOX	220	µg Cl-/L	SM 5320 B	1	25	6/24/98		6/26/98	12-0-156
963	TOX-ICR	TOX (Dupl)	220	µg Cl-/L	SM 5320 B	1	25	6/24/98		6/26/98	12-0-156
			220	**µg Cl-/L**	**0.0 % RPD**						
964	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.8	%	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
965	THM-ICR	Bromodichloromethane	37.7	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
966	THM-ICR	Bromoform	12.2	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

967	THM-ICR	Chloroform	37.3	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
968	THM-ICR	Dibromochloromethane	33.9	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
969	TURB	Turbidity	0.10	ntu	SM 2130 B	1	0.05	6/21/98		6/21/98	9-0-13
970	UV-ICR	UV	0.047	1/cm	SM 5910 B	1	0.009	6/21/98		6/22/98	8-0-206
971	UV-ICR	UV (Dupl)	0.047	1/cm	SM 5910 B	1	0.009	6/21/98		6/22/98	8-0-206
			0.047	**1/cm**	**0.0 % RPD**						

Sample ID: 118.20.Eff-31 **S&H ID:** 9806-358 **Date Sampled:** 6/14/98 3:13:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
972	Cl2Dose	Chlorine Dose	3.19	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/17/98		6/17/98	n/a
973	Cl2Res	Chlorine Residual	0.78	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/17/98		6/19/98	n/a
974	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	92.0	%	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
975	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
976	HAA-ICR	Bromochloroacetic acid	6.2	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
977	HAA-ICR	Bromodichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
978	HAA-ICR	Chlorodibromoacetic acid	2.1	µg/L	EPA 552.2	1	2.0	6/19/98	6/29/98	7/1/98	0-157-0
979	HAA-ICR	Dibromoacetic acid	9.2	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
980	HAA-ICR	Dichloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
981	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
982	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/19/98	6/29/98	7/1/98	0-157-0
983	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/19/98	6/29/98	7/1/98	0-157-0
984	HAA-ICR	Trichloroacetic acid	2.0	µg/L	EPA 552.2	1	1.0	6/19/98	6/29/98	7/1/98	0-157-0
985	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	6/17/98		6/19/98	n/a
986	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/17/98		6/17/98	n/a
987	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	6/14/98		6/14/98	n/a
988	TEMP	Cl2 Temperature	20.0	ºC	SM 2550 B	1	n/a	6/17/98		6/19/98	n/a
989	TEMP	Temperature	23.4	ºC	SM 2550 B	1	n/a	6/14/98		6/14/98	n/a
990	TIME	Cl2 Incubation Time	48.7	hrs	n/a	1	n/a	6/17/98		6/19/98	n/a
991	TOC-ICR	TOC	1.54	mg/L	SM 5310 C	1	0.50	6/14/98		6/15/98	7-0-297
992	TOC-ICR	TOC (Dupl)	1.55	mg/L	SM 5310 C	1	0.50	6/14/98		6/15/98	7-0-297
			1.54	**mg/L**	**0.6 % RPD**						
993	TOX-ICR	TOX	110	µg Cl-/L	SM 5320 B	1	25	6/19/98		6/25/98	12-0-155
994	TOX-ICR	TOX (Dupl)	113	µg Cl-/L	SM 5320 B	1	25	6/19/98		6/25/98	12-0-155
			112	**µg Cl-/L**	**2.7 % RPD**						
995	THM-ICR	1,2,3-Trichloropropane (Surrogate)	89.6	%	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
996	THM-ICR	Bromodichloromethane	20.0	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
997	THM-ICR	Bromoform	25.8	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
998	THM-ICR	Chloroform	8.3	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

999	THM-ICR	Dibromochloromethane	32.3	µg/L	EPA 551.1	1	1.0	6/19/98	6/30/98	7/3/98	0-160-0
1000	UV-ICR	UV	0.023	1/cm	SM 5910 B	1	0.009	6/14/98		6/15/98	8-0-201
1001	UV-ICR	UV (Dupl)	0.023	1/cm	SM 5910 B	1	0.009	6/14/98		6/15/98	8-0-201
			0.023	**1/cm**	**0.0 % RPD**						

Sample ID: 118.20.Eff-33 **S&H ID:** 9806-360 **Date Sampled:** 6/17/98 3:04:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1002	Cl2Dose	Chlorine Dose	3.32	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/22/98		6/22/98	n/a
1003	Cl2Res	Chlorine Residual	0.31	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/22/98		6/24/98	n/a
1004	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.0	%	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1005	HAA-ICR	2-Bromopropionic acid (Surrogate)	92.4	%	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1006	HAA-ICR	Bromochloroacetic acid	7.0	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1007	HAA-ICR	Bromodichloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1008	HAA-ICR	Chlorodibromoacetic acid	2.6	µg/L	EPA 552.2	1	2.0	6/24/98	6/29/98	7/1/98	0-157-0
1009	HAA-ICR	Dibromoacetic acid	9.8	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1010	HAA-ICR	Dichloroacetic acid	3.6	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1011	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1012	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/24/98	6/29/98	7/1/98	0-157-0
1013	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/24/98	6/29/98	7/1/98	0-157-0
1014	HAA-ICR	Trichloroacetic acid	2.0	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1015	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/22/98		6/24/98	n/a
1016	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/22/98		6/22/98	n/a
1017	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	6/17/98		6/17/98	n/a
1018	TEMP	Cl2 Temperature	20.3	ºC	SM 2550 B	1	n/a	6/22/98		6/24/98	n/a
1019	TEMP	Temperature	23.1	ºC	SM 2550 B	1	n/a	6/17/98		6/17/98	n/a
1020	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	6/22/98		6/24/98	n/a
1021	TOC-ICR	TOC	1.65	mg/L	SM 5310 C	1	0.50	6/17/98		6/17/98	7-0-299
1022	TOC-ICR	TOC (Dupl)	1.67	mg/L	SM 5310 C	1	0.50	6/17/98		6/17/98	7-0-299
			1.66	**mg/L**	**1.2 % RPD**						
1023	TOX-ICR	TOX	117	µg Cl-/L	SM 5320 B	1	25	6/24/98		6/26/98	12-0-156
1024	TOX-ICR	TOX (Dupl)	121	µg Cl-/L	SM 5320 B	1	25	6/24/98		6/26/98	12-0-156
			119	**µg Cl-/L**	**3.4 % RPD**						
1025	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.6	%	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1026	THM-ICR	Bromodichloromethane	21.6	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1027	THM-ICR	Bromoform	21.4	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1028	THM-ICR	Chloroform	9.2	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1029	THM-ICR	Dibromochloromethane	32.6	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

1030	UV-ICR	UV	0.024	1/cm	SM 5910 B	1	0.009	6/17/98		6/17/98	8-0-202
1031	UV-ICR	UV (Dupl)	0.025	1/cm	SM 5910 B	1	0.009	6/17/98		6/17/98	8-0-202
			0.025	**1/cm**	**4.0 % RPD**						

Sample ID: 118.20.Eff-35 **S&H ID:** 9806-362 **Date Sampled:** 6/20/98 4:03:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1032	Cl2Dose	Chlorine Dose	3.47	mg/L as Cl2	SM 4500-Cl B	1	n/a	6/22/98		6/22/98	n/a
1033	Cl2Res	Chlorine Residual	0.62	mg/L as Cl2	SM 4500-Cl F	1	0.10	6/22/98		6/24/98	n/a
1034	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	91.6	%	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1035	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1036	HAA-ICR	Bromochloroacetic acid	7.2	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1037	HAA-ICR	Bromodichloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1038	HAA-ICR	Chlorodibromoacetic acid	2.6	µg/L	EPA 552.2	1	2.0	6/24/98	6/29/98	7/1/98	0-157-0
1039	HAA-ICR	Dibromoacetic acid	9.5	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1040	HAA-ICR	Dichloroacetic acid	4.9	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1041	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1042	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	6/24/98	6/29/98	7/1/98	0-157-0
1043	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	6/24/98	6/29/98	7/1/98	0-157-0
1044	HAA-ICR	Trichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	6/24/98	6/29/98	7/1/98	0-157-0
1045	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	6/22/98		6/24/98	n/a
1046	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	6/22/98		6/22/98	n/a
1047	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	6/20/98		6/20/98	n/a
1048	TEMP	Cl2 Temperature	20.3	ºC	SM 2550 B	1	n/a	6/22/98		6/24/98	n/a
1049	TEMP	Temperature	24.1	ºC	SM 2550 B	1	n/a	6/20/98		6/20/98	n/a
1050	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	6/22/98		6/24/98	n/a
1051	TOC-ICR	TOC	1.82	mg/L	SM 5310 C	1	0.50	6/20/98		6/21/98	7-0-302
1052	TOC-ICR	TOC (Dupl)	1.86	mg/L	SM 5310 C	1	0.50	6/20/98		6/21/98	7-0-302
			1.84	**mg/L**	**2.2 % RPD**						
1053	TOX-ICR	TOX	134	µg Cl-/L	SM 5320 B	1	25	6/24/98		6/26/98	12-0-156
1054	TOX-ICR	TOX (Dupl)	129	µg Cl-/L	SM 5320 B	1	25	6/24/98		6/26/98	12-0-156
			132	**µg Cl-/L**	**3.8 % RPD**						
1055	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.4	%	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1056	THM-ICR	Bromodichloromethane	26.4	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1057	THM-ICR	Bromoform	24.9	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1058	THM-ICR	Chloroform	13.2	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1059	THM-ICR	Dibromochloromethane	36.0	µg/L	EPA 551.1	1	1.0	6/24/98	6/30/98	7/3/98	0-160-0
1060	UV-ICR	UV	0.028	1/cm	SM 5910 B	1	0.009	6/20/98		6/20/98	8-0-204
1061	UV-ICR	UV (Dupl)	0.028	1/cm	SM 5910 B	1	0.009	6/20/98		6/20/98	8-0-204

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
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Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

0.028	**1/cm**	**0.0 % RPD**

Sample ID: 118.20.Eff-37 **S&H ID:** 9806-364 **Date Sampled:** 6/21/98 6:34:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1062	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	6/21/98		6/21/98	n/a
1063	TEMP	Temperature	22.3	ºC	SM 2550 B	1	n/a	6/21/98		6/21/98	n/a
1064	TOC-ICR	TOC	1.79	mg/L	SM 5310 C	1	0.50	6/21/98		6/21/98	7-0-302
1065	TOC-ICR	TOC (Dupl)	1.80	mg/L	SM 5310 C	1	0.50	6/21/98		6/21/98	7-0-302
			1.79	**mg/L**	**0.6 % RPD**						

End of laboratory test results

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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Quality Control Report

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 118
Study Title: ICR RSSCT #2

Analysis: ALK (Alkalinity) **Method:** SM 2320 B

QC Batch ID: 1-0-22

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	100	96	mg/L	96%		06/02/98	9806-85	5		
Matrix Spike (Dupl)	Matrix Spike	100	94	mg/L	94%		06/02/98	9806-85	5		
		100	**95**	**mg/L**	**95%**	**2.1 %**					
Method Blank	Method Blank		ND*	mg/L			06/02/98	9806-98	5		
Standard	Standard	100	100	mg/L	100%		06/02/98	9806-99	5		
Standard (Dupl)	Standard	100	100	mg/L	100%		06/02/98	9806-99	5		
		100	**100**	**mg/L**	**100%**	**0.0 %**					
Matrix Spike	Matrix Spike	100	95	mg/L	95%		06/06/98	9806-270	5		
Matrix Spike (Dupl)	Matrix Spike	100	95	mg/L	95%		06/06/98	9806-270	5		
		100	**95**	**mg/L**	**95%**	**0.0 %**					
Method Blank	Method Blank		ND*	mg/L			06/06/98	9806-279	5		
Standard	Standard	100	98	mg/L	98%		06/06/98	9806-280	5		
Standard (Dupl)	Standard	100	99	mg/L	99%		06/06/98	9806-280	5		
		100	**98**	**mg/L**	**98%**	**1.0 %**					

Analysis: ALK (Alkalinity) **Method:** SM 2320 B

QC Batch ID: 1-0-23

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	100	98	mg/L	98%		06/10/98	9806-86	5		
Matrix Spike (Dupl)	Matrix Spike	100	96	mg/L	96%		06/10/98	9806-86	5		
		100	**97**	**mg/L**	**97%**	**2.1 %**					
Method Blank	Method Blank		ND*	mg/L			06/10/98	9806-339	5		
Standard	Standard	100	99	mg/L	99%		06/10/98	9806-340	5		
Standard (Dupl)	Standard	100	99	mg/L	99%		06/10/98	9806-340	5		
		100	**99**	**mg/L**	**99%**	**0.0 %**					
Matrix Spike	Matrix Spike	100	96	mg/L	96%		06/19/98	9806-471	5		
Matrix Spike (Dupl)	Matrix Spike	100	94	mg/L	94%		06/19/98	9806-471	5		
		100	**95**	**mg/L**	**95%**	**2.1 %**					
Method Blank	Method Blank		ND*	mg/L			06/19/98	9806-604	5		
Standard	Standard	100	105	mg/L	105%		06/19/98	9806-605	5		
Standard (Dupl)	Standard	100	98	mg/L	98%		06/19/98	9806-605	5		
		100	**101**	**mg/L**	**101%**	**6.9 %**					

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-283

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	10.00	10.16	mg/L	102%		9805-477	0.5		
Matrix Spike (Dupl)	Matrix Spike	10.00	10.24	mg/L	102%		9805-477	0.5		
		10.00	**10.20**	**mg/L**	**102%**	**0.8 %**				
Method Blank	Method Blank		ND*	mg/L			9805-476	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9805-476	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.94	mg/L	98%		9805-447	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**0.0 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-284

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.89	mg/L	97%		9805-506	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.92	mg/L	98%		9805-506	0.5		
		4.00	**3.90**	**mg/L**	**97%**	**0.8 %**				
Method Blank	Method Blank		ND*	mg/L			9805-507	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9805-507	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.51	mg/L	102%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
		0.50	**0.51**	**mg/L**	**102%**	**2.0 %**			50-150%	20%
Standard	Standard	4.00	3.90	mg/L	97%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.84	mg/L	96%		9805-447	0.5	90-110%	
		4.00	**3.87**	**mg/L**	**97%**	**1.6 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-285

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.97	mg/L	99%		9806-45	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.95	mg/L	99%		9806-45	0.5		
		4.00	**3.96**	**mg/L**	**99%**	**0.8 %**				
Method Blank	Method Blank		ND*	mg/L			9806-97	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-97	0.5		
			ND*	**mg/L**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Standard	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.02	mg/L	100%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.05	mg/L	101%		9805-447	0.5	90-110%	
		4.00	**4.04**	**mg/L**	**101%**	**0.7 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-286

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.92	mg/L	98%		9806-47	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.90	mg/L	97%		9806-47	0.5		
		4.00	**3.91**	**mg/L**	**98%**	**0.3 %**				
Method Blank	Method Blank		ND*	mg/L			9806-100	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-100	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.97	mg/L	99%		9805-447	0.5	90-110%	
		4.00	**3.96**	**mg/L**	**99%**	**0.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-287

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.97	mg/L	99%		9806-11	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.98	mg/L	100%		9806-11	0.5		
		4.00	**3.97**	**mg/L**	**99%**	**0.3 %**				
Method Blank	Method Blank		ND*	mg/L			9806-179	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-179	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.49	mg/L	98%		9805-257	0.5	50-150%	
		0.50	**0.49**	**mg/L**	**98%**	**2.0 %**			50-150%	20%
Standard	Standard	4.00	3.99	mg/L	100%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.97	mg/L	99%		9805-447	0.5	90-110%	
		4.00	**3.98**	**mg/L**	**100%**	**0.5 %**			90-110%	10%
Standard	Standard	10.00	9.71	mg/L	97%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.61	mg/L	96%		9806-118	0.5	90-110%	
		10.00	**9.66**	**mg/L**	**97%**	**1.0 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-288

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.17	mg/L	104%		9806-50	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.07	mg/L	102%		9806-50	0.5		
		4.00	**4.12**	**mg/L**	**103%**	**2.2 %**				
Method Blank	Method Blank		ND*	mg/L			9806-184	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-184	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9805-257	0.5	50-150%	
		0.50	**0.51**	**mg/L**	**102%**	**3.9 %**			50-150%	20%
Standard	Standard	4.00	4.07	mg/L	102%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.08	mg/L	102%		9805-447	0.5	90-110%	
		4.00	**4.08**	**mg/L**	**102%**	**0.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-289

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.05	mg/L	101%		9806-54	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.98	mg/L	100%		9806-54	0.5		
		4.00	**4.02**	**mg/L**	**100%**	**1.7 %**				
Method Blank	Method Blank		ND*	mg/L			9806-278	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-278	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.51	mg/L	102%		9805-257	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**3.8 %**			50-150%	20%
Standard	Standard	4.00	3.99	mg/L	100%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.03	mg/L	101%		9805-447	0.5	90-110%	
		4.00	**4.01**	**mg/L**	**100%**	**1.0 %**			90-110%	10%
Standard	Standard	10.00	9.95	mg/L	99%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.98	mg/L	100%		9806-118	0.5	90-110%	
		10.00	**9.97**	**mg/L**	**100%**	**0.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-290

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.99	mg/L	100%		9806-21	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.07	mg/L	102%		9806-21	0.5		
		4.00	**4.03**	**mg/L**	**101%**	**2.0 %**				

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Method Blank	Method Blank		ND*	mg/L			9806-281	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-281	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.47	mg/L	94%		9805-257	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.49	mg/L	98%		9805-257	0.5	50-150%	
		0.50	**0.48**	**mg/L**	**96%**	**4.2 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9805-447	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9805-447	0.5	90-110%	
		4.00	**4.00**	**mg/L**	**100%**	**1.2 %**			90-110%	10%
Standard	Standard	10.00	9.93	mg/L	99%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.06	mg/L	101%		9806-118	0.5	90-110%	
		10.00	**9.99**	**mg/L**	**100%**	**1.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-292

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.01	mg/L	100%		9806-26	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.08	mg/L	102%		9806-26	0.5		
		4.00	**4.05**	**mg/L**	**101%**	**1.7 %**				
Method Blank	Method Blank		ND*	mg/L			9806-298	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-298	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9806-111	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.92	mg/L	98%		9806-296	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.96	mg/L	99%		9806-296	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**1.0 %**			90-110%	10%
Standard	Standard	10.00	9.83	mg/L	98%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.91	mg/L	99%		9806-118	0.5	90-110%	
		10.00	**9.87**	**mg/L**	**99%**	**0.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-293

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.99	mg/L	100%		9806-239	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.05	mg/L	101%		9806-239	0.5		
		4.00	**4.02**	**mg/L**	**100%**	**1.5 %**				
Method Blank	Method Blank		ND*	mg/L			9806-337	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-337	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.56	mg/L	112%		9806-111	0.5	50-150%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
		0.50	**0.55**	**mg/L**	**110%**	**3.6 %**			50-150%	20%
Standard	Standard	4.00	3.96	mg/L	99%		9806-296	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.98	mg/L	100%		9806-296	0.5	90-110%	
		4.00	**3.97**	**mg/L**	**99%**	**0.5 %**			90-110%	10%
Standard	Standard	10.00	9.92	mg/L	99%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.00	mg/L	100%		9806-118	0.5	90-110%	
		10.00	**9.96**	**mg/L**	**100%**	**0.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-294

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.27	mg/L	107%		9806-70	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.13	mg/L	103%		9806-70	0.5		
		4.00	**4.20**	**mg/L**	**105%**	**3.3 %**				
Method Blank	Method Blank		ND*	mg/L			9806-346	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-346	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9806-111	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.02	mg/L	100%		9806-296	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.01	mg/L	100%		9806-296	0.5	90-110%	
		4.00	**4.02**	**mg/L**	**100%**	**0.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-295

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.02	mg/L	100%		9806-72	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.05	mg/L	101%		9806-72	0.5		
		4.00	**4.04**	**mg/L**	**101%**	**0.7 %**				
Method Blank	Method Blank		ND*	mg/L			9806-355	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-355	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9806-111	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.96	mg/L	99%		9806-296	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9806-296	0.5	90-110%	
		4.00	**3.99**	**mg/L**	**100%**	**1.5 %**			90-110%	10%
Standard	Standard	10.00	9.92	mg/L	99%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.93	mg/L	99%		9806-118	0.5	90-110%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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		10.00	**9.92**	**mg/L**	**99%**	**0.1 %**		90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-296

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.74	mg/L	94%		9806-251	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.83	mg/L	96%		9806-251	0.5		
		4.00	**3.79**	**mg/L**	**95%**	**2.4 %**				
Method Blank	Method Blank		ND*	mg/L			9806-369	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-369	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.93	mg/L	98%		9806-357	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.94	mg/L	98%		9806-357	0.5	90-110%	
		4.00	**3.93**	**mg/L**	**98%**	**0.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-297

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.10	mg/L	102%		9806-254	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.98	mg/L	100%		9806-254	0.5		
		4.00	**4.04**	**mg/L**	**101%**	**3.0 %**				
Method Blank	Method Blank		ND*	mg/L			9806-416	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-416	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.56	mg/L	112%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.56	mg/L	112%		9806-111	0.5	50-150%	
		0.50	**0.56**	**mg/L**	**112%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9806-357	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.99	mg/L	100%		9806-357	0.5	90-110%	
		4.00	**3.96**	**mg/L**	**99%**	**1.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-299

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.45	mg/L	111%		9806-360	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.42	mg/L	111%		9806-360	0.5		
		4.00	**4.44**	**mg/L**	**111%**	**0.7 %**				
Method Blank	Method Blank		ND*	mg/L			9806-449	0.5		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-449	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9806-111	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.05	mg/L	101%		9806-357	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.04	mg/L	101%		9806-357	0.5	90-110%	
		4.00	**4.04**	**mg/L**	**101%**	**0.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-302

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.99	mg/L	100%		9806-514	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.97	mg/L	99%		9806-514	0.5		
		4.00	**3.98**	**mg/L**	**100%**	**0.5 %**				
Method Blank	Method Blank		ND*	mg/L			9806-712	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9806-712	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9806-111	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9806-111	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9806-357	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.94	mg/L	98%		9806-357	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**0.0 %**			90-110%	10%
Standard	Standard	10.00	9.80	mg/L	98%		9806-118	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.91	mg/L	99%		9806-118	0.5	90-110%	
		10.00	**9.86**	**mg/L**	**99%**	**1.1 %**			90-110%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-192

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-101	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-101	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-101	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-101	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**		85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-193

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-185	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-185	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-185	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-185	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9806-113	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-194

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-282	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-282	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-282	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-282	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9806-113	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**1.2 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-195

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-284	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-284	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-284	0.009		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-284	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.085	1/cm	97%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9806-113	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-196

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-299	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-299	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-299	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-299	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9806-113	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-197

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-338	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-338	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-338	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-338	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.007	1/cm	78%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**14.3 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-198

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9806-347	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-347	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-347	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-347	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.007	1/cm	78%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9806-112	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9806-113	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-200

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9806-370	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-370	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-370	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-370	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.085	1/cm	97%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9806-113	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-201

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9806-417	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-417	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-417	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-417	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.086	1/cm	98%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.086	1/cm	98%		9806-113	0.009	85-115%	
		0.088	**0.086**	**1/cm**	**98%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-202

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-450	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-450	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-450	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-450	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-112	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.086	1/cm	98%		9806-113	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.086	1/cm	98%		9806-113	0.009	85-115%	
		0.088	**0.086**	**1/cm**	**98%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-204

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9806-709	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-709	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-709	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-709	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-614	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-614	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.086	1/cm	98%		9806-613	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.086	1/cm	98%		9806-613	0.009	85-115%	
		0.088	**0.086**	**1/cm**	**98%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-206

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9806-715	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-715	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9806-715	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9806-715	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9806-614	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9806-614	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.087	1/cm	99%		9806-613	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.087	1/cm	99%		9806-613	0.009	85-115%	
		0.088	**0.087**	**1/cm**	**99%**	**0.0 %**			85-115%	10%

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-11

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	4.51	4.56	ntu	101%		05/17/98	9902-79	0.05		
Standard	Standard	4.51	4.58	ntu	102%		05/20/98	9902-79	0.05		
Standard	Standard	4.51	4.61	ntu	102%		05/23/98	9902-79	0.05		
Standard	Standard	4.51	4.62	ntu	102%		05/24/98	9902-79	0.05		
Standard	Standard	4.51	4.62	ntu	102%		06/01/98	9902-79	0.05		
Standard	Standard	4.51	4.56	ntu	101%		06/05/98	9902-79	0.05		

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-12

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	5.41	5.52	ntu	102%		06/09/98	9807-108	0.05		
Standard	Standard	5.41	5.54	ntu	102%		06/10/98	9807-108	0.05		
Standard	Standard	5.41	5.48	ntu	101%		06/18/98	9807-108	0.05		

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-13

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	5.41	5.50	ntu	102%		06/20/98	9807-108	0.05		
Standard	Standard	5.41	5.50	ntu	102%		06/21/98	9807-108	0.05		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	5.41	5.50	ntu	102%	06/24/98	9807-108	0.05
Standard	Standard	5.41	5.52	ntu	102%	06/26/98	9807-108	0.05
Standard	Standard	5.41	5.45	ntu	101%	07/02/98	9807-108	0.05
Standard	Standard	5.41	5.48	ntu	101%	07/02/98	9807-108	0.05

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-146

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9806-289	25	75-125%	
Standard - TCP Aqueous	Standard	200	199	µg Cl-/L	100%		9806-288	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-290	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-147

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard - TCP Aqueous	Standard	25	26	µg Cl-/L	104%		9806-375	25	75-125%	
Standard - TCP Aqueous (Dupl)	Standard	200	224	µg Cl-/L	112%		9806-374	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-376	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-149

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	200	204	µg Cl-/L	102%		9806-17	25		
Matrix Spike (Dupl)	Matrix Spike	200	200	µg Cl-/L	100%		9806-17	25		
		200	**202**	**µg Cl-/L**	**101%**	**2.0 %**				
Standard - TCP Aqueous	Standard	25	20	µg Cl-/L	80%		9806-433	25	75-125%	
Standard - TCP Aqueous (Dupl)	Standard	200	200	µg Cl-/L	100%		9806-432	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-434	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-150

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9806-457	25	75-125%	
Standard - TCP Aqueous	Standard	200	208	µg Cl-/L	104%		9806-456	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-458	25		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-151

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	205	µg Cl-/L	102%		9806-220	25		
Matrix Spike (Dupl)	Matrix Spike	200	207	µg Cl-/L	103%		9806-220	25		
		200	**206**	**µg Cl-/L**	**103%**	**1.0 %**				
Standard - TCP Aqueous	Standard	25	26	µg Cl-/L	104%		9806-608	25	75-125%	
Standard - TCP Aqueous	Standard	200	204	µg Cl-/L	102%		9806-607	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-609	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-153

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	203	µg Cl-/L	101%		9806-71	25		
Matrix Spike (Dupl)	Matrix Spike	200	192	µg Cl-/L	96%		9806-71	25		
		200	**197**	**µg Cl-/L**	**98%**	**5.1 %**				
Standard - TCP Aqueous (Dupl)	Standard	25	27	µg Cl-/L	108%		9806-730	25	75-125%	
Standard - TCP Aqueous	Standard	200	198	µg Cl-/L	99%		9806-729	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-731	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-154

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	197	µg Cl-/L	98%		9806-266	25		
Matrix Spike (Dupl)	Matrix Spike	200	202	µg Cl-/L	101%		9806-266	25		
		200	**199**	**µg Cl-/L**	**100%**	**2.5 %**				
Standard - TCP Aqueous	Standard	25	24	µg Cl-/L	96%		9806-743	25	75-125%	
Standard - TCP Aqueous	Standard	200	204	µg Cl-/L	102%		9806-742	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-744	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-155

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9806-749	25	75-125%	
Standard - TCP Aqueous	Standard	200	202	µg Cl-/L	101%		9806-748	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-750	25		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-156

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	24	µg Cl-/L	96%		9806-759	25	75-125%	
Standard - TCP Aqueous	Standard	200	206	µg Cl-/L	103%		9806-758	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9806-760	25		

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-145-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromodichloromethane	Duplicate	50.1	45.9	µg/L		8.8%	9806-87	1		
Bromodichloromethane	Matrix Spike	40.0	38.7	µg/L	97%		9806-52	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9806-348	1		
Bromodichloromethane	Secondary Source Std	20.0	21.6	µg/L	108%		9806-349	1	70-130%	
Bromodichloromethane	Standard	20.0	19.5	µg/L	97%		9806-350	1	80-120%	
Bromodichloromethane	Standard	20.0	20.2	µg/L	101%		9806-350	1	80-120%	
Bromodichloromethane	Standard	40.0	40.7	µg/L	102%		9806-351	1	80-120%	
Bromodichloromethane	Standard	40.0	41.0	µg/L	102%		9806-351	1	80-120%	
Bromoform	Duplicate	14.7	13.3	µg/L		10.0%	9806-87	1		
Bromoform	Matrix Spike	40.0	42.1	µg/L	105%		9806-52	1		
Bromoform	Method Blank		ND*	µg/L			9806-348	1		
Bromoform	Secondary Source Std	20.0	20.9	µg/L	104%		9806-349	1	70-130%	
Bromoform	Standard	20.0	20.0	µg/L	100%		9806-350	1	80-120%	
Bromoform	Standard	20.0	20.7	µg/L	103%		9806-350	1	80-120%	
Bromoform	Standard	40.0	41.4	µg/L	103%		9806-351	1	80-120%	
Bromoform	Standard	40.0	41.7	µg/L	104%		9806-351	1	80-120%	
Chloroform	Duplicate	52.9	48.4	µg/L		8.9%	9806-87	1		
Chloroform	Matrix Spike	40.0	40.6	µg/L	102%		9806-52	1		
Chloroform	Method Blank		ND*	µg/L			9806-348	1		
Chloroform	Secondary Source Std	20.0	21.1	µg/L	106%		9806-349	1	70-130%	
Chloroform	Standard	20.0	19.1	µg/L	96%		9806-350	1	80-120%	
Chloroform	Standard	20.0	20.1	µg/L	101%		9806-350	1	80-120%	
Chloroform	Standard	40.0	41.1	µg/L	103%		9806-351	1	80-120%	
Chloroform	Standard	40.0	41.3	µg/L	103%		9806-351	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Dibromochloromethane	Duplicate	42.8	39.2	µg/L		8.8%	9806-87	1	
Dibromochloromethane	Matrix Spike	40.0	38.7	µg/L	97%		9806-52	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9806-348	1	
Dibromochloromethane	Secondary Source Std	20.0	21.0	µg/L	105%		9806-349	1	70-130%
Dibromochloromethane	Standard	20.0	20.1	µg/L	101%		9806-350	1	80-120%
Dibromochloromethane	Standard	20.0	20.2	µg/L	101%		9806-350	1	80-120%
Dibromochloromethane	Standard	40.0	40.5	µg/L	101%		9806-351	1	80-120%
Dibromochloromethane	Standard	40.0	41.0	µg/L	102%		9806-351	1	80-120%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-153-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromodichloromethane	Duplicate	26.5	25.3	µg/L		4.6%	9806-206	1		
Bromodichloromethane	Matrix Spike	40.0	43.3	µg/L	108%		9806-26	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9806-716	1		
Bromodichloromethane	Secondary Source Std	20.0	18.6	µg/L	93%		9806-717	1	70-130%	
Bromodichloromethane	Standard	20.0	20.0	µg/L	100%		9806-718	1	80-120%	
Bromodichloromethane	Standard	20.0	20.6	µg/L	103%		9806-718	1	80-120%	
Bromodichloromethane	Standard	40.0	40.5	µg/L	101%		9806-719	1	80-120%	
Bromoform	Duplicate	3.5	3.3	µg/L		5.9%	9806-206	1		
Bromoform	Matrix Spike	40.0	43.2	µg/L	108%		9806-26	1		
Bromoform	Method Blank		ND*	µg/L			9806-716	1		
Bromoform	Secondary Source Std	20.0	18.0	µg/L	90%		9806-717	1	70-130%	
Bromoform	Standard	20.0	19.5	µg/L	97%		9806-718	1	80-120%	
Bromoform	Standard	20.0	22.8	µg/L	114%		9806-718	1	80-120%	
Bromoform	Standard	40.0	42.9	µg/L	107%		9806-719	1	80-120%	
Chloroform	Duplicate	18.9	18.2	µg/L		3.8%	9806-206	1		
Chloroform	Matrix Spike	40.0	45.0	µg/L	113%		9806-26	1		
Chloroform	Method Blank		ND*	µg/L			9806-716	1		
Chloroform	Secondary Source Std	20.0	18.7	µg/L	93%		9806-717	1	70-130%	
Chloroform	Standard	20.0	19.8	µg/L	99%		9806-718	1	80-120%	
Chloroform	Standard	20.0	21.1	µg/L	106%		9806-718	1	80-120%	
Chloroform	Standard	40.0	40.6	µg/L	102%		9806-719	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Dibromochloromethane	Duplicate	22.8	21.9	µg/L		4.0%	9806-206	1	
Dibromochloromethane	Matrix Spike	40.0	45.6	µg/L	114%		9806-26	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9806-716	1	
Dibromochloromethane	Secondary Source Std	20.0	17.8	µg/L	89%		9806-717	1	70-130%
Dibromochloromethane	Standard	20.0	20.4	µg/L	102%		9806-718	1	80-120%
Dibromochloromethane	Standard	20.0	21.3	µg/L	106%		9806-718	1	80-120%
Dibromochloromethane	Standard	40.0	41.2	µg/L	103%		9806-719	1	80-120%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-160-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromodichloromethane	Duplicate	20.1	21.1	µg/L		4.9%	9806-79	1		
Bromodichloromethane	Matrix Spike	40.0	37.3	µg/L	93%		9806-258	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9806-846	1		
Bromodichloromethane	Secondary Source Std	50.0	48.8	µg/L	98%		9806-847	1	70-130%	
Bromodichloromethane	Standard	20.0	19.6	µg/L	98%		9806-848	1	80-120%	
Bromodichloromethane	Standard	40.0	41.2	µg/L	103%		9806-849	1	80-120%	
Bromoform	Duplicate	24.6	25.9	µg/L		5.1%	9806-79	1		
Bromoform	Matrix Spike	40.0	35.7	µg/L	89%		9806-258	1		
Bromoform	Method Blank		ND*	µg/L			9806-846	1		
Bromoform	Secondary Source Std	50.0	48.1	µg/L	96%		9806-847	1	70-130%	
Bromoform	Standard	20.0	19.8	µg/L	99%		9806-848	1	80-120%	
Bromoform	Standard	40.0	42.3	µg/L	106%		9806-849	1	80-120%	
Chloroform	Duplicate	8.1	8.7	µg/L		7.1%	9806-79	1		
Chloroform	Matrix Spike	40.0	38.1	µg/L	95%		9806-258	1		
Chloroform	Method Blank		ND*	µg/L			9806-846	1		
Chloroform	Secondary Source Std	50.0	51.6	µg/L	103%		9806-847	1	70-130%	
Chloroform	Standard	20.0	18.6	µg/L	93%		9806-848	1	80-120%	
Chloroform	Standard	40.0	41.9	µg/L	105%		9806-849	1	80-120%	
Dibromochloromethane	Duplicate	32.8	34.4	µg/L		4.8%	9806-79	1		
Dibromochloromethane	Matrix Spike	40.0	38.6	µg/L	97%		9806-258	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9806-846	1		
Dibromochloromethane	Secondary Source Std	50.0	47.9	µg/L	96%		9806-847	1	70-130%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Dibromochloromethane	Standard	20.0	19.6	µg/L	98%		9806-848	1	80-120%
Dibromochloromethane	Standard	40.0	41.1	µg/L	103%		9806-849	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-152-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromochloroacetic acid	Duplicate	2.2	2.3	µg/L		4.4%	9806-10	1		
Bromochloroacetic acid	Matrix Spike	40.0	36.9	µg/L	92%		9806-20	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9806-425	1		
Bromochloroacetic acid	Secondary Source Std	20.0	18.0	µg/L	90%		9806-426	1	70-130%	
Bromochloroacetic acid	Standard	20.0	20.1	µg/L	101%		9806-427	1	80-120%	
Bromochloroacetic acid	Standard	20.0	19.5	µg/L	97%		9806-427	1	80-120%	
Bromochloroacetic acid	Standard	40.0	41.9	µg/L	105%		9806-428	1	80-120%	
Bromodichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9806-10	1		
Bromodichloroacetic acid	Matrix Spike	40.0	34.5	µg/L	86%		9806-20	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9806-425	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9806-426	1		
Bromodichloroacetic acid	Standard	20.0	20.6	µg/L	103%		9806-427	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	20.3	µg/L	102%		9806-427	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	43.4	µg/L	109%		9806-428	1	80-120%	
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9806-10	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	35.2	µg/L	88%		9806-20	2		
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9806-425	2		
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9806-426	2		
Chlorodibromoacetic acid	Standard	20.0	21.3	µg/L	106%		9806-427	2	80-120%	
Chlorodibromoacetic acid	Standard	20.0	20.7	µg/L	103%		9806-427	2	80-120%	
Chlorodibromoacetic acid	Standard	40.0	43.9	µg/L	110%		9806-428	2	80-120%	
Dibromoacetic acid	Duplicate	4.1	4.1	µg/L		0.0%	9806-10	1		
Dibromoacetic acid	Matrix Spike	40.0	36.3	µg/L	91%		9806-20	1		
Dibromoacetic acid	Method Blank		ND*	µg/L			9806-425	1		
Dibromoacetic acid	Secondary Source Std	20.0	17.4	µg/L	87%		9806-426	1	70-130%	
Dibromoacetic acid	Standard	20.0	20.0	µg/L	100%		9806-427	1	80-120%	
Dibromoacetic acid	Standard	20.0	19.7	µg/L	98%		9806-427	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

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City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Dibromoacetic acid	Standard	40.0	42.8	µg/L	107%		9806-428	1	80-120%
Dichloroacetic acid	Duplicate	8.1	7.8	µg/L		3.8%	9806-10	1	
Dichloroacetic acid	Matrix Spike	40.0	37.0	µg/L	93%		9806-20	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9806-425	1	
Dichloroacetic acid	Secondary Source Std	20.0	20.5	µg/L	102%		9806-426	1	70-130%
Dichloroacetic acid	Standard	20.0	20.3	µg/L	102%		9806-427	1	80-120%
Dichloroacetic acid	Standard	20.0	20.7	µg/L	103%		9806-427	1	80-120%
Dichloroacetic acid	Standard	40.0	40.2	µg/L	101%		9806-428	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9806-10	1	
Monobromoacetic acid	Matrix Spike	40.0	35.4	µg/L	89%		9806-20	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9806-425	1	
Monobromoacetic acid	Secondary Source Std	20.0	22.2	µg/L	111%		9806-426	1	70-130%
Monobromoacetic acid	Standard	20.0	20.6	µg/L	103%		9806-427	1	80-120%
Monobromoacetic acid	Standard	20.0	20.3	µg/L	102%		9806-427	1	80-120%
Monobromoacetic acid	Standard	40.0	36.3	µg/L	91%		9806-428	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9806-10	2	
Monochloroacetic acid	Matrix Spike	40.0	35.6	µg/L	89%		9806-20	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9806-425	2	
Monochloroacetic acid	Secondary Source Std	20.0	21.5	µg/L	108%		9806-426	2	70-130%
Monochloroacetic acid	Standard	20.0	21.4	µg/L	107%		9806-427	2	80-120%
Monochloroacetic acid	Standard	20.0	22.2	µg/L	111%		9806-427	2	80-120%
Monochloroacetic acid	Standard	40.0	37.6	µg/L	94%		9806-428	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9806-10	4	
Tribromoacetic acid	Matrix Spike	40.0	36.7	µg/L	92%		9806-20	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9806-425	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9806-426	4	
Tribromoacetic acid	Standard	20.0	22.0	µg/L	110%		9806-427	4	80-120%
Tribromoacetic acid	Standard	20.0	21.0	µg/L	105%		9806-427	4	80-120%
Tribromoacetic acid	Standard	40.0	43.1	µg/L	108%		9806-428	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9806-10	1	
Trichloroacetic acid	Matrix Spike	40.0	33.0	µg/L	82%		9806-20	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9806-425	1	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Trichloroacetic acid	Secondary Source Std	20.0	16.0	µg/L	80%		9806-426	1	70-130%
Trichloroacetic acid	Standard	20.0	20.4	µg/L	102%		9806-427	1	80-120%
Trichloroacetic acid	Standard	20.0	20.2	µg/L	101%		9806-427	1	80-120%
Trichloroacetic acid	Standard	40.0	42.3	µg/L	106%		9806-428	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-157-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	6.6	5.6	µg/L		16.4%	9806-79	1		
Bromochloroacetic acid	Matrix Spike	40.0	42.4	µg/L	106%		9806-360	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9806-824	1		
Bromochloroacetic acid	Secondary Source Std	20.0	16.8	µg/L	84%		9806-825	1	70-130%	
Bromochloroacetic acid	Standard	20.0	19.5	µg/L	97%		9806-826	1	80-120%	
Bromochloroacetic acid	Standard	40.0	37.2	µg/L	93%		9806-827	1	80-120%	
Bromodichloroacetic acid	Duplicate	2.1	1.7	µg/L		21.1%	9806-79	1		
Bromodichloroacetic acid	Matrix Spike	40.0	41.1	µg/L	103%		9806-360	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9806-824	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9806-825	1	70-130%	
Bromodichloroacetic acid	Standard	20.0	18.7	µg/L	93%		9806-826	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	39.7	µg/L	99%		9806-827	1	80-120%	
Chlorodibromoacetic acid	Duplicate	2.1	2.0	µg/L		4.9%	9806-79	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	36.4	µg/L	91%		9806-360	2		
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9806-824	2		
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9806-825	2	70-130%	
Chlorodibromoacetic acid	Standard	20.0	18.5	µg/L	93%		9806-826	2	80-120%	
Chlorodibromoacetic acid	Standard	40.0	40.9	µg/L	102%		9806-827	2	80-120%	
Dibromoacetic acid	Duplicate	9.9	8.2	µg/L		18.8%	9806-79	1		
Dibromoacetic acid	Matrix Spike	40.0	41.9	µg/L	105%		9806-360	1		
Dibromoacetic acid	Method Blank		ND*	µg/L			9806-824	1		
Dibromoacetic acid	Secondary Source Std	20.0	17.0	µg/L	85%		9806-825	1	70-130%	
Dibromoacetic acid	Standard	20.0	19.6	µg/L	98%		9806-826	1	80-120%	
Dibromoacetic acid	Standard	40.0	39.2	µg/L	98%		9806-827	1	80-120%	
Dichloroacetic acid	Duplicate	4.0	3.6	µg/L		10.5%	9806-79	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

Dichloroacetic acid	Matrix Spike	40.0	42.6	µg/L	106%		9806-360	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9806-824	1	
Dichloroacetic acid	Secondary Source Std	20.0	18.0	µg/L	90%		9806-825	1	70-130%
Dichloroacetic acid	Standard	20.0	18.7	µg/L	93%		9806-826	1	80-120%
Dichloroacetic acid	Standard	40.0	33.7	µg/L	84%		9806-827	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9806-79	1	
Monobromoacetic acid	Matrix Spike	40.0	43.5	µg/L	109%		9806-360	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9806-824	1	
Monobromoacetic acid	Secondary Source Std	20.0	19.2	µg/L	96%		9806-825	1	70-130%
Monobromoacetic acid	Standard	20.0	20.1	µg/L	101%		9806-826	1	80-120%
Monobromoacetic acid	Standard	40.0	37.5	µg/L	94%		9806-827	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9806-79	2	
Monochloroacetic acid	Matrix Spike	40.0	44.7	µg/L	112%		9806-360	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9806-824	2	
Monochloroacetic acid	Secondary Source Std	20.0	20.5	µg/L	102%		9806-825	2	70-130%
Monochloroacetic acid	Standard	20.0	21.1	µg/L	106%		9806-826	2	80-120%
Monochloroacetic acid	Standard	40.0	38.0	µg/L	95%		9806-827	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9806-79	4	
Tribromoacetic acid	Matrix Spike	40.0	35.2	µg/L	88%		9806-360	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9806-824	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9806-825	4	70-130%
Tribromoacetic acid	Standard	20.0	18.6	µg/L	93%		9806-826	4	80-120%
Tribromoacetic acid	Standard	40.0	41.2	µg/L	103%		9806-827	4	80-120%
Trichloroacetic acid	Duplicate	2.2	1.9	µg/L		14.6%	9806-79	1	
Trichloroacetic acid	Matrix Spike	40.0	41.9	µg/L	105%		9806-360	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9806-824	1	
Trichloroacetic acid	Secondary Source Std	20.0	16.1	µg/L	81%		9806-825	1	70-130%
Trichloroacetic acid	Standard	20.0	18.8	µg/L	94%		9806-826	1	80-120%
Trichloroacetic acid	Standard	40.0	37.4	µg/L	93%		9806-827	1	80-120%

End of quality control report

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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QC Results from Montgomery Watson Laboratories

Printed on 7/7/99 11:21:49 PM

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Study#: 118
Study Title: ICR RSSCT #2

Phone: 785-368-3882 Fax: 785-368-3869

QC Batch ID: 79168 **Report #:** 44013, 44025

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	1.1	110.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	1.08	108.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			
MS	Ammonia Nitrogen	1	1.06	106.0%		(80 - 120)
MSD	Ammonia Nitrogen	1	1.05	105.0%		(80 - 120)

QC Batch ID: 79300 **Report #:** 44013, 44025

Analysis: CA **Method:** EPA/ML 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Calcium, Total, ICAP	50	49.4	99.0%		(90 - 110)
LCS2	Calcium, Total, ICAP	50	51	102.0%		(90 - 110)
MBLK	Calcium, Total, ICAP	ND	ND			
MS	Calcium, Total, ICAP	50	51.2	102.0%		(80 - 120)

QC Batch ID: 79302 **Report #:** 44013

Analysis: MG **Method:** ML/EPA 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Magnesium, Total, ICAP	20	20.3	102.0%		(85 - 115)
LCS2	Magnesium, Total, ICAP	20	20.9	104.0%		(85 - 115)
MS	Magnesium, Total, ICAP	20	20.4	102.0%		(70 - 130)

QC Batch ID: 79548 **Report #:** 44013, 44025

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.019	95.0%		(50 - 150)
LCS2	Bromide	0.1	0.099	99.0%		(90 - 110)
MBLK	Bromide	ND	ND			(70 - 130)
MS	Bromide	0.1	0.093	93.0%		(80 - 120)
MSD	Bromide	0.1	0.092	92.0%		(80 - 120)

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

QC Results from Montgomery Watson Laboratories

Mr. Bruce Northup
City of Topeka

Study#: 118
Study Title: ICR RSSCT #2

QC Batch ID: 79678 **Report #:** 44013

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.021	105.0%		(50 - 150)
LCS2	Bromide	0.1	0.101	101.0%		(90 - 110)
MS	Bromide	0.1	0.1	100.0%		(80 - 120)
MSD	Bromide	0.1	0.097	97.0%		(80 - 120)

End of MW QC report

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

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Comments

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 118
Study Title: ICR RSSCT #2

Study comments

Sample 9805-501 (Pre-Study) is a sample taken from a different treatment train.

Sample 9806-26 broke during its first chlorination period. It was rechlorinated on the sixth day past its sampling date.

Analysis comments

Analysis: Turbidity
Method: SM 2130 B

Reported turbidity data has been rounded following the requirements of SM 2130 B, reproduced in the table below (Standard Methods, 1995). Note that the reported digits are not necessarily significant.

Turbidity Range	Report to Nearest
0-1.0	0.05
1-10	0.1
10-40	1
40-100	5
100-400	10
400-1000	50
> 1000	100

End of comments

Summers & Hooper, Inc.
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Laboratory Report

Client:

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study Title: ICR RSSCT #3

Study #: 136

Reviewed By: _____
Stuart M. Hooper

Date Reviewed: 7/13/99

Electronic copies of the results and quality control data are available upon request.

Summers & Hooper, Inc.
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Laboratory Test Results

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 136
Study Title: ICR RSSCT #3

Sample ID: Settled.Top **S&H ID:** 9809-5 **Date Sampled:** 8/31/98 10:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1	TOC-ICR	TOC	2.50	mg/L	SM 5310 C	1	0.50	8/31/98		9/1/98	7-0-391
2	TOC-ICR	TOC (Dupl)	2.53	mg/L	SM 5310 C	1	0.50	8/31/98		9/1/98	7-0-391
			2.51	**mg/L**	**1.2 % RPD**						

Sample ID: settled.drum.top **S&H ID:** 9809-26 **Date Sampled:** 9/1/98 8:15:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
3	TOC-ICR	TOC	3.07	mg/L	SM 5310 C	1	0.50	9/1/98		9/4/98	7-0-394
4	TOC-ICR	TOC (Dupl)	3.14	mg/L	SM 5310 C	1	0.50	9/1/98		9/4/98	7-0-394
			3.11	**mg/L**	**2.3 % RPD**						

Sample ID: Top.settled on arrival **S&H ID:** 9809-29 **Date Sampled:** 9/3/98

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
5	TOC-ICR	TOC	2.36	mg/L	SM 5310 C	1	0.50	9/3/98		9/4/98	7-0-394
6	TOC-ICR	TOC (Dupl)	2.39	mg/L	SM 5310 C	1	0.50	9/3/98		9/4/98	7-0-394
			2.38	**mg/L**	**1.3 % RPD**						

Sample ID: Filtered at S&H **S&H ID:** 9809-30 **Date Sampled:** 9/3/98

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
7	TOC-ICR	TOC	2.35	mg/L	SM 5310 C	1	0.50	9/3/98		9/4/98	7-0-394
8	TOC-ICR	TOC (Dupl)	2.35	mg/L	SM 5310 C	1	0.50	9/3/98		9/4/98	7-0-394
			2.35	**mg/L**	**0.0 % RPD**						

Sample ID: 136.10.Eff-1 **S&H ID:** 9809-51 **Date Sampled:** 9/8/98 7:14:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
9	Cl2Dose	Chlorine Dose	1.50	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/11/98		9/11/98	n/a
10	Cl2Res	Chlorine Residual	0.72	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/11/98		9/13/98	n/a
11	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.6	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
12	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
13	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
14	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
15	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/21/98	0-217-0

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

16	HAA-ICR	Dibromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
17	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
18	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
19	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/21/98	0-217-0
20	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/13/98	9/21/98	9/21/98	0-217-0
21	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/21/98	0-217-0
22	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/13/98	n/a
23	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
24	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	9/8/98		9/8/98	n/a
25	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/11/98		9/13/98	n/a
26	TEMP	Temperature	21.1	ºC	SM 2550 B	1	n/a	9/8/98		9/8/98	n/a
27	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	9/11/98		9/13/98	n/a
28	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/8/98		9/9/98	7-0-399
29	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/8/98		9/9/98	7-0-399
			ND	**mg/L**							
30	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
31	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
			ND	**µg Cl-/L**							
32	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.4	%	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
33	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
34	THM-ICR	Bromoform	5.9	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
35	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
36	THM-ICR	Dibromochloromethane	2.5	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
37	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/8/98		9/9/98	8-0-288
38	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/8/98		9/9/98	8-0-288
			ND	**1/cm**							

Sample ID: 136.10.Eff-3 **S&H ID:** 9809-53 **Date Sampled:** 9/9/98 8:58:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
39	Cl2Dose	Chlorine Dose	1.72	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/11/98		9/11/98	n/a
40	Cl2Res	Chlorine Residual	0.79	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/11/98		9/13/98	n/a
41	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	102.0	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
42	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard) (Lab Dupl)	103.2	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			102.6	**%**	**1.2 % RPD**						
43	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.2	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
44	HAA-ICR	2-Bromopropionic acid (Surrogate) (Lab Dupl)	100.0	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

			98.6	**%**	**2.8 % RPD**						
45	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
46	HAA-ICR	Bromochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
47	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
48	HAA-ICR	Bromodichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
49	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
50	HAA-ICR	Chlorodibromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
51	HAA-ICR	Dibromoacetic acid	2.0	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
52	HAA-ICR	Dibromoacetic acid (Lab Dupl)	1.8	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			1.9	**µg/L**	**10.5 % RPD**						
53	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
54	HAA-ICR	Dichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
55	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
56	HAA-ICR	Monobromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
57	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
58	HAA-ICR	Monochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
59	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/13/98	9/21/98	9/22/98	0-217-0
60	HAA-ICR	Tribromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	4.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
61	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
62	HAA-ICR	Trichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
			ND	**µg/L**							
63	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/13/98	n/a
64	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
65	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/9/98		9/9/98	n/a
66	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/11/98		9/13/98	n/a
67	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	9/9/98		9/9/98	n/a
68	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	9/11/98		9/13/98	n/a
69	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/9/98		9/10/98	7-0-400
70	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/9/98		9/10/98	7-0-400
			ND	**mg/L**							
71	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
72	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

			ND	**µg Cl-/L**							
73	THM-ICR	1,2,3-Trichloropropane (Surrogate)	99.2	%	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
74	THM-ICR	Bromodichloromethane	1.2	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
75	THM-ICR	Bromoform	15.6	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
76	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
77	THM-ICR	Dibromochloromethane	6.1	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
78	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/9/98		9/10/98	8-0-289
79	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/9/98		9/10/98	8-0-289
			ND	**1/cm**							

Sample ID: 136.10.Eff-5 **S&H ID:** 9809-55 **Date Sampled:** 9/10/98 7:29:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
80	Cl2Dose	Chlorine Dose	1.99	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/11/98		9/11/98	n/a
81	Cl2Res	Chlorine Residual	0.91	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/11/98		9/13/98	n/a
82	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	103.6	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
83	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.0	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
84	HAA-ICR	Bromochloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
85	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
86	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
87	HAA-ICR	Dibromoacetic acid	3.2	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
88	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
89	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
90	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
91	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/13/98	9/21/98	9/22/98	0-217-0
92	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
93	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/13/98	n/a
94	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
95	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	9/10/98		9/10/98	n/a
96	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/11/98		9/13/98	n/a
97	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	9/10/98		9/10/98	n/a
98	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	9/11/98		9/13/98	n/a
99	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
100	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
			ND	**mg/L**							
101	TOX-ICR	TOX	28	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
102	TOX-ICR	TOX (Dupl)	26	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
			27	**µg Cl-/L**	**7.4 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

103	THM-ICR	1,2,3-Trichloropropane (Surrogate)	105.2	%	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
104	THM-ICR	Bromodichloromethane	2.5	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
105	THM-ICR	Bromoform	21.4	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
106	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
107	THM-ICR	Dibromochloromethane	10.2	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
108	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/10/98		9/10/98	8-0-289
109	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/10/98		9/10/98	8-0-289
			ND	**1/cm**							

Sample ID: 136.10.Eff-6 **S&H ID:** 9809-56 **Date Sampled:** 9/10/98 12:24:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
110	Cl2Dose	Chlorine Dose	2.02	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
111	Cl2Res	Chlorine Residual	0.75	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
112	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	99.6	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
113	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
114	HAA-ICR	Bromochloroacetic acid	2.0	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
115	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
116	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
117	HAA-ICR	Dibromoacetic acid	5.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
118	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
119	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
120	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
121	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
122	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
123	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
124	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
125	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/10/98		9/10/98	n/a
126	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
127	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	9/10/98		9/10/98	n/a
128	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
129	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
130	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
			ND	**mg/L**							
131	TOX-ICR	TOX	38	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/17/98	12-0-209
132	TOX-ICR	TOX (Dupl)	38	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/17/98	12-0-209
			38	**µg Cl-/L**	**0.0 % RPD**						
133	THM-ICR	1,2,3-Trichloropropane (Surrogate)	91.6	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

134	THM-ICR	Bromodichloromethane	3.5	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
135	THM-ICR	Bromoform	24.3	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
136	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
137	THM-ICR	Dibromochloromethane	14.1	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
138	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/10/98		9/11/98	8-0-290
139	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/10/98		9/11/98	8-0-290
			ND	**1/cm**							

Sample ID: 136.10.Eff-9 **S&H ID:** 9809-59 **Date Sampled:** 9/11/98 4:02:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
140	Cl2Dose	Chlorine Dose	2.25	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
141	Cl2Res	Chlorine Residual	0.80	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
142	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	106.0	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
143	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.4	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
144	HAA-ICR	Bromochloroacetic acid	3.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
145	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
146	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
147	HAA-ICR	Dibromoacetic acid	7.5	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
148	HAA-ICR	Dichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
149	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
150	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
151	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
152	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
153	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
154	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
155	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
156	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
157	TEMP	Temperature	21.0	ºC	SM 2550 B	1	n/a	9/11/98		9/11/98	n/a
158	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
159	TOC-ICR	TOC	0.66	mg/L	SM 5310 C	1	0.50	9/11/98		9/11/98	7-0-401
160	TOC-ICR	TOC (Dupl)	0.67	mg/L	SM 5310 C	1	0.50	9/11/98		9/11/98	7-0-401
			0.67	**mg/L**	**1.5 % RPD**						
161	TOX-ICR	TOX	52	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
162	TOX-ICR	TOX (Dupl)	54	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
			53	**µg Cl-/L**	**3.8 % RPD**						
163	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.4	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
164	THM-ICR	Bromodichloromethane	6.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
165	THM-ICR	Bromoform	29.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

166	THM-ICR	Chloroform	1.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
167	THM-ICR	Dibromochloromethane	21.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
168	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/11/98		9/11/98	8-0-290
169	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/11/98		9/11/98	8-0-290
			ND	**1/cm**							

Sample ID: 136.10.Eff-11 **S&H ID:** 9809-61 **Date Sampled:** 9/11/98 2:27:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
170	Cl2Dose	Chlorine Dose	2.38	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
171	Cl2Res	Chlorine Residual	0.74	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
172	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.4	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
173	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
174	HAA-ICR	Bromochloroacetic acid	3.6	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
175	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
176	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
177	HAA-ICR	Dibromoacetic acid	7.6	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
178	HAA-ICR	Dichloroacetic acid	1.4	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
179	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
180	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
181	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
182	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
183	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
184	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
185	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
186	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
187	TEMP	Temperature	21.1	ºC	SM 2550 B	1	n/a	9/11/98		9/11/98	n/a
188	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
189	TOC-ICR	TOC	0.78	mg/L	SM 5310 C	1	0.50	9/11/98		9/11/98	7-0-401
190	TOC-ICR	TOC (Dupl)	0.79	mg/L	SM 5310 C	1	0.50	9/11/98		9/11/98	7-0-401
			0.79	**mg/L**	**1.3 % RPD**						
191	TOX-ICR	TOX	62	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
192	TOX-ICR	TOX (Dupl)	63	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
			63	**µg Cl-/L**	**1.6 % RPD**						
193	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.6	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
194	THM-ICR	Bromodichloromethane	8.9	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
195	THM-ICR	Bromoform	30.4	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
196	THM-ICR	Chloroform	2.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
197	THM-ICR	Dibromochloromethane	25.8	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

198	UV-ICR	UV	0.011	1/cm	SM 5910 B	1	0.009	9/11/98		9/12/98	8-0-291
199	UV-ICR	UV (Dupl)	0.011	1/cm	SM 5910 B	1	0.009	9/11/98		9/12/98	8-0-291
			0.011	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-12 **S&H ID:** 9809-62 **Date Sampled:** 9/12/98 6:02:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
200	Cl2Dose	Chlorine Dose	2.55	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
201	Cl2Res	Chlorine Residual	0.79	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
202	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
203	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.4	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
204	HAA-ICR	Bromochloroacetic acid	3.6	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
205	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
206	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
207	HAA-ICR	Dibromoacetic acid	7.2	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
208	HAA-ICR	Dichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
209	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
210	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
211	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
212	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
213	pH	Cl2 pH - Final	9.0	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
214	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
215	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/12/98		9/12/98	n/a
216	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
217	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	9/12/98		9/12/98	n/a
218	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
219	TOC-ICR	TOC	0.92	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
220	TOC-ICR	TOC (Dupl)	0.93	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
			0.93	**mg/L**	**1.1 % RPD**						
221	TOX-ICR	TOX	81	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
222	TOX-ICR	TOX (Dupl)	73	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
			77	**µg Cl-/L**	**10.4 % RPD**						
223	THM-ICR	1,2,3-Trichloropropane (Surrogate)	96.0	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
224	THM-ICR	1,2,3-Trichloropropane (Surrogate) (Lab Dupl)	96.8	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
			96.4	**%**	**0.8 % RPD**						
225	THM-ICR	Bromodichloromethane	12.2	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
226	THM-ICR	Bromodichloromethane (Lab Dupl)	12.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
			12.4	**µg/L**	**4.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

227	THM-ICR	Bromoform	29.8	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
228	THM-ICR	Bromoform (Lab Dupl)	30.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
			30.2	**µg/L**	**2.6 % RPD**						
229	THM-ICR	Chloroform	3.5	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
230	THM-ICR	Chloroform (Lab Dupl)	3.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
			3.5	**µg/L**	**2.9 % RPD**						
231	THM-ICR	Dibromochloromethane	30.5	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
232	THM-ICR	Dibromochloromethane (Lab Dupl)	31.8	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
			31.1	**µg/L**	**4.2 % RPD**						
233	UV-ICR	UV	0.014	1/cm	SM 5910 B	1	0.009	9/12/98		9/12/98	8-0-291
234	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	9/12/98		9/12/98	8-0-291
			0.014	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-15 **S&H ID:** 9809-65 **Date Sampled:** 9/13/98 12:17:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
235	Cl2Dose	Chlorine Dose	2.72	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
236	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
237	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
238	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.6	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
239	HAA-ICR	Bromochloroacetic acid	4.4	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
240	HAA-ICR	Bromodichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
241	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
242	HAA-ICR	Dibromoacetic acid	7.9	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
243	HAA-ICR	Dichloroacetic acid	2.2	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
244	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
245	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
246	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
247	HAA-ICR	Trichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
248	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
249	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
250	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	9/13/98		9/13/98	n/a
251	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
252	TEMP	Temperature	21.6	ºC	SM 2550 B	1	n/a	9/13/98		9/13/98	n/a
253	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
254	TOC-ICR	TOC	1.07	mg/L	SM 5310 C	1	0.50	9/13/98		9/13/98	7-0-403
255	TOC-ICR	TOC (Dupl)	1.10	mg/L	SM 5310 C	1	0.50	9/13/98		9/13/98	7-0-403
			1.09	**mg/L**	**2.8 % RPD**						
256	TOX-ICR	TOX	91	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
257	TOX-ICR	TOX (Dupl)	91	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

			91	**µg Cl-/L**	**0.0 % RPD**						
258	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.4	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
259	THM-ICR	Bromodichloromethane	15.8	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
260	THM-ICR	Bromoform	26.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
261	THM-ICR	Chloroform	5.1	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
262	THM-ICR	Dibromochloromethane	33.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
263	UV-ICR	UV	0.016	1/cm	SM 5910 B	1	0.009	9/13/98		9/13/98	8-0-292
264	UV-ICR	UV (Dupl)	0.016	1/cm	SM 5910 B	1	0.009	9/13/98		9/13/98	8-0-292
			0.016	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-19 **S&H ID:** 9809-69 **Date Sampled:** 9/14/98 12:30:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
265	Cl2Dose	Chlorine Dose	2.96	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
266	Cl2Res	Chlorine Residual	0.79	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
267	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	99.6	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
268	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
269	HAA-ICR	Bromochloroacetic acid	5.7	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
270	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
271	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
272	HAA-ICR	Dibromoacetic acid	8.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
273	HAA-ICR	Dichloroacetic acid	3.3	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
274	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
275	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
276	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/21/98	9/22/98	0-217-0
277	HAA-ICR	Trichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
278	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
279	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
280	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/14/98		9/14/98	n/a
281	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
282	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	9/14/98		9/14/98	n/a
283	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
284	TOC-ICR	TOC	1.28	mg/L	SM 5310 C	1	0.50	9/14/98		9/16/98	7-0-406
285	TOC-ICR	TOC (Dupl)	1.29	mg/L	SM 5310 C	1	0.50	9/14/98		9/16/98	7-0-406
			1.29	**mg/L**	**0.8 % RPD**						
286	TOX-ICR	TOX	106	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/21/98	12-0-211
287	TOX-ICR	TOX (Dupl)	93	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/21/98	12-0-211
			100	**µg Cl-/L**	**13.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

288	THM-ICR	1,2,3-Trichloropropane (Surrogate)	89.2	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
289	THM-ICR	Bromodichloromethane	20.3	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
290	THM-ICR	Bromoform	22.9	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
291	THM-ICR	Chloroform	7.9	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
292	THM-ICR	Dibromochloromethane	35.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
293	UV-ICR	UV	0.019	1/cm	SM 5910 B	1	0.009	9/14/98		9/15/98	8-0-294
294	UV-ICR	UV (Dupl)	0.019	1/cm	SM 5910 B	1	0.009	9/14/98		9/15/98	8-0-294
			0.019	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-21 **S&H ID:** 9809-71 **Date Sampled:** 9/16/98 12:44:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
295	Cl2Dose	Chlorine Dose	3.14	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
296	Cl2Res	Chlorine Residual	0.84	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
297	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.0	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
298	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
299	HAA-ICR	Bromochloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
300	HAA-ICR	Bromodichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
301	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
302	HAA-ICR	Dibromoacetic acid	7.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
303	HAA-ICR	Dichloroacetic acid	4.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
304	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
305	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
306	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/21/98	9/22/98	0-217-0
307	HAA-ICR	Trichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
308	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
309	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
310	pH	pH	8.3	Unit	SM 4500-H+ B	1	n/a	9/16/98		9/16/98	n/a
311	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
312	TEMP	Temperature	21.6	ºC	SM 2550 B	1	n/a	9/16/98		9/16/98	n/a
313	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
314	TOC-ICR	TOC	1.43	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
315	TOC-ICR	TOC (Dupl)	1.45	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
			1.44	**mg/L**	**1.4 % RPD**						
316	TOX-ICR	TOX	127	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/21/98	12-0-211
317	TOX-ICR	TOX (Dupl)	124	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/21/98	12-0-211
			126	**µg Cl-/L**	**2.4 % RPD**						
318	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.6	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

319	THM-ICR	Bromodichloromethane	25.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
320	THM-ICR	Bromoform	21.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
321	THM-ICR	Chloroform	13.0	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
322	THM-ICR	Dibromochloromethane	37.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
323	UV-ICR	UV	0.022	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
324	UV-ICR	UV (Dupl)	0.022	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
			0.022	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-23 **S&H ID:** 9809-73 **Date Sampled:** 9/17/98 1:22:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
325	Cl2Dose	Chlorine Dose	3.26	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/19/98		9/19/98	n/a
326	Cl2Res	Chlorine Residual	0.90	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/19/98		9/21/98	n/a
327	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	92.8	%	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
328	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.8	%	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
329	HAA-ICR	Bromochloroacetic acid	7.7	µg/L	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
330	HAA-ICR	Bromodichloroacetic acid	2.0	µg/L	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
331	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/21/98	9/30/98	10/1/98	0-222-0
332	HAA-ICR	Dibromoacetic acid	10.0	µg/L	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
333	HAA-ICR	Dichloroacetic acid	6.4	µg/L	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
334	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
335	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/21/98	9/30/98	10/1/98	0-222-0
336	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/21/98	9/30/98	10/1/98	0-222-0
337	HAA-ICR	Trichloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	9/21/98	9/30/98	10/1/98	0-222-0
338	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/19/98		9/21/98	n/a
339	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/19/98		9/19/98	n/a
340	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
341	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/19/98		9/21/98	n/a
342	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	9/17/98		9/17/98	n/a
343	TIME	Cl2 Incubation Time	47.7	hrs	n/a	1	n/a	9/19/98		9/21/98	n/a
344	TOC-ICR	TOC	1.54	mg/L	SM 5310 C	1	0.50	9/17/98		9/18/98	7-0-407
345	TOC-ICR	TOC (Dupl)	1.54	mg/L	SM 5310 C	1	0.50	9/17/98		9/18/98	7-0-407
			1.54	**mg/L**	**0.0 % RPD**						
346	TOX-ICR	TOX	140	µg Cl-/L	SM 5320 B	1	25	9/21/98		9/22/98	12-0-212
347	TOX-ICR	TOX (Dupl)	138	µg Cl-/L	SM 5320 B	1	25	9/21/98		9/22/98	12-0-212
			139	**µg Cl-/L**	**1.4 % RPD**						
348	THM-ICR	1,2,3-Trichloropropane (Surrogate)	108.4	%	EPA 551.1	1	1.0	9/21/98	10/2/98	10/2/98	0-223-0
349	THM-ICR	Bromodichloromethane	30.3	µg/L	EPA 551.1	1	1.0	9/21/98	10/2/98	10/2/98	0-223-0
350	THM-ICR	Bromoform	23.1	µg/L	EPA 551.1	1	1.0	9/21/98	10/2/98	10/2/98	0-223-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

351	THM-ICR	Chloroform	18.0	µg/L	EPA 551.1	1	1.0	9/21/98	10/2/98	10/2/98	0-223-0
352	THM-ICR	Dibromochloromethane	38.7	µg/L	EPA 551.1	1	1.0	9/21/98	10/2/98	10/2/98	0-223-0
353	UV-ICR	UV	0.025	1/cm	SM 5910 B	1	0.009	9/17/98		9/18/98	8-0-296
354	UV-ICR	UV (Dupl)	0.025	1/cm	SM 5910 B	1	0.009	9/17/98		9/18/98	8-0-296
			0.025	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-25 **S&H ID:** 9809-75 **Date Sampled:** 9/19/98 11:03:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
355	Cl2Dose	Chlorine Dose	3.54	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/22/98		9/22/98	n/a
356	Cl2Res	Chlorine Residual	0.92	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/22/98		9/24/98	n/a
357	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	94.0	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
358	HAA-ICR	2-Bromopropionic acid (Surrogate)	108.4	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
359	HAA-ICR	Bromochloroacetic acid	11.0	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
360	HAA-ICR	Bromodichloroacetic acid	3.4	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
361	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
362	HAA-ICR	Dibromoacetic acid	13.6	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
363	HAA-ICR	Dichloroacetic acid	10.4	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
364	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
365	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
366	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/24/98	9/30/98	10/1/98	0-222-0
367	HAA-ICR	Trichloroacetic acid	4.1	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
368	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/24/98	n/a
369	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/22/98	n/a
370	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	9/19/98		9/19/98	n/a
371	TEMP	Cl2 Temperature	26.0	ºC	SM 2550 B	1	n/a	9/22/98		9/24/98	n/a
372	TEMP	Temperature	22.4	ºC	SM 2550 B	1	n/a	9/19/98		9/19/98	n/a
373	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	9/22/98		9/24/98	n/a
374	TOC-ICR	TOC	1.81	mg/L	SM 5310 C	1	0.50	9/19/98		9/21/98	7-0-409
375	TOC-ICR	TOC (Dupl)	1.82	mg/L	SM 5310 C	1	0.50	9/19/98		9/21/98	7-0-409
			1.81	**mg/L**	**0.6 % RPD**						
376	TOX-ICR	TOX	163	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
377	TOX-ICR	TOX (Dupl)	158	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
			161	**µg Cl-/L**	**3.1 % RPD**						
378	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.4	%	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
379	THM-ICR	Bromodichloromethane	33.8	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
380	THM-ICR	Bromoform	18.8	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
381	THM-ICR	Chloroform	26.5	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
382	THM-ICR	Dibromochloromethane	36.9	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

383	UV-ICR	UV	0.030	1/cm	SM 5910 B	1	0.009	9/19/98		9/20/98	8-0-298
384	UV-ICR	UV (Dupl)	0.030	1/cm	SM 5910 B	1	0.009	9/19/98		9/20/98	8-0-298
			0.030	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-27 **S&H ID:** 9809-77 **Date Sampled:** 9/21/98 6:01:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
385	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	9/21/98		9/21/98	n/a
386	TEMP	Temperature	21.0	ºC	SM 2550 B	1	n/a	9/21/98		9/21/98	n/a
387	TOC-ICR	TOC	1.85	mg/L	SM 5310 C	1	0.50	9/21/98		9/21/98	7-0-409
388	TOC-ICR	TOC (Dupl)	1.85	mg/L	SM 5310 C	1	0.50	9/21/98		9/21/98	7-0-409
			1.85	**mg/L**	**0.0 % RPD**						
389	UV-ICR	UV	0.031	1/cm	SM 5910 B	1	0.009	9/21/98		9/21/98	8-0-299
390	UV-ICR	UV (Dupl)	0.030	1/cm	SM 5910 B	1	0.009	9/21/98		9/21/98	8-0-299
			0.030	**1/cm**	**3.3 % RPD**						

Sample ID: 136.10.Eff-6d **S&H ID:** 9809-82 **Date Sampled:** 9/10/98 12:24:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
391	Cl2Dose	Chlorine Dose	2.02	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
392	Cl2Res	Chlorine Residual	0.73	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
393	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.0	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
394	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
395	HAA-ICR	Bromochloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
396	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
397	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
398	HAA-ICR	Dibromoacetic acid	4.0	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
399	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
400	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
401	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
402	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
403	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
404	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
405	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
406	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	9/10/98		9/10/98	n/a
407	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
408	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	9/10/98		9/10/98	n/a
409	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
410	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
411	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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			ND	**mg/L**							
412	TOX-ICR	TOX	38	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
413	TOX-ICR	TOX (Dupl)	37	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
			38	**µg Cl-/L**	**2.6 % RPD**						
414	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.0	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
415	THM-ICR	Bromodichloromethane	3.8	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
416	THM-ICR	Bromoform	25.5	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
417	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
418	THM-ICR	Dibromochloromethane	15.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
419	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/10/98		9/11/98	8-0-290
420	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/10/98		9/11/98	8-0-290
			ND	**1/cm**							

Sample ID: 136.10.Eff-12d **S&H ID:** 9809-84 **Date Sampled:** 9/12/98 6:02:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
421	Cl2Dose	Chlorine Dose	2.55	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
422	Cl2Res	Chlorine Residual	0.78	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
423	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
424	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
425	HAA-ICR	Bromochloroacetic acid	3.3	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
426	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
427	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
428	HAA-ICR	Dibromoacetic acid	6.5	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
429	HAA-ICR	Dichloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
430	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
431	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
432	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
433	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
434	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
435	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
436	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/12/98		9/12/98	n/a
437	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
438	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	9/12/98		9/12/98	n/a
439	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
440	TOC-ICR	TOC	0.94	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
441	TOC-ICR	TOC (Dupl)	0.95	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
			0.94	**mg/L**	**1.1 % RPD**						
442	TOX-ICR	TOX	82	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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Study Title: ICR RSSCT #3

443	TOX-ICR	TOX (Dupl)	70	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
			76	**µg Cl-/L**	**15.8 % RPD**						
444	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.2	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
445	THM-ICR	Bromodichloromethane	11.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
446	THM-ICR	Bromoform	28.2	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
447	THM-ICR	Chloroform	3.3	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
448	THM-ICR	Dibromochloromethane	29.3	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
449	UV-ICR	UV	0.014	1/cm	SM 5910 B	1	0.009	9/12/98		9/12/98	8-0-291
450	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	9/12/98		9/12/98	8-0-291
			0.014	**1/cm**	**0.0 % RPD**						

Sample ID: 136.10.Eff-21d **S&H ID:** 9809-86 **Date Sampled:** 9/16/98 12:44:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
451	Cl2Dose	Chlorine Dose	3.14	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
452	Cl2Res	Chlorine Residual	0.78	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
453	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	105.2	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
454	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
455	HAA-ICR	Bromochloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
456	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
457	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
458	HAA-ICR	Dibromoacetic acid	7.9	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
459	HAA-ICR	Dichloroacetic acid	4.2	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
460	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
461	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
462	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/21/98	9/22/98	0-217-0
463	HAA-ICR	Trichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
464	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
465	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
466	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/16/98		9/16/98	n/a
467	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
468	TEMP	Temperature	21.6	ºC	SM 2550 B	1	n/a	9/16/98		9/16/98	n/a
469	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
470	TOC-ICR	TOC	1.44	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
471	TOC-ICR	TOC (Dupl)	1.43	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
			1.44	**mg/L**	**0.7 % RPD**						
472	TOX-ICR	TOX	132	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
473	TOX-ICR	TOX (Dupl)	123	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
			128	**µg Cl-/L**	**7.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

474	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.0	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
475	THM-ICR	Bromodichloromethane	26.7	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
476	THM-ICR	Bromoform	22.2	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
477	THM-ICR	Chloroform	13.9	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
478	THM-ICR	Dibromochloromethane	39.9	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
479	UV-ICR	UV	0.022	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
480	UV-ICR	UV (Dupl)	0.022	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
			0.022	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-1 **S&H ID:** 9809-91 **Date Sampled:** 9/8/98 7:21:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
481	Cl2Dose	Chlorine Dose	1.50	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/11/98		9/11/98	n/a
482	Cl2Res	Chlorine Residual	0.73	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/11/98		9/13/98	n/a
483	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.4	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
484	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
485	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
486	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
487	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
488	HAA-ICR	Dibromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
489	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
490	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
491	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
492	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/13/98	9/21/98	9/22/98	0-217-0
493	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
494	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/13/98	n/a
495	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
496	pH	pH	9.1	Unit	SM 4500-H+ B	1	n/a	9/8/98		9/8/98	n/a
497	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/11/98		9/13/98	n/a
498	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	9/8/98		9/8/98	n/a
499	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	9/11/98		9/13/98	n/a
500	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/8/98		9/9/98	7-0-399
501	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/8/98		9/9/98	7-0-399
			ND	**mg/L**							
502	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
503	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
			ND	**µg Cl-/L**							
504	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.6	%	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

505	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
506	THM-ICR	Bromoform	4.8	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
507	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
508	THM-ICR	Dibromochloromethane	2.0	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
509	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/8/98		9/9/98	8-0-288
510	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/8/98		9/9/98	8-0-288
			ND	**1/cm**							

Sample ID: 136.20.Eff-2 **S&H ID:** 9809-92 **Date Sampled:** 9/11/98 10:01:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
511	Cl2Dose	Chlorine Dose	1.83	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
512	Cl2Res	Chlorine Residual	0.76	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
513	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	99.6	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
514	HAA-ICR	2-Bromopropionic acid (Surrogate)	101.2	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
515	HAA-ICR	Bromochloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
516	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
517	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
518	HAA-ICR	Dibromoacetic acid	3.8	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
519	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
520	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
521	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
522	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
523	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
524	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
525	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
526	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
527	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
528	TEMP	Temperature	22.2	ºC	SM 2550 B	1	n/a	9/11/98		9/11/98	n/a
529	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
530	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/11/98		9/12/98	7-0-402
531	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/11/98		9/12/98	7-0-402
			ND	**mg/L**							
532	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
533	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/18/98	12-0-210
			ND	**µg Cl-/L**							
534	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.8	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
535	THM-ICR	Bromodichloromethane	1.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
536	THM-ICR	Bromoform	17.7	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

537	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
538	THM-ICR	Dibromochloromethane	8.2	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
539	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/11/98		9/12/98	8-0-291
540	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/11/98		9/12/98	8-0-291
			ND	**1/cm**							

Sample ID: 136.20.Eff-4 **S&H ID:** 9809-94 **Date Sampled:** 9/12/98 2:25:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
541	Cl2Dose	Chlorine Dose	1.96	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
542	Cl2Res	Chlorine Residual	0.82	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
543	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.0	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
544	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
545	HAA-ICR	Bromochloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
546	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
547	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
548	HAA-ICR	Dibromoacetic acid	4.7	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
549	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
550	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
551	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
552	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
553	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
554	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
555	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
556	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	9/12/98		9/12/98	n/a
557	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
558	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	9/12/98		9/12/98	n/a
559	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
560	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
561	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
			ND	**mg/L**							
562	TOX-ICR	TOX	31	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/17/98	12-0-209
563	TOX-ICR	TOX (Dupl)	30	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/17/98	12-0-209
			31	**µg Cl-/L**	**3.2 % RPD**						
564	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.2	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
565	THM-ICR	Bromodichloromethane	2.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
566	THM-ICR	Bromoform	22.2	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
567	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
568	THM-ICR	Dibromochloromethane	11.8	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

569	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/12/98		9/13/98	8-0-292
570	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/12/98		9/13/98	8-0-292
			ND	**1/cm**							

Sample ID: 136.20.Eff-6 **S&H ID:** 9809-96 **Date Sampled:** 9/13/98 6:38:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
571	Cl2Dose	Chlorine Dose	2.09	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
572	Cl2Res	Chlorine Residual	0.76	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
573	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
574	HAA-ICR	2-Bromopropionic acid (Surrogate)	106.0	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
575	HAA-ICR	Bromochloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
576	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
577	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
578	HAA-ICR	Dibromoacetic acid	4.7	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
579	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
580	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
581	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
582	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
583	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
584	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
585	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
586	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	9/13/98		9/13/98	n/a
587	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
588	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	9/13/98		9/13/98	n/a
589	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
590	TOC-ICR	TOC	0.53	mg/L	SM 5310 C	1	0.50	9/13/98		9/13/98	7-0-403
591	TOC-ICR	TOC (Dupl)	0.52	mg/L	SM 5310 C	1	0.50	9/13/98		9/13/98	7-0-403
			0.53	**mg/L**	**1.9 % RPD**						
592	TOX-ICR	TOX	34	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/21/98	12-0-211
593	TOX-ICR	TOX (Dupl)	40	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/21/98	12-0-211
			37	**µg Cl-/L**	**16.2 % RPD**						
594	THM-ICR	1,2,3-Trichloropropane (Surrogate)	107.2	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
595	THM-ICR	Bromodichloromethane	4.2	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
596	THM-ICR	Bromoform	27.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
597	THM-ICR	Chloroform	1.1	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
598	THM-ICR	Dibromochloromethane	16.6	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
599	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/13/98		9/13/98	8-0-292
600	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/13/98		9/13/98	8-0-292

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

ND 1/cm

Sample ID: 136.20.Eff-7 **S&H ID:** 9809-97 **Date Sampled:** 9/13/98 10:33:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
601	Cl2Dose	Chlorine Dose	2.20	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
602	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
603	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.4	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
604	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.4	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
605	HAA-ICR	Bromochloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
606	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
607	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
608	HAA-ICR	Dibromoacetic acid	4.6	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
609	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
610	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
611	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
612	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/21/98	9/22/98	0-217-0
613	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
614	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
615	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
616	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	9/13/98		9/13/98	n/a
617	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
618	TEMP	Temperature	22.6	ºC	SM 2550 B	1	n/a	9/13/98		9/13/98	n/a
619	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
620	TOC-ICR	TOC	0.61	mg/L	SM 5310 C	1	0.50	9/13/98		9/14/98	7-0-404
621	TOC-ICR	TOC (Dupl)	0.61	mg/L	SM 5310 C	1	0.50	9/13/98		9/14/98	7-0-404
			0.61	**mg/L**	**0.0 % RPD**						
622	TOX-ICR	TOX	43	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
623	TOX-ICR	TOX (Dupl)	44	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
			44	**µg Cl-/L**	**2.3 % RPD**						
624	THM-ICR	1,2,3-Trichloropropane (Surrogate)	96.4	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
625	THM-ICR	Bromodichloromethane	4.8	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
626	THM-ICR	Bromoform	27.1	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
627	THM-ICR	Chloroform	1.2	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
628	THM-ICR	Dibromochloromethane	17.8	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
629	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/13/98		9/14/98	8-0-293
630	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/13/98		9/14/98	8-0-293
			ND	**1/cm**							

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Sample ID: 136.20.Eff-9 **S&H ID:** 9809-99 **Date Sampled:** 9/14/98 8:11:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
631	Cl2Dose	Chlorine Dose	2.40	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
632	Cl2Res	Chlorine Residual	0.83	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
633	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	108.4	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
634	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
635	HAA-ICR	Bromochloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
636	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
637	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
638	HAA-ICR	Dibromoacetic acid	6.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
639	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
640	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
641	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/21/98	9/22/98	0-217-0
642	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/21/98	9/22/98	0-217-0
643	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/21/98	9/22/98	0-217-0
644	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
645	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
646	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/14/98		9/14/98	n/a
647	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
648	TEMP	Temperature	22.7	ºC	SM 2550 B	1	n/a	9/14/98		9/14/98	n/a
649	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
650	TOC-ICR	TOC	0.78	mg/L	SM 5310 C	1	0.50	9/14/98		9/16/98	7-0-406
651	TOC-ICR	TOC (Dupl)	0.79	mg/L	SM 5310 C	1	0.50	9/14/98		9/16/98	7-0-406
			0.79	**mg/L**	**1.3 % RPD**						
652	TOX-ICR	TOX	56	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/21/98	12-0-211
653	TOX-ICR	TOX (Dupl)	55	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/21/98	12-0-211
			56	**µg Cl-/L**	**1.8 % RPD**						
654	THM-ICR	1,2,3-Trichloropropane (Surrogate)	99.2	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
655	THM-ICR	Bromodichloromethane	7.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
656	THM-ICR	Bromoform	30.1	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
657	THM-ICR	Chloroform	1.9	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
658	THM-ICR	Dibromochloromethane	24.0	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
659	UV-ICR	UV	0.010	1/cm	SM 5910 B	1	0.009	9/14/98		9/15/98	8-0-294
660	UV-ICR	UV (Dupl)	0.010	1/cm	SM 5910 B	1	0.009	9/14/98		9/15/98	8-0-294
			0.010	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Sample ID: 136.20.Eff-10 **S&H ID:** 9809-100 **Date Sampled:** 9/16/98 10:15:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
661	Cl2Dose	Chlorine Dose	2.56	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
662	Cl2Res	Chlorine Residual	0.80	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
663	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	89.2	%	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
664	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard) (Lab Dupl)	89.6	%	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			89.4	**%**	**0.4 % RPD**						
665	HAA-ICR	2-Bromopropionic acid (Surrogate)	104.8	%	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
666	HAA-ICR	2-Bromopropionic acid (Surrogate) (Lab Dupl)	102.4	%	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			103.6	**%**	**2.3 % RPD**						
667	HAA-ICR	Bromochloroacetic acid	3.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
668	HAA-ICR	Bromochloroacetic acid (Lab Dupl)	3.4	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			3.5	**µg/L**	**2.9 % RPD**						
669	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
670	HAA-ICR	Bromodichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			ND	**µg/L**							
671	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/30/98	10/1/98	0-222-0
672	HAA-ICR	Chlorodibromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/30/98	10/1/98	0-222-0
			ND	**µg/L**							
673	HAA-ICR	Dibromoacetic acid	8.1	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
674	HAA-ICR	Dibromoacetic acid (Lab Dupl)	7.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			7.8	**µg/L**	**7.7 % RPD**						
675	HAA-ICR	Dichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
676	HAA-ICR	Dichloroacetic acid (Lab Dupl)	1.7	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			1.6	**µg/L**	**12.5 % RPD**						
677	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
678	HAA-ICR	Monobromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
			ND	**µg/L**							
679	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/30/98	10/1/98	0-222-0
680	HAA-ICR	Monochloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/30/98	10/1/98	0-222-0
			ND	**µg/L**							
681	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/30/98	10/1/98	0-222-0
682	HAA-ICR	Tribromoacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/30/98	10/1/98	0-222-0
			ND	**µg/L**							
683	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
684	HAA-ICR	Trichloroacetic acid (Lab Dupl)	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

			ND	**µg/L**							
685	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
686	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
687	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/16/98		9/16/98	n/a
688	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
689	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	9/16/98		9/16/98	n/a
690	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
691	TOC-ICR	TOC	0.94	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
692	TOC-ICR	TOC (Dupl)	0.91	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
			0.93	**mg/L**	**3.2 % RPD**						
693	TOX-ICR	TOX	70	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
694	TOX-ICR	TOX (Dupl)	68	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
			69	**µg Cl-/L**	**2.9 % RPD**						
695	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.2	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
696	THM-ICR	Bromodichloromethane	10.3	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
697	THM-ICR	Bromoform	31.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
698	THM-ICR	Chloroform	2.8	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
699	THM-ICR	Dibromochloromethane	29.1	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
700	UV-ICR	UV	0.013	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
701	UV-ICR	UV (Dupl)	0.013	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
			0.013	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-13 **S&H ID:** 9809-103 **Date Sampled:** 9/18/98 4:41:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
702	Cl2Dose	Chlorine Dose	2.71	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/22/98		9/22/98	n/a
703	Cl2Res	Chlorine Residual	0.87	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/22/98		9/24/98	n/a
704	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	93.2	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
705	HAA-ICR	2-Bromopropionic acid (Surrogate)	107.2	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
706	HAA-ICR	Bromochloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
707	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
708	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
709	HAA-ICR	Dibromoacetic acid	12.2	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
710	HAA-ICR	Dichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
711	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
712	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
713	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/24/98	9/30/98	10/1/98	0-222-0
714	HAA-ICR	Trichloroacetic acid	2.0	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
715	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/24/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

716	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/22/98	n/a
717	pH	pH	8.3	Unit	SM 4500-H+ B	1	n/a	9/18/98		9/18/98	n/a
718	TEMP	Cl2 Temperature	26.0	ºC	SM 2550 B	1	n/a	9/22/98		9/24/98	n/a
719	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	9/18/98		9/18/98	n/a
720	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	9/22/98		9/24/98	n/a
721	TOC-ICR	TOC	1.01	mg/L	SM 5310 C	1	0.50	9/18/98		9/19/98	7-0-408
722	TOC-ICR	TOC (Dupl)	1.05	mg/L	SM 5310 C	1	0.50	9/18/98		9/19/98	7-0-408
			1.03	**mg/L**	**3.9 % RPD**						
723	TOX-ICR	TOX	84	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
724	TOX-ICR	TOX (Dupl)	84	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
			84	**µg Cl-/L**	**0.0 % RPD**						
725	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.0	%	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
726	THM-ICR	Bromodichloromethane	13.9	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
727	THM-ICR	Bromoform	27.9	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
728	THM-ICR	Chloroform	4.2	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
729	THM-ICR	Dibromochloromethane	30.1	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
730	UV-ICR	UV	0.016	1/cm	SM 5910 B	1	0.009	9/18/98		9/19/98	8-0-297
731	UV-ICR	UV (Dupl)	0.015	1/cm	SM 5910 B	1	0.009	9/18/98		9/19/98	8-0-297
			0.016	**1/cm**	**6.3 % RPD**						

Sample ID: 136.20.Eff-14 **S&H ID:** 9809-104 **Date Sampled:** 9/19/98 7:43:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
732	Cl2Dose	Chlorine Dose	2.87	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/22/98		9/22/98	n/a
733	Cl2Res	Chlorine Residual	0.88	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/22/98		9/24/98	n/a
734	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.0	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
735	HAA-ICR	2-Bromopropionic acid (Surrogate)	110.4	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
736	HAA-ICR	Bromochloroacetic acid	7.9	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
737	HAA-ICR	Bromodichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
738	HAA-ICR	Chlorodibromoacetic acid	2.5	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
739	HAA-ICR	Dibromoacetic acid	14.2	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
740	HAA-ICR	Dichloroacetic acid	3.7	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
741	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
742	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
743	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/24/98	9/30/98	10/1/98	0-222-0
744	HAA-ICR	Trichloroacetic acid	2.4	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
745	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/24/98	n/a
746	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/22/98	n/a
747	pH	pH	8.5	Unit	SM 4500-H+ B	1	n/a	9/19/98		9/19/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

748	TEMP	Cl2 Temperature	26.0	ºC	SM 2550 B	1	n/a	9/22/98		9/24/98	n/a
749	TEMP	Temperature	23.0	ºC	SM 2550 B	1	n/a	9/19/98		9/19/98	n/a
750	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	9/22/98		9/24/98	n/a
751	TOC-ICR	TOC	1.21	mg/L	SM 5310 C	1	0.50	9/19/98		9/21/98	7-0-409
752	TOC-ICR	TOC (Dupl)	1.21	mg/L	SM 5310 C	1	0.50	9/19/98		9/21/98	7-0-409
			1.21	**mg/L**	**0.0 % RPD**						
753	TOX-ICR	TOX	104	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
754	TOX-ICR	TOX (Dupl)	95	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
			100	**µg Cl-/L**	**9.0 % RPD**						
755	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.2	%	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
756	THM-ICR	Bromodichloromethane	17.5	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
757	THM-ICR	Bromoform	26.5	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
758	THM-ICR	Chloroform	6.1	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
759	THM-ICR	Dibromochloromethane	32.6	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
760	UV-ICR	UV	0.018	1/cm	SM 5910 B	1	0.009	9/19/98		9/20/98	8-0-298
761	UV-ICR	UV (Dupl)	0.018	1/cm	SM 5910 B	1	0.009	9/19/98		9/20/98	8-0-298
			0.018	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-22 **S&H ID:** 9809-112 **Date Sampled:** 9/25/98 5:21:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
762	Cl2Dose	Chlorine Dose	3.07	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/25/98		9/25/98	n/a
763	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/25/98		9/27/98	n/a
764	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.6	%	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
765	HAA-ICR	2-Bromopropionic acid (Surrogate)	109.2	%	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
766	HAA-ICR	Bromochloroacetic acid	9.7	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
767	HAA-ICR	Bromodichloroacetic acid	3.2	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
768	HAA-ICR	Chlorodibromoacetic acid	2.9	µg/L	EPA 552.2	1	2.0	9/27/98	9/30/98	10/1/98	0-222-0
769	HAA-ICR	Dibromoacetic acid	15.4	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
770	HAA-ICR	Dichloroacetic acid	6.6	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
771	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
772	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/27/98	9/30/98	10/1/98	0-222-0
773	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/27/98	9/30/98	10/1/98	0-222-0
774	HAA-ICR	Trichloroacetic acid	3.5	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
775	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/27/98	n/a
776	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/25/98	n/a
777	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/25/98	n/a
778	TEMP	Cl2 Temperature	26.0	ºC	SM 2550 B	1	n/a	9/25/98		9/27/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

779	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	9/25/98		9/25/98	n/a
780	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	9/25/98		9/27/98	n/a
781	TOC-ICR	TOC	1.40	mg/L	SM 5310 C	1	0.50	9/25/98		9/25/98	7-0-413
782	TOC-ICR	TOC (Dupl)	1.41	mg/L	SM 5310 C	1	0.50	9/25/98		9/25/98	7-0-413
			1.40	**mg/L**	**0.7 % RPD**						
783	TOX-ICR	TOX	122	µg Cl-/L	SM 5320 B	1	25	9/27/98		9/30/98	12-0-214
784	TOX-ICR	TOX (Dupl)	117	µg Cl-/L	SM 5320 B	1	25	9/27/98		9/30/98	12-0-214
			120	**µg Cl-/L**	**4.2 % RPD**						
785	THM-ICR	1,2,3-Trichloropropane (Surrogate)	89.6	%	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
786	THM-ICR	Bromodichloromethane	23.1	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
787	THM-ICR	Bromoform	25.0	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
788	THM-ICR	Chloroform	11.9	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
789	THM-ICR	Dibromochloromethane	33.6	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
790	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	9/25/98		9/26/98	8-0-302
791	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	9/25/98		9/26/98	8-0-302
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-24 **S&H ID:** 9809-114 **Date Sampled:** 9/26/98 6:06:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
792	Cl2Dose	Chlorine Dose	3.17	mg/L as Cl2	SM 4500-Cl B	1	n/a	10/2/98		10/2/98	n/a
793	Cl2Res	Chlorine Residual	0.64	mg/L as Cl2	SM 4500-Cl F	1	0.10	10/2/98		10/4/98	n/a
794	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	101.2	%	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
795	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.8	%	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
796	HAA-ICR	Bromochloroacetic acid	7.0	µg/L	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
797	HAA-ICR	Bromodichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
798	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	10/4/98	10/12/98	10/14/98	0-233-0
799	HAA-ICR	Dibromoacetic acid	9.2	µg/L	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
800	HAA-ICR	Dichloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
801	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
802	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	10/4/98	10/12/98	10/14/98	0-233-0
803	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	10/4/98	10/12/98	10/14/98	0-233-0
804	HAA-ICR	Trichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	10/4/98	10/12/98	10/14/98	0-233-0
805	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	10/2/98		10/4/98	n/a
806	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	10/2/98		10/2/98	n/a
807	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/26/98		9/26/98	n/a
808	TEMP	Cl2 Temperature	25.7	ºC	SM 2550 B	1	n/a	10/2/98		10/4/98	n/a
809	TEMP	Temperature	23.0	ºC	SM 2550 B	1	n/a	9/26/98		9/26/98	n/a
810	TIME	Cl2 Incubation Time	47.7	hrs	n/a	1	n/a	10/2/98		10/4/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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811	TOC-ICR	TOC	1.51	mg/L	SM 5310 C	1	0.50	9/26/98		9/26/98	7-0-414
812	TOC-ICR	TOC (Dupl)	1.51	mg/L	SM 5310 C	1	0.50	9/26/98		9/26/98	7-0-414
			1.51	**mg/L**	**0.0 % RPD**						
813	TOX-ICR	TOX	130	µg Cl-/L	SM 5320 B	1	25	10/4/98		10/12/98	12-0-223
814	TOX-ICR	TOX (Dupl)	125	µg Cl-/L	SM 5320 B	1	25	10/4/98		10/12/98	12-0-223
			128	**µg Cl-/L**	**3.9 % RPD**						
815	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.0	%	EPA 551.1	1	1.0	10/4/98	10/9/98	10/10/98	0-232-0
816	THM-ICR	Bromodichloromethane	26.7	µg/L	EPA 551.1	1	1.0	10/4/98	10/9/98	10/10/98	0-232-0
817	THM-ICR	Bromoform	22.0	µg/L	EPA 551.1	1	1.0	10/4/98	10/9/98	10/10/98	0-232-0
818	THM-ICR	Chloroform	15.4	µg/L	EPA 551.1	1	1.0	10/4/98	10/9/98	10/10/98	0-232-0
819	THM-ICR	Dibromochloromethane	36.0	µg/L	EPA 551.1	1	1.0	10/4/98	10/9/98	10/10/98	0-232-0
820	UV-ICR	UV	0.024	1/cm	SM 5910 B	1	0.009	9/26/98		9/27/98	8-0-303
821	UV-ICR	UV (Dupl)	0.024	1/cm	SM 5910 B	1	0.009	9/26/98		9/27/98	8-0-303
			0.024	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-25 **S&H ID:** 9809-115 **Date Sampled:** 9/28/98 7:37:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
822	Cl2Dose	Chlorine Dose	3.19	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/29/98		9/29/98	n/a
823	Cl2Res	Chlorine Residual	0.86	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/29/98		10/1/98	n/a
824	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	94.4	%	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
825	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
826	HAA-ICR	Bromochloroacetic acid	7.1	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
827	HAA-ICR	Bromodichloroacetic acid	1.4	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
828	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	10/1/98	10/8/98	10/8/98	0-230-0
829	HAA-ICR	Dibromoacetic acid	9.3	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
830	HAA-ICR	Dichloroacetic acid	6.2	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
831	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
832	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	10/1/98	10/8/98	10/8/98	0-230-0
833	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	10/1/98	10/8/98	10/8/98	0-230-0
834	HAA-ICR	Trichloroacetic acid	1.4	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
835	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/29/98		10/1/98	n/a
836	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/29/98		9/29/98	n/a
837	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	9/28/98		9/28/98	n/a
838	TEMP	Cl2 Temperature	24.3	ºC	SM 2550 B	1	n/a	9/29/98		10/1/98	n/a
839	TEMP	Temperature	22.0	ºC	SM 2550 B	1	n/a	9/28/98		9/28/98	n/a
840	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	9/29/98		10/1/98	n/a
841	TOC-ICR	TOC	1.51	mg/L	SM 5310 C	1	0.50	9/28/98		9/28/98	7-0-416
842	TOC-ICR	TOC (Dupl)	1.53	mg/L	SM 5310 C	1	0.50	9/28/98		9/28/98	7-0-416

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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			1.52	**mg/L**	**1.3 % RPD**						
843	TOX-ICR	TOX	135	µg Cl-/L	SM 5320 B	1	25	10/1/98		10/3/98	12-0-217
844	TOX-ICR	TOX (Dupl)	129	µg Cl-/L	SM 5320 B	1	25	10/1/98		10/3/98	12-0-217
			132	**µg Cl-/L**	**4.5 % RPD**						
845	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.6	%	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
846	THM-ICR	Bromodichloromethane	25.8	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
847	THM-ICR	Bromoform	22.5	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
848	THM-ICR	Chloroform	14.4	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
849	THM-ICR	Dibromochloromethane	34.8	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
850	UV-ICR	UV	0.024	1/cm	SM 5910 B	1	0.009	9/28/98		9/28/98	8-0-304
851	UV-ICR	UV (Dupl)	0.024	1/cm	SM 5910 B	1	0.009	9/28/98		9/28/98	8-0-304
			0.024	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-4d **S&H ID:** 9809-121 **Date Sampled:** 9/12/98 2:25:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
852	Cl2Dose	Chlorine Dose	1.96	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/15/98		9/15/98	n/a
853	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/15/98		9/17/98	n/a
854	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.8	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
855	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
856	HAA-ICR	Bromochloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
857	HAA-ICR	Bromodichloroacetic acid	1.0	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
858	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
859	HAA-ICR	Dibromoacetic acid	3.8	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
860	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
861	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
862	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/17/98	9/21/98	9/22/98	0-217-0
863	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/17/98	9/21/98	9/22/98	0-217-0
864	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/17/98	9/21/98	9/22/98	0-217-0
865	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/17/98	n/a
866	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/15/98		9/15/98	n/a
867	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	9/12/98		9/12/98	n/a
868	TEMP	Cl2 Temperature	26.1	ºC	SM 2550 B	1	n/a	9/15/98		9/17/98	n/a
869	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	9/12/98		9/12/98	n/a
870	TIME	Cl2 Incubation Time	48.3	hrs	n/a	1	n/a	9/15/98		9/17/98	n/a
871	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
872	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	9/12/98		9/12/98	7-0-402
			ND	**mg/L**							
873	TOX-ICR	TOX	28	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/17/98	12-0-209

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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874	TOX-ICR	TOX (Dupl)	29	µg Cl-/L	SM 5320 B	1	25	9/17/98		9/17/98	12-0-209
			29	**µg Cl-/L**	**3.4 % RPD**						
875	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.0	%	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
876	THM-ICR	Bromodichloromethane	2.5	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
877	THM-ICR	Bromoform	21.0	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
878	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
879	THM-ICR	Dibromochloromethane	11.1	µg/L	EPA 551.1	1	1.0	9/17/98	9/23/98	9/23/98	0-219-0
880	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	9/12/98		9/13/98	8-0-292
881	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	9/12/98		9/13/98	8-0-292
			ND	**1/cm**							

Sample ID: 136.20.Eff-10d **S&H ID:** 9809-122 **Date Sampled:** 9/16/98 10:15:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
882	Cl2Dose	Chlorine Dose	2.56	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/17/98		9/17/98	n/a
883	Cl2Res	Chlorine Residual	0.73	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/17/98		9/19/98	n/a
884	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	88.8	%	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
885	HAA-ICR	2-Bromopropionic acid (Surrogate)	105.6	%	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
886	HAA-ICR	Bromochloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
887	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
888	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/30/98	10/1/98	0-222-0
889	HAA-ICR	Dibromoacetic acid	7.9	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
890	HAA-ICR	Dichloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
891	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
892	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/19/98	9/30/98	10/1/98	0-222-0
893	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/19/98	9/30/98	10/1/98	0-222-0
894	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/19/98	9/30/98	10/1/98	0-222-0
895	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/19/98	n/a
896	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/17/98		9/17/98	n/a
897	pH	pH	8.4	Unit	SM 4500-H+ B	1	n/a	9/16/98		9/16/98	n/a
898	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/17/98		9/19/98	n/a
899	TEMP	Temperature	21.1	ºC	SM 2550 B	1	n/a	9/16/98		9/16/98	n/a
900	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	9/17/98		9/19/98	n/a
901	TOC-ICR	TOC	0.93	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
902	TOC-ICR	TOC (Dupl)	0.92	mg/L	SM 5310 C	1	0.50	9/16/98		9/16/98	7-0-406
			0.93	**mg/L**	**1.1 % RPD**						
903	TOX-ICR	TOX	72	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
904	TOX-ICR	TOX (Dupl)	73	µg Cl-/L	SM 5320 B	1	25	9/19/98		9/22/98	12-0-212
			73	**µg Cl-/L**	**1.4 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

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905	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.8	%	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
906	THM-ICR	Bromodichloromethane	9.4	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
907	THM-ICR	Bromoform	27.5	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
908	THM-ICR	Chloroform	2.6	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
909	THM-ICR	Dibromochloromethane	26.2	µg/L	EPA 551.1	1	1.0	9/19/98	9/23/98	9/23/98	0-219-0
910	UV-ICR	UV	0.013	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
911	UV-ICR	UV (Dupl)	0.013	1/cm	SM 5910 B	1	0.009	9/16/98		9/16/98	8-0-295
			0.013	**1/cm**	**0.0 % RPD**						

Sample ID: 136.20.Eff-22d **S&H ID:** 9809-128 **Date Sampled:** 9/25/98 5:21:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
912	Cl2Dose	Chlorine Dose	3.07	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/25/98		9/25/98	n/a
913	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/25/98		9/27/98	n/a
914	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.0	%	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
915	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
916	HAA-ICR	Bromochloroacetic acid	5.2	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
917	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
918	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/27/98	9/30/98	10/1/98	0-222-0
919	HAA-ICR	Dibromoacetic acid	7.0	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
920	HAA-ICR	Dichloroacetic acid	4.2	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
921	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
922	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/27/98	9/30/98	10/1/98	0-222-0
923	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/27/98	9/30/98	10/1/98	0-222-0
924	HAA-ICR	Trichloroacetic acid	1.6	µg/L	EPA 552.2	1	1.0	9/27/98	9/30/98	10/1/98	0-222-0
925	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/27/98	n/a
926	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/25/98	n/a
927	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/25/98	n/a
928	TEMP	Cl2 Temperature	26.0	ºC	SM 2550 B	1	n/a	9/25/98		9/27/98	n/a
929	TEMP	Temperature	21.5	ºC	SM 2550 B	1	n/a	9/25/98		9/25/98	n/a
930	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	9/25/98		9/27/98	n/a
931	TOC-ICR	TOC	1.39	mg/L	SM 5310 C	1	0.50	9/25/98		9/25/98	7-0-413
932	TOC-ICR	TOC (Dupl)	1.41	mg/L	SM 5310 C	1	0.50	9/25/98		9/25/98	7-0-413
			1.40	**mg/L**	**1.4 % RPD**						
933	TOX-ICR	TOX	119	µg Cl-/L	SM 5320 B	1	25	9/27/98		9/30/98	12-0-214
934	TOX-ICR	TOX (Dupl)	130	µg Cl-/L	SM 5320 B	1	25	9/27/98		9/30/98	12-0-214
			125	**µg Cl-/L**	**8.8 % RPD**						
935	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.4	%	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

936	THM-ICR	Bromodichloromethane	23.5	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
937	THM-ICR	Bromoform	22.5	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
938	THM-ICR	Chloroform	11.9	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
939	THM-ICR	Dibromochloromethane	34.3	µg/L	EPA 551.1	1	1.0	9/27/98	10/2/98	10/2/98	0-223-0
940	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	9/25/98		9/26/98	8-0-302
941	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	9/25/98		9/26/98	8-0-302
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 136.Inf.A-1 **S&H ID:** 9809-131 **Date Sampled:** 9/8/98 2:10:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
942	ALK	Alkalinity	30	mg/L	SM 2320 B	1	5	9/8/98		9/9/98	1-0-32
943	ALK	Alkalinity (Dupl)	30	mg/L	SM 2320 B	1	5	9/8/98		9/9/98	1-0-32
			30	**mg/L**	**0.0 % RPD**						
944	NH3	Ammonia Nitrogen	ND	mg/L	EPA 350.1	1	0.05	9/8/98		9/17/98	MW84241
945	BR	Bromide	0.140	mg/L	EPA 300.0 A	1	0.020	9/8/98		9/15/98	MW84247
946	CaHardM	Calcium Hardness	95	mg/L CaCO3	EPA 200.7	1	5	9/8/98		9/15/98	MW n/a
947	CaMW	Calcium, Total, ICAP	38	mg/L	EPA 200.7	1	1	9/8/98	9/15/98	9/15/98	MW84102
948	MgMW	Magnesium, Total, ICAP	9	mg/L	EPA 200.7	1	0	9/8/98	9/15/98	9/15/98	MW84192
949	TotHard	Total Hardness as CaCO3 by ICP	133	mg/L CaCO3	SM 2340B	1	7	9/8/98		9/15/98	MW n/a

Sample ID: 136.Inf.A-2 **S&H ID:** 9809-132 **Date Sampled:** 9/21/98 10:20:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
950	ALK	Alkalinity	29	mg/L	SM 2320 B	1	5	9/21/98		9/21/98	1-0-32
951	ALK	Alkalinity (Dupl)	30	mg/L	SM 2320 B	1	5	9/21/98		9/21/98	1-0-32
			30	**mg/L**	**3.3 % RPD**						
952	NH3	Ammonia Nitrogen	ND	mg/L	EPA 350.1	1	0.05	9/21/98		10/1/98	MW85042
953	BR	Bromide	0.160	mg/L	EPA 300.0 A	2	0.040	9/21/98		10/2/98	MW85090
954	CaHardM	Calcium Hardness	95	mg/L CaCO3	EPA 200.7	1	5	9/21/98		9/30/98	MW n/a
955	CaMW	Calcium, Total, ICAP	38	mg/L	EPA 200.7	1	1	9/21/98	9/30/98	9/30/98	MW84900
956	MgMW	Magnesium, Total, ICAP	9	mg/L	EPA 200.7	1	0	9/21/98	9/30/98	9/30/98	MW84902
957	TotHard	Total Hardness as CaCO3 by ICP	133	mg/L CaCO3	SM 2340B	1	7	9/21/98		9/30/98	MW n/a

Sample ID: 136.Inf.B-1 **S&H ID:** 9809-133 **Date Sampled:** 9/8/98 2:15:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
958	Cl2Dose	Chlorine Dose	4.60	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/11/98		9/11/98	n/a
959	Cl2Res	Chlorine Residual	1.10	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/11/98		9/13/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

960	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	101.2	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
961	HAA-ICR	2-Bromopropionic acid (Surrogate)	95.6	%	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
962	HAA-ICR	Bromochloroacetic acid	9.6	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
963	HAA-ICR	Bromodichloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
964	HAA-ICR	Chlorodibromoacetic acid	2.1	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
965	HAA-ICR	Dibromoacetic acid	7.1	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
966	HAA-ICR	Dichloroacetic acid	13.3	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
967	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
968	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/13/98	9/21/98	9/22/98	0-217-0
969	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/13/98	9/21/98	9/22/98	0-217-0
970	HAA-ICR	Trichloroacetic acid	3.0	µg/L	EPA 552.2	1	1.0	9/13/98	9/21/98	9/22/98	0-217-0
971	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/13/98	n/a
972	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/11/98		9/11/98	n/a
973	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	9/8/98		9/8/98	n/a
974	TEMP	Cl2 Temperature	26.2	ºC	SM 2550 B	1	n/a	9/11/98		9/13/98	n/a
975	TEMP	Temperature	16.5	ºC	SM 2550 B	1	n/a	9/8/98		9/8/98	n/a
976	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	9/11/98		9/13/98	n/a
977	TOC-ICR	TOC	2.32	mg/L	SM 5310 C	1	0.50	9/8/98		9/8/98	7-0-398
978	TOC-ICR	TOC (Dupl)	2.36	mg/L	SM 5310 C	1	0.50	9/8/98		9/8/98	7-0-398
			2.34	**mg/L**	**1.7 % RPD**						
979	TOX-ICR	TOX	245	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
980	TOX-ICR	TOX (Dupl)	251	µg Cl-/L	SM 5320 B	1	25	9/13/98		9/14/98	12-0-207
			248	**µg Cl-/L**	**2.4 % RPD**						
981	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.8	%	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
982	THM-ICR	Bromodichloromethane	49.1	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
983	THM-ICR	Bromoform	13.0	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
984	THM-ICR	Chloroform	71.0	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
985	THM-ICR	Dibromochloromethane	38.8	µg/L	EPA 551.1	1	1.0	9/13/98	9/14/98	9/14/98	0-215-0
986	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	9/8/98		9/8/98	9-0-17
987	UV-ICR	UV	0.048	1/cm	SM 5910 B	1	0.009	9/8/98		9/9/98	8-0-288
988	UV-ICR	UV (Dupl)	0.049	1/cm	SM 5910 B	1	0.009	9/8/98		9/9/98	8-0-288
			0.049	**1/cm**	**2.0 % RPD**						

Sample ID: 136.Inf.B-2 **S&H ID:** 9809-134 **Date Sampled:** 9/10/98 4:18:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
989	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	9/10/98		9/10/98	n/a
990	TEMP	Temperature	17.3	ºC	SM 2550 B	1	n/a	9/10/98		9/10/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

991	TOC-ICR	TOC	2.47	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
992	TOC-ICR	TOC (Dupl)	2.52	mg/L	SM 5310 C	1	0.50	9/10/98		9/10/98	7-0-400
			2.50	**mg/L**	**2.0 % RPD**						

Sample ID: 136.Inf.B-3 **S&H ID:** 9809-135 **Date Sampled:** 9/13/98 8:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
993	pH	pH	9.1	Unit	SM 4500-H+ B	1	n/a	9/13/98		9/13/98	n/a
994	TEMP	Temperature	17.1	ºC	SM 2550 B	1	n/a	9/13/98		9/13/98	n/a
995	TOC-ICR	TOC	2.31	mg/L	SM 5310 C	1	0.50	9/13/98		9/13/98	7-0-403
996	TOC-ICR	TOC (Dupl)	2.38	mg/L	SM 5310 C	1	0.50	9/13/98		9/13/98	7-0-403
			2.34	**mg/L**	**3.0 % RPD**						

Sample ID: 136.Inf.B-4 **S&H ID:** 9809-136 **Date Sampled:** 9/20/98 2:50:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
997	Cl2Dose	Chlorine Dose	4.30	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/22/98		9/22/98	n/a
998	Cl2Res	Chlorine Residual	0.91	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/22/98		9/24/98	n/a
999	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	94.0	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1000	HAA-ICR	2-Bromopropionic acid (Surrogate)	109.2	%	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1001	HAA-ICR	Bromochloroacetic acid	16.7	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1002	HAA-ICR	Bromodichloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1003	HAA-ICR	Chlorodibromoacetic acid	3.0	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
1004	HAA-ICR	Dibromoacetic acid	14.2	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1005	HAA-ICR	Dichloroacetic acid	19.4	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1006	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1007	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	9/24/98	9/30/98	10/1/98	0-222-0
1008	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	9/24/98	9/30/98	10/1/98	0-222-0
1009	HAA-ICR	Trichloroacetic acid	8.4	µg/L	EPA 552.2	1	1.0	9/24/98	9/30/98	10/1/98	0-222-0
1010	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/24/98	n/a
1011	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	9/22/98		9/22/98	n/a
1012	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	9/20/98		9/20/98	n/a
1013	TEMP	Cl2 Temperature	26.0	ºC	SM 2550 B	1	n/a	9/22/98		9/24/98	n/a
1014	TEMP	Temperature	17.2	ºC	SM 2550 B	1	n/a	9/20/98		9/20/98	n/a
1015	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	9/22/98		9/24/98	n/a
1016	TOC-ICR	TOC	2.29	mg/L	SM 5310 C	1	0.50	9/20/98		9/21/98	7-0-409
1017	TOC-ICR	TOC (Dupl)	2.33	mg/L	SM 5310 C	1	0.50	9/20/98		9/21/98	7-0-409
			2.31	**mg/L**	**1.7 % RPD**						
1018	TOX-ICR	TOX	254	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213
1019	TOX-ICR	TOX (Dupl)	248	µg Cl-/L	SM 5320 B	1	25	9/24/98		9/25/98	12-0-213

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

			251	**µg Cl-/L**	**2.4 % RPD**						
1020	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.6	%	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
1021	THM-ICR	Bromodichloromethane	43.0	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
1022	THM-ICR	Bromoform	13.1	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
1023	THM-ICR	Chloroform	56.6	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
1024	THM-ICR	Dibromochloromethane	35.7	µg/L	EPA 551.1	1	1.0	9/24/98	10/2/98	10/2/98	0-223-0
1025	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	9/20/98		9/20/98	9-0-17
1026	UV-ICR	UV	0.047	1/cm	SM 5910 B	1	0.009	9/20/98		9/21/98	8-0-299
1027	UV-ICR	UV (Dupl)	0.048	1/cm	SM 5910 B	1	0.009	9/20/98		9/21/98	8-0-299
			0.048	**1/cm**	**2.1 % RPD**						

Sample ID: 136.Inf.B-5 **S&H ID:** 9809-137 **Date Sampled:** 9/25/98 6:13:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1028	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	9/25/98		9/25/98	n/a
1029	TEMP	Temperature	18.1	ºC	SM 2550 B	1	n/a	9/25/98		9/25/98	n/a
1030	TOC-ICR	TOC	2.32	mg/L	SM 5310 C	1	0.50	9/25/98		9/26/98	7-0-414
1031	TOC-ICR	TOC (Dupl)	2.32	mg/L	SM 5310 C	1	0.50	9/25/98		9/26/98	7-0-414
			2.32	**mg/L**	**0.0 % RPD**						

Sample ID: 136.Inf.B-6 **S&H ID:** 9809-138 **Date Sampled:** 9/28/98 4:00:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1032	Cl2Dose	Chlorine Dose	4.20	mg/L as Cl2	SM 4500-Cl B	1	n/a	9/29/98		9/29/98	n/a
1033	Cl2Res	Chlorine Residual	0.83	mg/L as Cl2	SM 4500-Cl F	1	0.10	9/29/98		10/1/98	n/a
1034	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.2	%	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1035	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.0	%	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1036	HAA-ICR	Bromochloroacetic acid	11.0	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1037	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1038	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	10/1/98	10/8/98	10/8/98	0-230-0
1039	HAA-ICR	Dibromoacetic acid	8.4	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1040	HAA-ICR	Dichloroacetic acid	14.9	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1041	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1042	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	10/1/98	10/8/98	10/8/98	0-230-0
1043	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	10/1/98	10/8/98	10/8/98	0-230-0
1044	HAA-ICR	Trichloroacetic acid	4.0	µg/L	EPA 552.2	1	1.0	10/1/98	10/8/98	10/8/98	0-230-0
1045	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	9/29/98		10/1/98	n/a
1046	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	9/29/98		9/29/98	n/a
1047	TEMP	Cl2 Temperature	24.3	ºC	SM 2550 B	1	n/a	9/29/98		10/1/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
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Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

1048	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	9/29/98		10/1/98	n/a
1049	TOC-ICR	TOC	2.31	mg/L	SM 5310 C	1	0.50	9/28/98		9/29/98	7-0-417
1050	TOC-ICR	TOC (Dupl)	2.29	mg/L	SM 5310 C	1	0.50	9/28/98		9/29/98	7-0-417
			2.30	**mg/L**	**0.9 % RPD**						
1051	TOX-ICR	TOX	247	µg Cl-/L	SM 5320 B	1	25	10/1/98		10/3/98	12-0-217
1052	TOX-ICR	TOX (Dupl)	284	µg Cl-/L	SM 5320 B	1	25	10/1/98		10/3/98	12-0-217
			266	**µg Cl-/L**	**13.9 % RPD**						
1053	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.2	%	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
1054	THM-ICR	Bromodichloromethane	41.3	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
1055	THM-ICR	Bromoform	12.9	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
1056	THM-ICR	Chloroform	53.3	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
1057	THM-ICR	Dibromochloromethane	34.1	µg/L	EPA 551.1	1	1.0	10/1/98	10/7/98	10/7/98	0-228-0
1058	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	9/28/98		9/28/98	9-0-18
1059	UV-ICR	UV	0.047	1/cm	SM 5910 B	1	0.009	9/28/98		9/29/98	8-0-307
1060	UV-ICR	UV (Dupl)	0.048	1/cm	SM 5910 B	1	0.009	9/28/98		9/29/98	8-0-307
			0.048	**1/cm**	**2.1 % RPD**						

End of laboratory test results

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

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Quality Control Report

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 136
Study Title: ICR RSSCT #3

Analysis: ALK (Alkalinity) **Method:** SM 2320 B

QC Batch ID: 1-0-32

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	100	93	mg/L	93%		09/09/98	9808-589	5		
Matrix Spike (Dupl)	Matrix Spike	100	93	mg/L	93%		09/09/98	9808-589	5		
		100	**93**	**mg/L**	**93%**	**0.0 %**					
Method Blank	Method Blank		ND*	mg/L			09/09/98	9809-148	5		
Standard	Standard	100	98	mg/L	98%		09/09/98	9809-149	5		
Standard (Dupl)	Standard	100	100	mg/L	100%		09/09/98	9809-149	5		
		100	**99**	**mg/L**	**99%**	**2.0 %**					
Matrix Spike	Matrix Spike	100	97	mg/L	97%		09/15/98	9809-272	5		
Matrix Spike (Dupl)	Matrix Spike	100	96	mg/L	96%		09/15/98	9809-272	5		
		100	**97**	**mg/L**	**97%**	**1.0 %**					
Method Blank	Method Blank		ND*	mg/L			09/15/98	9809-372	5		
Standard	Standard	100	97	mg/L	97%		09/15/98	9809-373	5		
Standard (Dupl)	Standard	100	97	mg/L	97%		09/15/98	9809-373	5		
		100	**97**	**mg/L**	**97%**	**0.0 %**					
Matrix Spike	Matrix Spike	100	97	mg/L	97%		09/21/98	9809-132	5		
Matrix Spike (Dupl)	Matrix Spike	100	96	mg/L	96%		09/21/98	9809-132	5		
		100	**96**	**mg/L**	**96%**	**1.0 %**					
Method Blank	Method Blank		ND*	mg/L			09/21/98	9809-401	5		
Standard	Standard	100	99	mg/L	99%		09/21/98	9809-402	5		
Standard (Dupl)	Standard	100	98	mg/L	98%		09/21/98	9809-402	5		
		100	**99**	**mg/L**	**99%**	**1.0 %**					

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-391

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.06	mg/L	101%		9808-548	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.01	mg/L	100%		9808-548	0.5		
		4.00	**4.04**	**mg/L**	**101%**	**1.5 %**				
Method Blank	Method Blank		ND*	mg/L			9809-4	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-4	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.51	mg/L	102%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9808-425	0.5	50-150%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

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		0.50	**0.51**	**mg/L**	**102%**	**2.0 %**			50-150%	20%
Standard	Standard	4.00	3.98	mg/L	100%		9808-409	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.97	mg/L	99%		9808-409	0.5	90-110%	
		4.00	**3.97**	**mg/L**	**99%**	**0.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-394

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.90	mg/L	97%		9808-552	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.94	mg/L	98%		9808-552	0.5		
		4.00	**3.92**	**mg/L**	**98%**	**1.0 %**				
Method Blank	Method Blank		ND*	mg/L			9809-32	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-32	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.51	mg/L	102%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.51	mg/L	102%		9808-425	0.5	50-150%	
		0.50	**0.51**	**mg/L**	**102%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.01	mg/L	100%		9808-409	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.96	mg/L	99%		9808-409	0.5	90-110%	
		4.00	**3.99**	**mg/L**	**100%**	**1.3 %**			90-110%	10%
Standard	Standard	10.00	9.72	mg/L	97%		9808-163	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.93	mg/L	99%		9808-163	0.5	90-110%	
		10.00	**9.83**	**mg/L**	**98%**	**2.1 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-398

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.02	mg/L	100%		9808-566	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.04	mg/L	101%		9808-566	0.5		
		4.00	**4.03**	**mg/L**	**101%**	**0.5 %**				
Method Blank	Method Blank		ND*	mg/L			9809-50	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-50	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.51	mg/L	102%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9808-425	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**5.8 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9808-409	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.96	mg/L	99%		9808-409	0.5	90-110%	
		4.00	**3.96**	**mg/L**	**99%**	**0.3 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-399

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.01	mg/L	100%		9809-51	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.97	mg/L	99%		9809-51	0.5		
		4.00	**3.99**	**mg/L**	**100%**	**1.0 %**				
Method Blank	Method Blank		ND*	mg/L			9809-139	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-139	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9808-425	0.5	50-150%	
		0.50	**0.50**	**mg/L**	**100%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.91	mg/L	98%		9808-409	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.01	mg/L	100%		9808-409	0.5	90-110%	
		4.00	**3.96**	**mg/L**	**99%**	**2.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-400

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.91	mg/L	98%		9808-569	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.89	mg/L	97%		9808-569	0.5		
		4.00	**3.90**	**mg/L**	**97%**	**0.8 %**				
Method Blank	Method Blank		ND*	mg/L			9809-156	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-156	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.51	mg/L	102%		9808-425	0.5	50-150%	
		0.50	**0.50**	**mg/L**	**100%**	**2.0 %**			50-150%	20%
Standard	Standard	4.00	3.98	mg/L	100%		9808-409	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.98	mg/L	100%		9808-409	0.5	90-110%	
		4.00	**3.98**	**mg/L**	**100%**	**0.0 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-401

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.94	mg/L	98%		9808-571	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.06	mg/L	101%		9808-571	0.5		
		4.00	**4.00**	**mg/L**	**100%**	**3.0 %**				
Method Blank	Method Blank		ND*	mg/L			9809-160	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-160	0.5		
			ND*	**mg/L**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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6 Knollcrest Drive
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Quality Control Report

Mr. Bruce Northup
City of Topeka

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Standard	Standard	0.50	0.49	mg/L	98%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9808-425	0.5	50-150%	
		0.50	**0.49**	**mg/L**	**98%**	**2.0 %**			50-150%	20%
Standard	Standard	4.00	4.05	mg/L	101%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.96	mg/L	99%		9809-163	0.5	90-110%	
		4.00	**4.01**	**mg/L**	**100%**	**2.2 %**			90-110%	10%
Standard	Standard	4.00	3.73	mg/L	93%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.82	mg/L	95%		9809-163	0.5	90-110%	
		4.00	**3.77**	**mg/L**	**94%**	**2.4 %**			90-110%	10%
Standard	Standard	10.00	9.55	mg/L	96%		9809-169	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.80	mg/L	98%		9809-169	0.5	90-110%	
		10.00	**9.67**	**mg/L**	**97%**	**2.6 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-402

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.02	mg/L	100%		9809-92	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.01	mg/L	100%		9809-92	0.5		
		4.00	**4.01**	**mg/L**	**100%**	**0.2 %**				
Method Blank	Method Blank		ND*	mg/L			9809-170	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-170	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9808-425	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.96	mg/L	99%		9809-163	0.5	90-110%	
		4.00	**3.97**	**mg/L**	**99%**	**0.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-403

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.97	mg/L	99%		9809-65	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.06	mg/L	101%		9809-65	0.5		
		4.00	**4.01**	**mg/L**	**100%**	**2.2 %**				
Method Blank	Method Blank		ND*	mg/L			9809-172	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-172	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.51	mg/L	102%		9808-425	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**5.8 %**			50-150%	20%
Standard	Standard	4.00	4.11	mg/L	103%		9809-163	0.5	90-110%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc. 6 Knollcrest Drive Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

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Standard (Dupl)	Standard	4.00	4.07	mg/L	102%		9809-163	0.5	90-110%	
		4.00	**4.09**	**mg/L**	**102%**	**1.0 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-404

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.93	mg/L	98%		9809-97	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.90	mg/L	97%		9809-97	0.5		
		4.00	**3.92**	**mg/L**	**98%**	**0.8 %**				
Method Blank	Method Blank		ND*	mg/L			9809-175	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-175	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9808-425	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**7.7 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.90	mg/L	97%		9809-163	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**1.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-406

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.01	mg/L	100%		9809-193	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.27	mg/L	107%		9809-193	0.5		
		4.00	**4.14**	**mg/L**	**103%**	**6.0 %**				
Method Blank	Method Blank		ND*	mg/L			9809-376	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-376	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9808-425	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.04	mg/L	101%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.16	mg/L	104%		9809-163	0.5	90-110%	
		4.00	**4.10**	**mg/L**	**102%**	**2.9 %**			90-110%	10%
Standard	Standard	10.00	9.86	mg/L	99%		9809-169	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.06	mg/L	101%		9809-169	0.5	90-110%	
		10.00	**9.96**	**mg/L**	**100%**	**2.0 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-407

QC Type	Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Matrix Spike	Matrix Spike	4.00	4.00	mg/L	100%		9808-576	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.98	mg/L	100%		9808-576	0.5		
		4.00	**3.99**	**mg/L**	**100%**	**0.5 %**				
Method Blank	Method Blank		ND*	mg/L			9809-389	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-389	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9808-425	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9808-425	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.89	mg/L	97%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.91	mg/L	98%		9809-163	0.5	90-110%	
		4.00	**3.90**	**mg/L**	**97%**	**0.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-408

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.95	mg/L	99%		9809-103	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.02	mg/L	100%		9809-103	0.5		
		4.00	**3.98**	**mg/L**	**100%**	**1.8 %**				
Method Blank	Method Blank		ND*	mg/L			9809-394	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-394	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9809-375	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9809-375	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**7.7 %**			50-150%	20%
Standard	Standard	4.00	3.92	mg/L	98%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.99	mg/L	100%		9809-163	0.5	90-110%	
		4.00	**3.95**	**mg/L**	**99%**	**1.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-409

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.99	mg/L	100%		9809-75	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.11	mg/L	103%		9809-75	0.5		
		4.00	**4.05**	**mg/L**	**101%**	**2.7 %**				
Method Blank	Method Blank		ND*	mg/L			9809-399	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-399	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9809-375	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9809-375	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.01	mg/L	100%		9809-163	0.5	90-110%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

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Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9809-163	0.5	90-110%	
		4.00	**4.02**	**mg/L**	**100%**	**0.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-413

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.36	mg/L	109%		9809-112	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.09	mg/L	102%		9809-112	0.5		
		4.00	**4.22**	**mg/L**	**105%**	**6.2 %**				
Method Blank	Method Blank		ND*	mg/L			9809-435	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-435	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9809-375	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9809-375	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.00	mg/L	100%		9809-163	0.5	90-110%	
		4.00	**3.98**	**mg/L**	**100%**	**0.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-414

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.04	mg/L	101%		9809-113	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.13	mg/L	103%		9809-113	0.5		
		4.00	**4.08**	**mg/L**	**102%**	**2.2 %**				
Method Blank	Method Blank		ND*	mg/L			9809-649	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-649	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.55	mg/L	110%		9809-375	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9809-375	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**5.7 %**			50-150%	20%
Standard	Standard	4.00	4.06	mg/L	101%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.04	mg/L	101%		9809-163	0.5	90-110%	
		4.00	**4.05**	**mg/L**	**101%**	**0.5 %**			90-110%	10%
Standard	Standard	10.00	10.04	mg/L	100%		9809-169	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.17	mg/L	102%		9809-169	0.5	90-110%	
		10.00	**10.10**	**mg/L**	**101%**	**1.3 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-416

QC Type	Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Matrix Spike	Matrix Spike	4.00	4.06	mg/L	101%		9809-476	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.09	mg/L	102%		9809-476	0.5		
		4.00	**4.07**	**mg/L**	**102%**	**0.7 %**				
Matrix Spike	Matrix Spike	4.00	3.91	mg/L	98%		9809-646	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.88	mg/L	97%		9809-646	0.5		
		4.00	**3.90**	**mg/L**	**97%**	**0.8 %**				
Method Blank	Method Blank		ND*	mg/L			9809-660	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-660	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9809-375	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9809-375	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.00	mg/L	100%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.03	mg/L	101%		9809-163	0.5	90-110%	
		4.00	**4.01**	**mg/L**	**100%**	**0.7 %**			90-110%	10%
Standard	Standard	4.00	3.96	mg/L	99%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.93	mg/L	98%		9809-163	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**0.8 %**			90-110%	10%
Standard	Standard	10.00	10.09	mg/L	101%		9809-169	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.16	mg/L	102%		9809-169	0.5	90-110%	
		10.00	**10.13**	**mg/L**	**101%**	**0.7 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-417

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.93	mg/L	98%		9809-568	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.97	mg/L	99%		9809-568	0.5		
		4.00	**3.95**	**mg/L**	**99%**	**1.3 %**				
Method Blank	Method Blank		ND*	mg/L			9809-667	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9809-667	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9809-375	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9809-375	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9809-163	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9809-163	0.5	90-110%	
		4.00	**4.00**	**mg/L**	**100%**	**1.2 %**			90-110%	10%
Standard	Standard	10.00	9.99	mg/L	100%		9809-169	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.95	mg/L	99%		9809-169	0.5	90-110%	
		10.00	**9.97**	**mg/L**	**100%**	**0.4 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-288

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-140	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-140	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-140	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-140	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.096	1/cm	109%		9809-8	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.097	1/cm	110%		9809-8	0.009	85-115%	
		0.088	**0.097**	**1/cm**	**110%**	**1.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-289

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-158	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-158	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-158	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-158	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.097	1/cm	110%		9809-8	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.098	1/cm	111%		9809-8	0.009	85-115%	
		0.088	**0.098**	**1/cm**	**111%**	**1.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-290

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-159	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-159	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-159	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-159	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.093	1/cm	106%		9809-8	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.093	1/cm	106%		9809-8	0.009	85-115%	
		0.088	**0.093**	**1/cm**	**106%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-291

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9809-171	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-171	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-171	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-171	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.089	1/cm	101%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**1.1 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-292

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9809-173	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-173	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-173	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-173	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-293

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-174	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-174	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-174	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-174	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.091	1/cm	103%		9809-164	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**1.1 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-294

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-371	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-371	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-371	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-371	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-7	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-295

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-377	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-377	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-377	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-377	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Standard	Standard	0.009	0.007	1/cm	78%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9809-374	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-164	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-296

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9809-388	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-388	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-388	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-388	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.095	1/cm	108%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.095	1/cm	108%		9809-164	0.009	85-115%	
		0.088	**0.095**	**1/cm**	**108%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-297

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9809-395	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-395	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-395	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-395	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.009	1/cm	100%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.009	1/cm	100%		9809-374	0.009	75-125%	
		0.009	**0.009**	**1/cm**	**100%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.096	1/cm	109%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.096	1/cm	109%		9809-164	0.009	85-115%	
		0.088	**0.096**	**1/cm**	**109%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-298

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-397	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-397	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-397	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-397	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.096	1/cm	109%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.096	1/cm	109%		9809-164	0.009	85-115%	
		0.088	**0.096**	**1/cm**	**109%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-299

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-398	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-398	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-398	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-398	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.089	1/cm	101%		9809-164	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.089	1/cm	101%		9809-164	0.009	85-115%	
		0.088	**0.089**	**1/cm**	**101%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-302

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-648	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-648	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-648	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-648	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-303

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9809-653	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-653	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-653	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-653	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-304

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9809-657	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-657	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-657	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-657	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
		0.088	**0.090**	**1/cm**	**102%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-307

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9809-665	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-665	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9809-665	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9809-665	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9809-374	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.091	1/cm	103%		9809-650	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.090	1/cm	102%		9809-650	0.009	85-115%	
		0.088	**0.091**	**1/cm**	**103%**	**1.1 %**			85-115%	10%

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-17

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	5.41	5.49	ntu	101%		08/28/98	9807-108	0.05		
Standard	Standard	5.41	5.48	ntu	101%		08/31/98	9807-108	0.05		
Standard	Standard	5.41	5.48	ntu	101%		09/07/98	9807-108	0.05		
Standard	Standard	5.41	5.48	ntu	101%		09/08/98	9807-108	0.05		
Standard	Standard	5.41	5.51	ntu	102%		09/14/98	9807-108	0.05		
Standard	Standard	5.41	5.51	ntu	102%		09/17/98	9807-108	0.05		
Standard	Standard	5.41	5.52	ntu	102%		09/20/98	9807-108	0.05		
Standard	Standard	5.41	5.52	ntu	102%		09/25/98	9807-108	0.05		

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-18

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	5.41	5.48	ntu	101%		09/28/98	9807-108	0.05		
Standard	Standard	5.41	5.59	ntu	103%		09/28/98	9807-108	0.05		
Standard	Standard	5.41	5.48	ntu	101%		09/30/98	9807-108	0.05		
Standard	Standard	5.41	5.50	ntu	102%		10/01/98	9807-108	0.05		
Standard	Standard	5.41	5.52	ntu	102%		10/04/98	9807-108	0.05		
Standard	Standard	5.41	5.53	ntu	102%		10/06/98	9807-108	0.05		
Standard	Standard	5.41	5.48	ntu	101%		10/08/98	9807-108	0.05		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	5.41	5.48	ntu	101%	10/14/98	9807-108	0.05
Standard	Standard	5.41	5.51	ntu	102%	10/16/98	9807-108	0.05
Standard	Standard	5.41	5.54	ntu	102%	10/16/98	9807-108	0.05

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-207

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9809-182	25	75-125%	
Standard - TCP Aqueous	Standard	200	189	µg Cl-/L	94%		9809-181	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-183	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-209

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9809-385	25	75-125%	
Standard - TCP Aqueous	Standard	200	200	µg Cl-/L	100%		9809-384	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-386	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-210

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9809-392	25	75-125%	
Standard - TCP Aqueous	Standard	200	208	µg Cl-/L	104%		9809-391	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-393	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-211

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	215	µg Cl-/L	108%		9809-69	25		
Matrix Spike (Dupl)	Matrix Spike	200	201	µg Cl-/L	100%		9809-69	25		
		200	**208**	**µg Cl-/L**	**104%**	**6.7 %**				
Standard - TCP Aqueous	Standard	25	22	µg Cl-/L	88%		9809-405	25	75-125%	
Standard - TCP Aqueous	Standard	200	199	µg Cl-/L	100%		9809-404	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-406	25		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-212

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9809-414	25	75-125%	
Standard - TCP Aqueous	Standard	200	208	µg Cl-/L	104%		9809-413	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-415	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-213

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9809-466	25	75-125%	
Standard - TCP Aqueous	Standard	200	204	µg Cl-/L	102%		9809-465	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-467	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-214

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9809-673	25	75-125%	
Standard - TCP Aqueous	Standard	200	214	µg Cl-/L	107%		9809-672	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9809-674	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-217

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9810-72	25	75-125%	
Standard - TCP Aqueous	Standard	200	195	µg Cl-/L	97%		9810-71	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9810-73	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-223

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	192	µg Cl-/L	96%		9809-114	25		
Matrix Spike (Dupl)	Matrix Spike	200	183	µg Cl-/L	92%		9809-114	25		
		200	**188**	**µg Cl-/L**	**94%**	**4.3 %**				
Standard - TCP Aqueous (Dupl)	Standard	25	23	µg Cl-/L	92%		9810-260	25	75-125%	
Standard - TCP Aqueous	Standard	200	208	µg Cl-/L	104%		9810-259	25	85-115%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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System Blank	Blank	ND*	µg Cl-/L	9810-261	25	

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-215-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	22.1	22.7	µg/L		2.7%	9808-525	1		
Bromodichloromethane	Matrix Spike	40.0	40.3	µg/L	101%		9809-157	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9809-176	1		
Bromodichloromethane	Secondary Source Std	20.0	20.1	µg/L	101%		9809-177	1	70-130%	
Bromodichloromethane	Standard	20.0	21.0	µg/L	105%		9809-178	1	80-120%	
Bromodichloromethane	Standard	20.0	21.7	µg/L	109%		9809-178	1	80-120%	
Bromodichloromethane	Standard	40.0	39.5	µg/L	99%		9809-179	1	80-120%	
Bromoform	Duplicate	3.5	3.5	µg/L		0.0%	9808-525	1		
Bromoform	Matrix Spike	40.0	43.4	µg/L	109%		9809-157	1		
Bromoform	Method Blank		ND*	µg/L			9809-176	1		
Bromoform	Secondary Source Std	20.0	17.7	µg/L	89%		9809-177	1	70-130%	
Bromoform	Standard	20.0	20.3	µg/L	102%		9809-178	1	80-120%	
Bromoform	Standard	20.0	21.7	µg/L	109%		9809-178	1	80-120%	
Bromoform	Standard	40.0	41.2	µg/L	103%		9809-179	1	80-120%	
Chloroform	Duplicate	14.9	15.4	µg/L		3.3%	9808-525	1		
Chloroform	Matrix Spike	40.0	42.7	µg/L	107%		9809-157	1		
Chloroform	Method Blank		ND*	µg/L			9809-176	1		
Chloroform	Secondary Source Std	20.0	20.8	µg/L	104%		9809-177	1	70-130%	
Chloroform	Standard	20.0	20.7	µg/L	103%		9809-178	1	80-120%	
Chloroform	Standard	20.0	21.4	µg/L	107%		9809-178	1	80-120%	
Chloroform	Standard	40.0	39.5	µg/L	99%		9809-179	1	80-120%	
Dibromochloromethane	Duplicate	18.6	19.1	µg/L		2.7%	9808-525	1		
Dibromochloromethane	Matrix Spike	40.0	40.8	µg/L	102%		9809-157	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9809-176	1		
Dibromochloromethane	Secondary Source Std	20.0	18.3	µg/L	92%		9809-177	1	70-130%	
Dibromochloromethane	Standard	20.0	20.6	µg/L	103%		9809-178	1	80-120%	
Dibromochloromethane	Standard	20.0	21.4	µg/L	107%		9809-178	1	80-120%	
Dibromochloromethane	Standard	40.0	40.6	µg/L	102%		9809-179	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-219-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	12.2	12.7	µg/L		4.0%	9809-62	1		
Bromodichloromethane	Matrix Spike	40.0	38.9	µg/L	97%		9809-69	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9809-423	1		
Bromodichloromethane	Secondary Source Std	20.0	20.6	µg/L	103%		9809-424	1	70-130%	
Bromodichloromethane	Standard	20.0	19.1	µg/L	96%		9809-425	1	80-120%	
Bromodichloromethane	Standard	20.0	20.0	µg/L	100%		9809-425	1	80-120%	
Bromodichloromethane	Standard	40.0	39.9	µg/L	100%		9809-426	1	80-120%	
Bromoform	Duplicate	29.8	30.6	µg/L		2.6%	9809-62	1		
Bromoform	Matrix Spike	40.0	38.4	µg/L	96%		9809-69	1		
Bromoform	Method Blank		ND*	µg/L			9809-423	1		
Bromoform	Secondary Source Std	20.0	17.6	µg/L	88%		9809-424	1	70-130%	
Bromoform	Standard	20.0	16.4	µg/L	82%		9809-425	1	80-120%	
Bromoform	Standard	20.0	17.8	µg/L	89%		9809-425	1	80-120%	
Bromoform	Standard	40.0	37.1	µg/L	93%		9809-426	1	80-120%	
Chloroform	Duplicate	3.5	3.6	µg/L		2.8%	9809-62	1		
Chloroform	Matrix Spike	40.0	40.1	µg/L	100%		9809-69	1		
Chloroform	Method Blank		ND*	µg/L			9809-423	1		
Chloroform	Secondary Source Std	20.0	20.9	µg/L	104%		9809-424	1	70-130%	
Chloroform	Standard	20.0	18.4	µg/L	92%		9809-425	1	80-120%	
Chloroform	Standard	20.0	19.1	µg/L	96%		9809-425	1	80-120%	
Chloroform	Standard	40.0	40.2	µg/L	101%		9809-426	1	80-120%	
Dibromochloromethane	Duplicate	30.5	31.8	µg/L		4.2%	9809-62	1		
Dibromochloromethane	Matrix Spike	40.0	43.9	µg/L	110%		9809-69	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9809-423	1		
Dibromochloromethane	Secondary Source Std	20.0	19.4	µg/L	97%		9809-424	1	70-130%	
Dibromochloromethane	Standard	20.0	19.5	µg/L	97%		9809-425	1	80-120%	
Dibromochloromethane	Standard	20.0	20.8	µg/L	104%		9809-425	1	80-120%	
Dibromochloromethane	Standard	40.0	42.2	µg/L	106%		9809-426	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-223-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	4.7	4.4	µg/L		6.6%	9809-186	1		
Bromodichloromethane	Matrix Spike	40.0	36.8	µg/L	92%		9809-498	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9810-63	1		
Bromodichloromethane	Secondary Source Std	20.0	21.6	µg/L	108%		9810-64	1	70-130%	
Bromodichloromethane	Standard	20.0	18.3	µg/L	92%		9810-65	1	80-120%	
Bromodichloromethane	Standard	20.0	19.3	µg/L	97%		9810-65	1	80-120%	
Bromodichloromethane	Standard	40.0	39.4	µg/L	98%		9810-66	1	80-120%	
Bromoform	Duplicate	26.7	26.2	µg/L		1.9%	9809-186	1		
Bromoform	Matrix Spike	40.0	38.8	µg/L	97%		9809-498	1		
Bromoform	Method Blank		ND*	µg/L			9810-63	1		
Bromoform	Secondary Source Std	20.0	19.1	µg/L	96%		9810-64	1	70-130%	
Bromoform	Standard	20.0	18.0	µg/L	90%		9810-65	1	80-120%	
Bromoform	Standard	20.0	19.9	µg/L	99%		9810-65	1	80-120%	
Bromoform	Standard	40.0	42.0	µg/L	105%		9810-66	1	80-120%	
Chloroform	Duplicate	1.4	1.2	µg/L		15.4%	9809-186	1		
Chloroform	Matrix Spike	40.0	36.8	µg/L	92%		9809-498	1		
Chloroform	Method Blank		ND*	µg/L			9810-63	1		
Chloroform	Secondary Source Std	20.0	22.1	µg/L	111%		9810-64	1	70-130%	
Chloroform	Standard	20.0	17.8	µg/L	89%		9810-65	1	80-120%	
Chloroform	Standard	20.0	18.6	µg/L	93%		9810-65	1	80-120%	
Chloroform	Standard	40.0	38.3	µg/L	96%		9810-66	1	80-120%	
Dibromochloromethane	Duplicate	16.2	15.3	µg/L		5.7%	9809-186	1		
Dibromochloromethane	Matrix Spike	40.0	37.1	µg/L	93%		9809-498	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9810-63	1		
Dibromochloromethane	Secondary Source Std	20.0	20.9	µg/L	104%		9810-64	1	70-130%	
Dibromochloromethane	Standard	20.0	18.5	µg/L	93%		9810-65	1	80-120%	
Dibromochloromethane	Standard	20.0	18.7	µg/L	93%		9810-65	1	80-120%	
Dibromochloromethane	Standard	40.0	40.3	µg/L	101%		9810-66	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-228-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	9.9	9.7	µg/L		2.0%	9809-473	1		
Bromodichloromethane	Matrix Spike	40.0	39.2	µg/L	98%		9809-606	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9810-110	1		
Bromodichloromethane	Secondary Source Std	20.0	20.6	µg/L	103%		9810-111	1	70-130%	
Bromodichloromethane	Standard	20.0	20.6	µg/L	103%		9810-112	1	80-120%	
Bromodichloromethane	Standard	20.0	19.7	µg/L	98%		9810-112	1	80-120%	
Bromodichloromethane	Standard	40.0	40.4	µg/L	101%		9810-113	1	80-120%	
Bromoform	Duplicate	11.9	11.8	µg/L		0.8%	9809-473	1		
Bromoform	Matrix Spike	40.0	39.3	µg/L	98%		9809-606	1		
Bromoform	Method Blank		ND*	µg/L			9810-110	1		
Bromoform	Secondary Source Std	20.0	17.9	µg/L	89%		9810-111	1	70-130%	
Bromoform	Standard	20.0	18.3	µg/L	92%		9810-112	1	80-120%	
Bromoform	Standard	20.0	18.8	µg/L	94%		9810-112	1	80-120%	
Bromoform	Standard	40.0	38.9	µg/L	97%		9810-113	1	80-120%	
Chloroform	Duplicate	4.3	4.4	µg/L		2.3%	9809-473	1		
Chloroform	Matrix Spike	40.0	40.2	µg/L	101%		9809-606	1		
Chloroform	Method Blank		ND*	µg/L			9810-110	1		
Chloroform	Secondary Source Std	20.0	21.1	µg/L	106%		9810-111	1	70-130%	
Chloroform	Standard	20.0	20.1	µg/L	101%		9810-112	1	80-120%	
Chloroform	Standard	20.0	19.7	µg/L	98%		9810-112	1	80-120%	
Chloroform	Standard	40.0	42.3	µg/L	106%		9810-113	1	80-120%	
Dibromochloromethane	Duplicate	16.3	16.0	µg/L		1.9%	9809-473	1		
Dibromochloromethane	Matrix Spike	40.0	38.8	µg/L	97%		9809-606	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9810-110	1		
Dibromochloromethane	Secondary Source Std	20.0	20.0	µg/L	100%		9810-111	1	70-130%	
Dibromochloromethane	Standard	20.0	21.0	µg/L	105%		9810-112	1	80-120%	
Dibromochloromethane	Standard	20.0	19.7	µg/L	98%		9810-112	1	80-120%	
Dibromochloromethane	Standard	40.0	40.7	µg/L	102%		9810-113	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-232-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	21.2	21.3	µg/L		0.5%	9809-571	1		
Bromodichloromethane	Matrix Spike	40.0	38.3	µg/L	96%		9809-525	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9810-223	1		
Bromodichloromethane	Secondary Source Std	20.0	20.2	µg/L	101%		9810-224	1	70-130%	
Bromodichloromethane	Standard	20.0	18.9	µg/L	94%		9810-225	1	80-120%	
Bromodichloromethane	Standard	20.0	19.2	µg/L	96%		9810-225	1	80-120%	
Bromodichloromethane	Standard	40.0	42.3	µg/L	106%		9810-226	1	80-120%	
Bromoform	Duplicate	7.1	7.2	µg/L		1.4%	9809-571	1		
Bromoform	Matrix Spike	40.0	38.4	µg/L	96%		9809-525	1		
Bromoform	Method Blank		ND*	µg/L			9810-223	1		
Bromoform	Secondary Source Std	20.0	17.0	µg/L	85%		9810-224	1	70-130%	
Bromoform	Standard	20.0	18.0	µg/L	90%		9810-225	1	80-120%	
Bromoform	Standard	20.0	17.8	µg/L	89%		9810-225	1	80-120%	
Bromoform	Standard	40.0	40.4	µg/L	101%		9810-226	1	80-120%	
Chloroform	Duplicate	13.5	13.3	µg/L		1.5%	9809-571	1		
Chloroform	Matrix Spike	40.0	41.8	µg/L	104%		9809-525	1		
Chloroform	Method Blank		ND*	µg/L			9810-223	1		
Chloroform	Secondary Source Std	20.0	20.0	µg/L	100%		9810-224	1	70-130%	
Chloroform	Standard	20.0	17.9	µg/L	89%		9810-225	1	80-120%	
Chloroform	Standard	20.0	18.6	µg/L	93%		9810-225	1	80-120%	
Chloroform	Standard	40.0	43.4	µg/L	109%		9810-226	1	80-120%	
Dibromochloromethane	Duplicate	23.3	23.5	µg/L		0.9%	9809-571	1		
Dibromochloromethane	Matrix Spike	40.0	39.5	µg/L	99%		9809-525	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9810-223	1		
Dibromochloromethane	Secondary Source Std	20.0	19.4	µg/L	97%		9810-224	1	70-130%	
Dibromochloromethane	Standard	20.0	18.6	µg/L	93%		9810-225	1	80-120%	
Dibromochloromethane	Standard	20.0	19.2	µg/L	96%		9810-225	1	80-120%	
Dibromochloromethane	Standard	40.0	42.8	µg/L	107%		9810-226	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-217-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	1		
Bromochloroacetic acid	Matrix Spike	40.0	35.1	µg/L	88%		9809-94	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9809-400	1		
Bromochloroacetic acid	Secondary Source Std	20.0	16.6	µg/L	83%		9809-407	1	70-130%	
Bromochloroacetic acid	Standard	20.0	19.9	µg/L	99%		9809-408	1	80-120%	
Bromochloroacetic acid	Standard	20.0	19.7	µg/L	98%		9809-408	1	80-120%	
Bromochloroacetic acid	Standard	40.0	41.2	µg/L	103%		9809-409	1	80-120%	
Bromodichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	1		
Bromodichloroacetic acid	Matrix Spike	40.0	31.2	µg/L	78%		9809-94	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9809-400	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9809-407	1	70-130%	
Bromodichloroacetic acid	Standard	20.0	17.6	µg/L	88%		9809-408	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	17.2	µg/L	86%		9809-408	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	44.5	µg/L	111%		9809-409	1	80-120%	
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	31.0	µg/L	78%		9809-94	2		
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9809-400	2		
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9809-407	2	70-130%	
Chlorodibromoacetic acid	Standard	20.0	17.4	µg/L	87%		9809-408	2	80-120%	
Chlorodibromoacetic acid	Standard	20.0	17.0	µg/L	85%		9809-408	2	80-120%	
Chlorodibromoacetic acid	Standard	40.0	44.0	µg/L	110%		9809-409	2	80-120%	
Dibromoacetic acid	Duplicate	2.0	1.8	µg/L		10.5%	9809-53	1		
Dibromoacetic acid	Matrix Spike	40.0	32.1	µg/L	80%		9809-94	1		
Dibromoacetic acid	Method Blank		ND*	µg/L			9809-400	1		
Dibromoacetic acid	Secondary Source Std	20.0	15.2	µg/L	76%		9809-407	1	70-130%	
Dibromoacetic acid	Standard	20.0	19.3	µg/L	97%		9809-408	1	80-120%	
Dibromoacetic acid	Standard	20.0	19.1	µg/L	96%		9809-408	1	80-120%	
Dibromoacetic acid	Standard	40.0	42.2	µg/L	106%		9809-409	1	80-120%	
Dichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	1		
Dichloroacetic acid	Matrix Spike	40.0	38.8	µg/L	97%		9809-94	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

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Study Title: ICR RSSCT #3

Dichloroacetic acid	Method Blank		ND*	µg/L			9809-400	1	
Dichloroacetic acid	Secondary Source Std	20.0	19.4	µg/L	97%		9809-407	1	70-130%
Dichloroacetic acid	Standard	20.0	19.9	µg/L	99%		9809-408	1	80-120%
Dichloroacetic acid	Standard	20.0	19.6	µg/L	98%		9809-408	1	80-120%
Dichloroacetic acid	Standard	40.0	40.0	µg/L	100%		9809-409	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	1	
Monobromoacetic acid	Matrix Spike	40.0	43.4	µg/L	109%		9809-94	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9809-400	1	
Monobromoacetic acid	Secondary Source Std	20.0	22.1	µg/L	111%		9809-407	1	70-130%
Monobromoacetic acid	Standard	20.0	19.3	µg/L	97%		9809-408	1	80-120%
Monobromoacetic acid	Standard	20.0	19.1	µg/L	96%		9809-408	1	80-120%
Monobromoacetic acid	Standard	40.0	40.7	µg/L	102%		9809-409	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	2	
Monochloroacetic acid	Matrix Spike	40.0	40.9	µg/L	102%		9809-94	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9809-400	2	
Monochloroacetic acid	Secondary Source Std	20.0	21.5	µg/L	108%		9809-407	2	70-130%
Monochloroacetic acid	Standard	20.0	17.8	µg/L	89%		9809-408	2	80-120%
Monochloroacetic acid	Standard	20.0	18.5	µg/L	93%		9809-408	2	80-120%
Monochloroacetic acid	Standard	40.0	40.3	µg/L	101%		9809-409	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	4	
Tribromoacetic acid	Matrix Spike	40.0	34.6	µg/L	86%		9809-94	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9809-400	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9809-407	4	70-130%
Tribromoacetic acid	Standard	20.0	17.6	µg/L	88%		9809-408	4	80-120%
Tribromoacetic acid	Standard	20.0	17.4	µg/L	87%		9809-408	4	80-120%
Tribromoacetic acid	Standard	40.0	42.6	µg/L	106%		9809-409	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-53	1	
Trichloroacetic acid	Matrix Spike	40.0	29.6	µg/L	74%		9809-94	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9809-400	1	
Trichloroacetic acid	Secondary Source Std	20.0	14.1	µg/L	70%		9809-407	1	70-130%
Trichloroacetic acid	Standard	20.0	17.8	µg/L	89%		9809-408	1	80-120%
Trichloroacetic acid	Standard	20.0	17.5	µg/L	88%		9809-408	1	80-120%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Quality Control Report

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Trichloroacetic acid	Standard	40.0	43.5	µg/L	109%		9809-409	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-222-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	3.5	3.4	µg/L		2.9%	9809-100	1		
Bromochloroacetic acid	Matrix Spike	40.0	42.5	µg/L	106%		9809-185	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9809-677	1		
Bromochloroacetic acid	Secondary Source Std	20.0	17.4	µg/L	87%		9809-678	1	70-130%	
Bromochloroacetic acid	Standard	20.0	18.7	µg/L	93%		9809-679	1	80-120%	
Bromochloroacetic acid	Standard	20.0	19.0	µg/L	95%		9809-679	1	80-120%	
Bromochloroacetic acid	Standard	40.0	41.1	µg/L	103%		9809-680	1	80-120%	
Bromodichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-100	1		
Bromodichloroacetic acid	Matrix Spike	40.0	42.2	µg/L	106%		9809-185	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9809-677	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9809-678	1	70-130%	
Bromodichloroacetic acid	Standard	20.0	22.9	µg/L	115%		9809-679	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	20.3	µg/L	102%		9809-679	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	43.7	µg/L	109%		9809-680	1	80-120%	
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-100	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	42.3	µg/L	106%		9809-185	2		
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9809-677	2		
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9809-678	2	70-130%	
Chlorodibromoacetic acid	Standard	20.0	23.0	µg/L	115%		9809-679	2	80-120%	
Chlorodibromoacetic acid	Standard	20.0	22.0	µg/L	110%		9809-679	2	80-120%	
Chlorodibromoacetic acid	Standard	40.0	44.0	µg/L	110%		9809-680	2	80-120%	
Dibromoacetic acid	Duplicate	8.1	7.5	µg/L		7.7%	9809-100	1		
Dibromoacetic acid	Matrix Spike	40.0	44.2	µg/L	111%		9809-185	1		
Dibromoacetic acid	Method Blank		ND*	µg/L			9809-677	1		
Dibromoacetic acid	Secondary Source Std	20.0	18.4	µg/L	92%		9809-678	1	70-130%	
Dibromoacetic acid	Standard	20.0	19.2	µg/L	96%		9809-679	1	80-120%	
Dibromoacetic acid	Standard	20.0	20.3	µg/L	102%		9809-679	1	80-120%	
Dibromoacetic acid	Standard	40.0	41.1	µg/L	103%		9809-680	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

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City of Topeka

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Study Title: ICR RSSCT #3

Dichloroacetic acid	Duplicate	1.5	1.7	µg/L		12.5%	9809-100	1	
Dichloroacetic acid	Matrix Spike	40.0	43.2	µg/L	108%		9809-185	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9809-677	1	
Dichloroacetic acid	Secondary Source Std	20.0	19.1	µg/L	96%		9809-678	1	70-130%
Dichloroacetic acid	Standard	20.0	18.7	µg/L	93%		9809-679	1	80-120%
Dichloroacetic acid	Standard	20.0	18.4	µg/L	92%		9809-679	1	80-120%
Dichloroacetic acid	Standard	40.0	37.0	µg/L	93%		9809-680	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-100	1	
Monobromoacetic acid	Matrix Spike	40.0	41.7	µg/L	104%		9809-185	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9809-677	1	
Monobromoacetic acid	Secondary Source Std	20.0	20.8	µg/L	104%		9809-678	1	70-130%
Monobromoacetic acid	Standard	20.0	17.9	µg/L	89%		9809-679	1	80-120%
Monobromoacetic acid	Standard	20.0	18.1	µg/L	91%		9809-679	1	80-120%
Monobromoacetic acid	Standard	40.0	39.8	µg/L	99%		9809-680	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-100	2	
Monochloroacetic acid	Matrix Spike	40.0	38.6	µg/L	97%		9809-185	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9809-677	2	
Monochloroacetic acid	Secondary Source Std	20.0	19.1	µg/L	96%		9809-678	2	70-130%
Monochloroacetic acid	Standard	20.0	19.3	µg/L	97%		9809-679	2	80-120%
Monochloroacetic acid	Standard	20.0	17.8	µg/L	89%		9809-679	2	80-120%
Monochloroacetic acid	Standard	40.0	40.1	µg/L	100%		9809-680	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-100	4	
Tribromoacetic acid	Matrix Spike	40.0	39.9	µg/L	100%		9809-185	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9809-677	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9809-678	4	70-130%
Tribromoacetic acid	Standard	20.0	20.8	µg/L	104%		9809-679	4	80-120%
Tribromoacetic acid	Standard	20.0	22.2	µg/L	111%		9809-679	4	80-120%
Tribromoacetic acid	Standard	40.0	42.3	µg/L	106%		9809-680	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-100	1	
Trichloroacetic acid	Matrix Spike	40.0	42.2	µg/L	106%		9809-185	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9809-677	1	
Trichloroacetic acid	Secondary Source Std	20.0	17.3	µg/L	86%		9809-678	1	70-130%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Trichloroacetic acid	Standard	20.0	19.5	µg/L	97%		9809-679	1	80-120%
Trichloroacetic acid	Standard	20.0	19.8	µg/L	99%		9809-679	1	80-120%
Trichloroacetic acid	Standard	40.0	41.1	µg/L	103%		9809-680	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-230-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromochloroacetic acid	Duplicate	2.4	2.3	µg/L		4.3%	9809-472	1		
Bromochloroacetic acid	Matrix Spike	40.0	45.1	µg/L	113%		9809-605	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9810-123	1		
Bromochloroacetic acid	Secondary Source Std	20.0	18.2	µg/L	91%		9810-124	1	70-130%	
Bromochloroacetic acid	Standard	20.0	20.7	µg/L	103%		9810-125	1	80-120%	
Bromochloroacetic acid	Standard	20.0	20.7	µg/L	103%		9810-125	1	80-120%	
Bromochloroacetic acid	Standard	40.0	39.4	µg/L	98%		9810-126	1	80-120%	
Bromodichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-472	1		
Bromodichloroacetic acid	Matrix Spike	40.0	44.9	µg/L	112%		9809-605	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9810-123	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9810-124	1	70-130%	
Bromodichloroacetic acid	Standard	20.0	18.2	µg/L	91%		9810-125	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	18.3	µg/L	92%		9810-125	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	37.4	µg/L	93%		9810-126	1	80-120%	
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-472	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	41.3	µg/L	103%		9809-605	2		
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9810-123	2		
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9810-124	2	70-130%	
Chlorodibromoacetic acid	Standard	20.0	17.1	µg/L	86%		9810-125	2	80-120%	
Chlorodibromoacetic acid	Standard	20.0	17.1	µg/L	86%		9810-125	2	80-120%	
Chlorodibromoacetic acid	Standard	40.0	36.6	µg/L	92%		9810-126	2	80-120%	
Dibromoacetic acid	Duplicate	3.4	3.4	µg/L		0.0%	9809-472	1		
Dibromoacetic acid	Matrix Spike	40.0	46.5	µg/L	116%		9809-605	1		
Dibromoacetic acid	Method Blank		ND*	µg/L			9810-123	1		
Dibromoacetic acid	Secondary Source Std	20.0	18.1	µg/L	91%		9810-124	1	70-130%	
Dibromoacetic acid	Standard	20.0	20.7	µg/L	103%		9810-125	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

Dibromoacetic acid	Standard	20.0	20.6	µg/L	103%		9810-125	1	80-120%
Dibromoacetic acid	Standard	40.0	39.3	µg/L	98%		9810-126	1	80-120%
Dichloroacetic acid	Duplicate	1.7	1.8	µg/L		5.7%	9809-472	1	
Dichloroacetic acid	Matrix Spike	40.0	42.0	µg/L	105%		9809-605	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9810-123	1	
Dichloroacetic acid	Secondary Source Std	20.0	19.9	µg/L	99%		9810-124	1	70-130%
Dichloroacetic acid	Standard	20.0	20.3	µg/L	102%		9810-125	1	80-120%
Dichloroacetic acid	Standard	20.0	20.6	µg/L	103%		9810-125	1	80-120%
Dichloroacetic acid	Standard	40.0	40.3	µg/L	101%		9810-126	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-472	1	
Monobromoacetic acid	Matrix Spike	40.0	43.6	µg/L	109%		9809-605	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9810-123	1	
Monobromoacetic acid	Secondary Source Std	20.0	20.9	µg/L	104%		9810-124	1	70-130%
Monobromoacetic acid	Standard	20.0	20.3	µg/L	102%		9810-125	1	80-120%
Monobromoacetic acid	Standard	20.0	20.4	µg/L	102%		9810-125	1	80-120%
Monobromoacetic acid	Standard	40.0	39.3	µg/L	98%		9810-126	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-472	2	
Monochloroacetic acid	Matrix Spike	40.0	38.7	µg/L	97%		9809-605	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9810-123	2	
Monochloroacetic acid	Secondary Source Std	20.0	22.1	µg/L	111%		9810-124	2	70-130%
Monochloroacetic acid	Standard	20.0	19.6	µg/L	98%		9810-125	2	80-120%
Monochloroacetic acid	Standard	20.0	20.9	µg/L	104%		9810-125	2	80-120%
Monochloroacetic acid	Standard	40.0	38.9	µg/L	97%		9810-126	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9809-472	4	
Tribromoacetic acid	Matrix Spike	40.0	39.2	µg/L	98%		9809-605	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9810-123	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9810-124	4	70-130%
Tribromoacetic acid	Standard	20.0	16.5	µg/L	82%		9810-125	4	80-120%
Tribromoacetic acid	Standard	20.0	16.8	µg/L	84%		9810-125	4	80-120%
Tribromoacetic acid	Standard	40.0	35.8	µg/L	89%		9810-126	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9809-472	1	
Trichloroacetic acid	Matrix Spike	40.0	45.7	µg/L	114%		9809-605	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9810-123	1	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
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Mr. Bruce Northup
City of Topeka

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Trichloroacetic acid	Secondary Source Std	20.0	17.7	µg/L	89%		9810-124	1	70-130%
Trichloroacetic acid	Standard	20.0	20.5	µg/L	102%		9810-125	1	80-120%
Trichloroacetic acid	Standard	20.0	20.5	µg/L	102%		9810-125	1	80-120%
Trichloroacetic acid	Standard	40.0	39.1	µg/L	98%		9810-126	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-233-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	15.0	14.1	µg/L		6.2%	9810-250	1		
Bromochloroacetic acid	Matrix Spike	40.0	38.5	µg/L	96%		9809-538	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9810-253	1		
Bromochloroacetic acid	Secondary Source Std	20.0	19.8	µg/L	99%		9810-254	1	70-130%	
Bromochloroacetic acid	Standard	20.0	18.2	µg/L	91%		9810-255	1	80-120%	
Bromochloroacetic acid	Standard	20.0	18.4	µg/L	92%		9810-255	1	80-120%	
Bromochloroacetic acid	Standard	40.0	38.7	µg/L	97%		9810-256	1	80-120%	
Bromodichloroacetic acid	Duplicate	5.4	6.2	µg/L		13.8%	9810-250	1		
Bromodichloroacetic acid	Matrix Spike	40.0	40.7	µg/L	102%		9809-538	1		
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9810-253	1		
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9810-254	1	70-130%	
Bromodichloroacetic acid	Standard	20.0	17.3	µg/L	86%		9810-255	1	80-120%	
Bromodichloroacetic acid	Standard	20.0	18.7	µg/L	93%		9810-255	1	80-120%	
Bromodichloroacetic acid	Standard	40.0	42.6	µg/L	106%		9810-256	1	80-120%	
Chlorodibromoacetic acid	Duplicate	2.0	2.3	µg/L		14.0%	9810-250	2		
Chlorodibromoacetic acid	Matrix Spike	40.0	35.9	µg/L	90%		9809-538	2		
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9810-253	2		
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9810-254	2	70-130%	
Chlorodibromoacetic acid	Standard	20.0	17.2	µg/L	86%		9810-255	2	80-120%	
Chlorodibromoacetic acid	Standard	20.0	18.7	µg/L	93%		9810-255	2	80-120%	
Chlorodibromoacetic acid	Standard	40.0	43.5	µg/L	109%		9810-256	2	80-120%	
Dibromoacetic acid	Duplicate	6.9	6.5	µg/L		6.0%	9810-250	1		
Dibromoacetic acid	Matrix Spike	40.0	38.3	µg/L	96%		9809-538	1		
Dibromoacetic acid	Method Blank		ND*	µg/L			9810-253	1		
Dibromoacetic acid	Secondary Source Std	20.0	21.9	µg/L	110%		9810-254	1	70-130%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Mr. Bruce Northup
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Dibromoacetic acid	Standard	20.0	17.9	µg/L	89%		9810-255	1	80-120%
Dibromoacetic acid	Standard	20.0	18.2	µg/L	91%		9810-255	1	80-120%
Dibromoacetic acid	Standard	40.0	38.8	µg/L	97%		9810-256	1	80-120%
Dichloroacetic acid	Duplicate	44.7	41.9	µg/L		6.5%	9810-250	1	
Dichloroacetic acid	Matrix Spike	40.0	39.1	µg/L	98%		9809-538	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9810-253	1	
Dichloroacetic acid	Secondary Source Std	20.0	19.6	µg/L	98%		9810-254	1	70-130%
Dichloroacetic acid	Standard	20.0	18.2	µg/L	91%		9810-255	1	80-120%
Dichloroacetic acid	Standard	20.0	18.2	µg/L	91%		9810-255	1	80-120%
Dichloroacetic acid	Standard	40.0	37.8	µg/L	94%		9810-256	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9810-250	1	
Monobromoacetic acid	Matrix Spike	40.0	43.2	µg/L	108%		9809-538	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9810-253	1	
Monobromoacetic acid	Secondary Source Std	20.0	22.2	µg/L	111%		9810-254	1	70-130%
Monobromoacetic acid	Standard	20.0	21.1	µg/L	106%		9810-255	1	80-120%
Monobromoacetic acid	Standard	20.0	20.9	µg/L	104%		9810-255	1	80-120%
Monobromoacetic acid	Standard	40.0	38.0	µg/L	95%		9810-256	1	80-120%
Monochloroacetic acid	Duplicate	4.7	4.9	µg/L		4.2%	9810-250	2	
Monochloroacetic acid	Matrix Spike	40.0	41.8	µg/L	104%		9809-538	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9810-253	2	
Monochloroacetic acid	Secondary Source Std	20.0	22.7	µg/L	114%		9810-254	2	70-130%
Monochloroacetic acid	Standard	20.0	21.5	µg/L	108%		9810-255	2	80-120%
Monochloroacetic acid	Standard	20.0	22.3	µg/L	112%		9810-255	2	80-120%
Monochloroacetic acid	Standard	40.0	38.9	µg/L	97%		9810-256	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9810-250	4	
Tribromoacetic acid	Matrix Spike	40.0	35.0	µg/L	88%		9809-538	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9810-253	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9810-254	4	70-130%
Tribromoacetic acid	Standard	20.0	17.9	µg/L	89%		9810-255	4	80-120%
Tribromoacetic acid	Standard	20.0	19.2	µg/L	96%		9810-255	4	80-120%
Tribromoacetic acid	Standard	40.0	43.0	µg/L	108%		9810-256	4	80-120%
Trichloroacetic acid	Duplicate	31.9	30.2	µg/L		5.5%	9810-250	1	
Trichloroacetic acid	Matrix Spike	40.0	37.0	µg/L	93%		9809-538	1	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

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Mr. Bruce Northup
City of Topeka

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Trichloroacetic acid	Method Blank		ND*	µg/L		9810-253	1	
Trichloroacetic acid	Secondary Source Std	20.0	23.2	µg/L	116%	9810-254	1	70-130%
Trichloroacetic acid	Standard	20.0	17.4	µg/L	87%	9810-255	1	80-120%
Trichloroacetic acid	Standard	20.0	17.7	µg/L	89%	9810-255	1	80-120%
Trichloroacetic acid	Standard	40.0	38.8	µg/L	97%	9810-256	1	80-120%

End of quality control report

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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QC Results from Montgomery Watson Laboratories

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Topeka, KS 66606

Study#: 136
Study Title: ICR RSSCT #3

Phone: 785-368-3882 Fax: 785-368-3869

QC Batch ID: 84102 **Report #:** 47015, 47016

Analysis: CA **Method:** EPA/ML 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Calcium, Total, ICAP	50	50.8	102.0%		(85 - 115)
LCS2	Calcium, Total, ICAP	50	50.9	102.0%		(85 - 115)
MBLK	Calcium, Total, ICAP	ND	ND			
MS	Calcium, Total, ICAP	50	53.2	106.0%		(70 - 130)

QC Batch ID: 84192 **Report #:** 47015, 47016

Analysis: MG **Method:** ML/EPA 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Magnesium, Total, ICAP	20	20.2	101.0%		(85 - 115)
LCS2	Magnesium, Total, ICAP	20	20.3	102.0%		(85 - 115)
MBLK	Magnesium, Total, ICAP	ND	ND			
MS	Magnesium, Total, ICAP	20	21.7	108.0%		(70 - 130)

QC Batch ID: 84241 **Report #:** 47015, 47016

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	1.11	111.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	1.01	101.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			
MS	Ammonia Nitrogen	1	0.91	91.0%		(80 - 120)
MS	Ammonia Nitrogen	1.5	1.47	98.0%		(80 - 120)
MSD	Ammonia Nitrogen	1	0.92	92.0%		(80 - 120)
MSD	Ammonia Nitrogen	1.5	1.47	98.0%		(80 - 120)

QC Batch ID: 84247 **Report #:** 47015, 47016

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.02	100.0%		(50 - 150)

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

QC Results from Montgomery Watson Laboratories

Mr. Bruce Northup
City of Topeka

Study#: 136
Study Title: ICR RSSCT #3

LCS2	Bromide	0.1	0.101	101.0%	(90 - 110)
MBLK	Bromide	ND	ND		(70 - 130)
MS	Bromide	0.02	0.015	75.0%	(80 - 120)

QC Batch ID: 84900 **Report #:** 47469

Analysis: CA **Method:** EPA/ML 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Calcium, Total, ICAP	50	48.9	98.0%		(85 - 115)
LCS2	Calcium, Total, ICAP	50	49.1	98.0%		(85 - 115)
MBLK	Calcium, Total, ICAP	ND	ND			
MS	Calcium, Total, ICAP	50	50.8	102.0%		(70 - 130)

QC Batch ID: 84902 **Report #:** 47469

Analysis: MG **Method:** ML/EPA 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Magnesium, Total, ICAP	20	19.2	96.0%		(85 - 115)
LCS2	Magnesium, Total, ICAP	20	19.3	96.0%		(85 - 115)
MBLK	Magnesium, Total, ICAP	ND	ND			
MS	Magnesium, Total, ICAP	20	20.6	103.0%		(70 - 130)

QC Batch ID: 85042 **Report #:** 47469

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	1.03	103.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	1.06	106.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			
MS	Ammonia Nitrogen	1	1.16	116.0%		(80 - 120)
MSD	Ammonia Nitrogen	1	1.15	115.0%		(80 - 120)

QC Batch ID: 85090 **Report #:** 47469

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.023	115.0%		(50 - 150)
LCS2	Bromide	0.1	0.102	102.0%		(90 - 110)
MBLK	Bromide	ND	ND			(70 - 130)
MS	Bromide	0.1	0.101	101.0%		(80 - 120)
MSD	Bromide	0.1	0.105	105.0%		(80 - 120)

End of MW QC report

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

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Comments

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Study#: 136
Study Title: ICR RSSCT #3

Study comments

Sample 9809-138 taken 4 hours after the run ended. Temperature and pH were not measured.

The 20-minute RSSCT was stopped according to the 2 month, change less than 10% of influent provision of the ICR.

After a short power outage on 9/30/98, the incubation bath circulators did not restart affecting the SDS temperature of samples 9809-115 and 9809-138. This was corrected after 14 hours.

Analysis comments

Analysis: Turbidity
Method: SM 2130 B

Reported turbidity data has been rounded following the requirements of SM 2130 B, reproduced in the table below (Standard Methods, 1995). Note that the reported digits are not necessarily significant.

Turbidity Range	Report to Nearest
0-1.0	0.05
1-10	0.1
10-40	1
40-100	5
100-400	10
400-1000	50
> 1000	100

End of comments

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237
Phone: (513) 679-2200
Fax: (513) 679-2201

Laboratory Report

Client:

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study Title: ICR RSSCT #4

Study #: 184

Reviewed By: _____
Stuart M. Hooper

Date Reviewed: 7/13/99

Electronic copies of the results and quality control data are available upon request.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237
Phone: (513) 679-2200
Fax: (513) 679-2201

Laboratory Test Results

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 184
Study Title: ICR RSSCT #4

Sample ID: Topeka. Settled **S&H ID:** 9811-319 **Date Sampled:** 11/16/98 10:00:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1	TOC-ICR	TOC	3.24	mg/L	SM 5310 C	1	0.50	11/16/98		11/17/98	7-0-465
2	TOC-ICR	TOC (Dupl)	3.34	mg/L	SM 5310 C	1	0.50	11/16/98		11/17/98	7-0-465
			3.29	**mg/L**	**3.0 % RPD**						

Sample ID: Top.Raw **S&H ID:** 9811-337 **Date Sampled:** 11/17/98 10:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
3	TOC-ICR	TOC	4.87	mg/L	SM 5310 C	1	0.50	11/17/98		11/19/98	7-0-467

Sample ID: Top.Settled.Drum **S&H ID:** 9811-338 **Date Sampled:** 11/17/98 9:45:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
4	TOC-ICR	TOC	2.74	mg/L	SM 5310 C	1	0.50	11/17/98		11/19/98	7-0-467
5	TOC-ICR	TOC (Dupl)	2.77	mg/L	SM 5310 C	1	0.50	11/17/98		11/19/98	7-0-467
			2.75	**mg/L**	**1.1 % RPD**						

Sample ID: Top.Settled on Arrival **S&H ID:** 9811-347 **Date Sampled:** 11/19/98

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
6	TOC-ICR	TOC	2.84	mg/L	SM 5310 C	1	0.50	11/19/98		11/19/98	7-0-467
7	TOC-ICR	TOC (Dupl)	2.81	mg/L	SM 5310 C	1	0.50	11/19/98		11/19/98	7-0-467
			2.83	**mg/L**	**1.1 % RPD**						

Sample ID: Top.Filtered.S&H **S&H ID:** 9811-348 **Date Sampled:** 11/19/98

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
8	TOC-ICR	TOC	2.79	mg/L	SM 5310 C	1	0.50	11/19/98		11/19/98	7-0-467
9	TOC-ICR	TOC (Dupl)	2.81	mg/L	SM 5310 C	1	0.50	11/19/98		11/19/98	7-0-467
			2.80	**mg/L**	**0.7 % RPD**						

Sample ID: 184.10.Eff-1 **S&H ID:** 9811-373 **Date Sampled:** 11/19/98 11:44:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
10	Cl2Dose	Chlorine Dose	1.52	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/23/98		11/23/98	n/a
11	Cl2Res	Chlorine Residual	0.82	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/23/98		11/25/98	n/a
12	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	102.0	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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13	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.4	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
14	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
15	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
16	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
17	HAA-ICR	Dibromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
18	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
19	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
20	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
21	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/25/98	12/1/98	12/2/98	0-273-0
22	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
23	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/25/98	n/a
24	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
25	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/19/98		11/19/98	n/a
26	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/23/98		11/25/98	n/a
27	TEMP	Temperature	22.2	ºC	SM 2550 B	1	n/a	11/19/98		11/19/98	n/a
28	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/23/98		11/25/98	n/a
29	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	11/19/98		11/20/98	7-0-468
30	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	11/19/98		11/20/98	7-0-468
			ND	**mg/L**							
31	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
32	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
			ND	**µg Cl-/L**							
33	THM-ICR	1,2,3-Trichloropropane (Surrogate)	90.8	%	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
34	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
35	THM-ICR	Bromoform	1.6	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
36	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
37	THM-ICR	Dibromochloromethane	1.1	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
38	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	11/19/98		11/20/98	8-0-366
39	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	11/19/98		11/20/98	8-0-366
			ND	**1/cm**							

Sample ID: 184.10.Eff-5 **S&H ID:** 9811-377 **Date Sampled:** 11/21/98 7:12:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
40	Cl2Dose	Chlorine Dose	1.66	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/23/98		11/23/98	n/a
41	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/23/98		11/25/98	n/a
42	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	106.4	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
43	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

44	HAA-ICR	Bromochloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
45	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
46	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
47	HAA-ICR	Dibromoacetic acid	2.4	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
48	HAA-ICR	Dichloroacetic acid	2.3	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
49	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
50	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
51	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/25/98	12/1/98	12/2/98	0-273-0
52	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
53	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/25/98	n/a
54	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
55	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/21/98		11/21/98	n/a
56	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/23/98		11/25/98	n/a
57	TEMP	Temperature	21.0	ºC	SM 2550 B	1	n/a	11/21/98		11/21/98	n/a
58	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/23/98		11/25/98	n/a
59	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
60	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
			ND	**mg/L**							
61	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
62	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
			ND	**µg Cl-/L**							
63	THM-ICR	1,2,3-Trichloropropane (Surrogate)	91.6	%	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
64	THM-ICR	Bromodichloromethane	2.6	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
65	THM-ICR	Bromoform	7.6	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
66	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
67	THM-ICR	Dibromochloromethane	6.7	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
68	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	11/21/98		11/21/98	8-0-367
69	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	11/21/98		11/21/98	8-0-367
			ND	**1/cm**							

Sample ID: 184.10.Eff-6 **S&H ID:** 9811-378 **Date Sampled:** 11/21/98 2:17:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
70	Cl2Dose	Chlorine Dose	1.75	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/23/98		11/23/98	n/a
71	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/23/98		11/25/98	n/a
72	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.4	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
73	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.8	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
74	HAA-ICR	Bromochloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
75	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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76	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
77	HAA-ICR	Dibromoacetic acid	3.0	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
78	HAA-ICR	Dichloroacetic acid	6.9	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
79	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
80	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
81	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/25/98	12/1/98	12/2/98	0-273-0
82	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
83	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/25/98	n/a
84	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
85	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/21/98		11/21/98	n/a
86	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/23/98		11/25/98	n/a
87	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	11/21/98		11/21/98	n/a
88	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/23/98		11/25/98	n/a
89	TOC-ICR	TOC	0.56	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
90	TOC-ICR	TOC (Dupl)	0.55	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
			0.56	**mg/L**	**1.8 % RPD**						
91	TOX-ICR	TOX	34	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
92	TOX-ICR	TOX (Dupl)	34	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
			34	**µg Cl-/L**	**0.0 % RPD**						
93	THM-ICR	1,2,3-Trichloropropane (Surrogate)	84.4	%	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
94	THM-ICR	Bromodichloromethane	4.1	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
95	THM-ICR	Bromoform	9.0	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
96	THM-ICR	Chloroform	1.5	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
97	THM-ICR	Dibromochloromethane	9.7	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
98	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	11/21/98		11/22/98	8-0-368
99	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	11/21/98		11/22/98	8-0-368
			ND	**1/cm**							

Sample ID: 184.10.Eff-7 **S&H ID:** 9811-379 **Date Sampled:** 11/21/98 9:08:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
100	Cl2Dose	Chlorine Dose	1.83	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/25/98		11/25/98	n/a
101	Cl2Res	Chlorine Residual	0.73	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/25/98		11/27/98	n/a
102	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.6	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
103	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
104	HAA-ICR	Bromochloroacetic acid	2.3	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
105	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
106	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
107	HAA-ICR	Dibromoacetic acid	3.3	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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108	HAA-ICR	Dichloroacetic acid	7.6	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
109	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
110	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
111	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/27/98	12/1/98	12/2/98	0-273-0
112	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
113	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/27/98	n/a
114	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
115	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/21/98		11/21/98	n/a
116	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/25/98		11/27/98	n/a
117	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	11/21/98		11/21/98	n/a
118	TIME	Cl2 Incubation Time	47.8	hrs	n/a	1	n/a	11/25/98		11/27/98	n/a
119	TOC-ICR	TOC	0.66	mg/L	SM 5310 C	1	0.50	11/21/98		11/22/98	7-0-470
120	TOC-ICR	TOC (Dupl)	0.68	mg/L	SM 5310 C	1	0.50	11/21/98		11/22/98	7-0-470
			0.67	**mg/L**	**3.0 % RPD**						
121	TOX-ICR	TOX	43	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
122	TOX-ICR	TOX (Dupl)	45	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
			44	**µg Cl-/L**	**4.5 % RPD**						
123	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.6	%	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
124	THM-ICR	Bromodichloromethane	6.0	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
125	THM-ICR	Bromoform	10.7	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
126	THM-ICR	Chloroform	2.1	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
127	THM-ICR	Dibromochloromethane	13.1	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
128	UV-ICR	UV	0.011	1/cm	SM 5910 B	1	0.009	11/21/98		11/22/98	8-0-368
129	UV-ICR	UV (Dupl)	0.011	1/cm	SM 5910 B	1	0.009	11/21/98		11/22/98	8-0-368
			0.011	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-8 **S&H ID:** 9811-380 **Date Sampled:** 11/22/98 4:01:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
130	Cl2Dose	Chlorine Dose	1.94	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/25/98		11/25/98	n/a
131	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/25/98		11/27/98	n/a
132	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.6	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
133	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.8	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
134	HAA-ICR	Bromochloroacetic acid	3.5	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
135	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
136	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
137	HAA-ICR	Dibromoacetic acid	4.1	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
138	HAA-ICR	Dichloroacetic acid	7.5	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
139	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

140	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
141	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/27/98	12/1/98	12/2/98	0-273-0
142	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
143	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/27/98	n/a
144	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
145	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/22/98		11/22/98	n/a
146	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/25/98		11/27/98	n/a
147	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	11/22/98		11/22/98	n/a
148	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	11/25/98		11/27/98	n/a
149	TOC-ICR	TOC	0.82	mg/L	SM 5310 C	1	0.50	11/22/98		11/22/98	7-0-470
150	TOC-ICR	TOC (Dupl)	0.83	mg/L	SM 5310 C	1	0.50	11/22/98		11/22/98	7-0-470
			0.82	**mg/L**	**1.2 % RPD**						
151	TOX-ICR	TOX	52	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
152	TOX-ICR	TOX (Dupl)	54	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
			53	**µg Cl-/L**	**3.8 % RPD**						
153	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.6	%	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
154	THM-ICR	Bromodichloromethane	8.3	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
155	THM-ICR	Bromoform	10.2	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
156	THM-ICR	Chloroform	3.2	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
157	THM-ICR	Dibromochloromethane	15.5	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
158	UV-ICR	UV	0.013	1/cm	SM 5910 B	1	0.009	11/22/98		11/22/98	8-0-368
159	UV-ICR	UV (Dupl)	0.013	1/cm	SM 5910 B	1	0.009	11/22/98		11/22/98	8-0-368
			0.013	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-10 **S&H ID:** 9811-382 **Date Sampled:** 11/22/98 4:46:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
160	Cl2Dose	Chlorine Dose	2.07	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/25/98		11/25/98	n/a
161	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/25/98		11/27/98	n/a
162	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	94.8	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
163	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
164	HAA-ICR	Bromochloroacetic acid	4.6	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
165	HAA-ICR	Bromodichloroacetic acid	1.3	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
166	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
167	HAA-ICR	Dibromoacetic acid	4.8	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
168	HAA-ICR	Dichloroacetic acid	7.1	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
169	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
170	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
171	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/27/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

172	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
173	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/27/98	n/a
174	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
175	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/22/98		11/22/98	n/a
176	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/25/98		11/27/98	n/a
177	TEMP	Temperature	21.8	ºC	SM 2550 B	1	n/a	11/22/98		11/22/98	n/a
178	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	11/25/98		11/27/98	n/a
179	TOC-ICR	TOC	1.04	mg/L	SM 5310 C	1	0.50	11/22/98		11/22/98	7-0-470
180	TOC-ICR	TOC (Dupl)	1.02	mg/L	SM 5310 C	1	0.50	11/22/98		11/22/98	7-0-470
			1.03	**mg/L**	**1.9 % RPD**						
181	TOX-ICR	TOX	67	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
182	TOX-ICR	TOX (Dupl)	68	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
			68	**µg Cl-/L**	**1.5 % RPD**						
183	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.0	%	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
184	THM-ICR	Bromodichloromethane	11.2	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
185	THM-ICR	Bromoform	8.6	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
186	THM-ICR	Chloroform	5.2	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
187	THM-ICR	Dibromochloromethane	17.2	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
188	UV-ICR	UV	0.017	1/cm	SM 5910 B	1	0.009	11/22/98		11/23/98	8-0-369
189	UV-ICR	UV (Dupl)	0.017	1/cm	SM 5910 B	1	0.009	11/22/98		11/23/98	8-0-369
			0.017	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-12 **S&H ID:** 9811-384 **Date Sampled:** 11/23/98 6:38:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
190	Cl2Dose	Chlorine Dose	2.18	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
191	Cl2Res	Chlorine Residual	0.95	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
192	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	111.6	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
193	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.4	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
194	HAA-ICR	Bromochloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
195	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
196	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/8/98	0-280-0
197	HAA-ICR	Dibromoacetic acid	5.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
198	HAA-ICR	Dichloroacetic acid	7.4	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
199	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
200	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/8/98	0-280-0
201	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/7/98	12/8/98	0-280-0
202	HAA-ICR	Trichloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
203	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

204	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
205	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
206	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
207	TEMP	Temperature	21.6	ºC	SM 2550 B	1	n/a	11/23/98		11/23/98	n/a
208	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
209	TOC-ICR	TOC	1.19	mg/L	SM 5310 C	1	0.50	11/23/98		11/23/98	7-0-471
210	TOC-ICR	TOC (Dupl)	1.23	mg/L	SM 5310 C	1	0.50	11/23/98		11/23/98	7-0-471
			1.21	**mg/L**	**3.3 % RPD**						
211	TOX-ICR	TOX	83	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
212	TOX-ICR	TOX (Dupl)	83	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			83	**µg Cl-/L**	**0.0 % RPD**						
213	THM-ICR	1,2,3-Trichloropropane (Surrogate)	96.0	%	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
214	THM-ICR	Bromodichloromethane	14.2	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
215	THM-ICR	Bromoform	7.1	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
216	THM-ICR	Chloroform	7.9	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
217	THM-ICR	Dibromochloromethane	18.1	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
218	UV-ICR	UV	0.020	1/cm	SM 5910 B	1	0.009	11/23/98		11/23/98	8-0-370
219	UV-ICR	UV (Dupl)	0.020	1/cm	SM 5910 B	1	0.009	11/23/98		11/23/98	8-0-370
			0.020	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-14 **S&H ID:** 9811-386 **Date Sampled:** 11/24/98 4:11:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
220	Cl2Dose	Chlorine Dose	2.26	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
221	Cl2Res	Chlorine Residual	0.81	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
222	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	105.6	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
223	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
224	HAA-ICR	Bromochloroacetic acid	6.1	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
225	HAA-ICR	Bromodichloroacetic acid	1.8	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
226	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/8/98	0-280-0
227	HAA-ICR	Dibromoacetic acid	5.8	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
228	HAA-ICR	Dichloroacetic acid	7.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
229	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
230	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/8/98	0-280-0
231	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/7/98	12/8/98	0-280-0
232	HAA-ICR	Trichloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
233	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
234	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
235	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/24/98		11/24/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

236	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
237	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	11/24/98		11/24/98	n/a
238	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
239	TOC-ICR	TOC	1.30	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
240	TOC-ICR	TOC (Dupl)	1.32	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
			1.31	**mg/L**	**1.5 % RPD**						
241	TOX-ICR	TOX	96	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
242	TOX-ICR	TOX (Dupl)	96	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			96	**µg Cl-/L**	**0.0 % RPD**						
243	THM-ICR	1,2,3-Trichloropropane (Surrogate)	90.0	%	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
244	THM-ICR	Bromodichloromethane	16.1	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
245	THM-ICR	Bromoform	5.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
246	THM-ICR	Chloroform	10.7	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
247	THM-ICR	Dibromochloromethane	18.3	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
248	UV-ICR	UV	0.023	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
249	UV-ICR	UV (Dupl)	0.023	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
			0.023	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-16 **S&H ID:** 9811-388 **Date Sampled:** 11/24/98 6:29:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
250	Cl2Dose	Chlorine Dose	2.39	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
251	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
252	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	107.2	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
253	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.6	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
254	HAA-ICR	Bromochloroacetic acid	6.5	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
255	HAA-ICR	Bromodichloroacetic acid	1.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
256	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/8/98	0-280-0
257	HAA-ICR	Dibromoacetic acid	5.0	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
258	HAA-ICR	Dichloroacetic acid	9.1	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
259	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
260	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/8/98	0-280-0
261	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/7/98	12/8/98	0-280-0
262	HAA-ICR	Trichloroacetic acid	5.7	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/8/98	0-280-0
263	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
264	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
265	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	11/24/98		11/24/98	n/a
266	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

267	TEMP	Temperature	23.9	ºC	SM 2550 B	1	n/a	11/24/98		11/24/98	n/a
268	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
269	TOC-ICR	TOC	1.50	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
270	TOC-ICR	TOC (Dupl)	1.54	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
			1.52	**mg/L**	**2.6 % RPD**						
271	TOX-ICR	TOX	114	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
272	TOX-ICR	TOX (Dupl)	110	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			112	**µg Cl-/L**	**3.6 % RPD**						
273	THM-ICR	1,2,3-Trichloropropane (Surrogate)	93.2	%	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
274	THM-ICR	Bromodichloromethane	19.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
275	THM-ICR	Bromoform	5.1	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
276	THM-ICR	Chloroform	16.4	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
277	THM-ICR	Dibromochloromethane	19.9	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/4/98	0-279-0
278	UV-ICR	UV	0.027	1/cm	SM 5910 B	1	0.009	11/24/98		11/25/98	8-0-374
279	UV-ICR	UV (Dupl)	0.027	1/cm	SM 5910 B	1	0.009	11/24/98		11/25/98	8-0-374
			0.027	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-21 **S&H ID:** 9811-393 **Date Sampled:** 11/26/98 5:43:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
280	Cl2Dose	Chlorine Dose	2.51	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
281	Cl2Res	Chlorine Residual	0.84	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
282	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	112.8	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
283	HAA-ICR	2-Bromopropionic acid (Surrogate)	96.0	%	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
284	HAA-ICR	Bromochloroacetic acid	6.8	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
285	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
286	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/9/98	0-280-0
287	HAA-ICR	Dibromoacetic acid	4.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
288	HAA-ICR	Dichloroacetic acid	10.4	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
289	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
290	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/7/98	12/9/98	0-280-0
291	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/7/98	12/9/98	0-280-0
292	HAA-ICR	Trichloroacetic acid	5.4	µg/L	EPA 552.2	1	1.0	11/29/98	12/7/98	12/9/98	0-280-0
293	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
294	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
295	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/26/98		11/26/98	n/a
296	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
297	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	11/26/98		11/26/98	n/a
298	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

299	TOC-ICR	TOC	1.68	mg/L	SM 5310 C	1	0.50	11/26/98		11/26/98	7-0-474
300	TOC-ICR	TOC (Dupl)	1.75	mg/L	SM 5310 C	1	0.50	11/26/98		11/26/98	7-0-474
			1.71	**mg/L**	**4.1 % RPD**						
301	TOX-ICR	TOX	127	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/7/98	12-0-257
302	TOX-ICR	TOX (Dupl)	126	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/7/98	12-0-257
			127	**µg Cl-/L**	**0.8 % RPD**						
303	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.8	%	EPA 551.1	1	1.0	11/29/98	12/4/98	12/5/98	0-279-0
304	THM-ICR	Bromodichloromethane	20.0	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/5/98	0-279-0
305	THM-ICR	Bromoform	3.5	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/5/98	0-279-0
306	THM-ICR	Chloroform	19.2	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/5/98	0-279-0
307	THM-ICR	Dibromochloromethane	16.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/4/98	12/5/98	0-279-0
308	UV-ICR	UV	0.032	1/cm	SM 5910 B	1	0.009	11/26/98		11/26/98	8-0-376
309	UV-ICR	UV (Dupl)	0.032	1/cm	SM 5910 B	1	0.009	11/26/98		11/26/98	8-0-376
			0.032	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-23 **S&H ID:** 9811-395 **Date Sampled:** 11/27/98 11:55:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
310	Cl2Dose	Chlorine Dose	2.59	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/30/98		11/30/98	n/a
311	Cl2Res	Chlorine Residual	0.88	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/30/98		12/2/98	n/a
312	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.4	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
313	HAA-ICR	2-Bromopropionic acid (Surrogate)	101.6	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
314	HAA-ICR	Bromochloroacetic acid	7.8	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
315	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
316	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
317	HAA-ICR	Dibromoacetic acid	4.9	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
318	HAA-ICR	Dichloroacetic acid	10.4	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
319	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
320	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
321	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/2/98	12/10/98	12/11/98	0-286-0
322	HAA-ICR	Trichloroacetic acid	6.6	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
323	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		12/2/98	n/a
324	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
325	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
326	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/30/98		12/2/98	n/a
327	TEMP	Temperature	21.9	ºC	SM 2550 B	1	n/a	11/27/98		11/27/98	n/a
328	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/30/98		12/2/98	n/a
329	TOC-ICR	TOC	1.91	mg/L	SM 5310 C	1	0.50	11/27/98		11/28/98	7-0-475
330	TOC-ICR	TOC (Dupl)	1.93	mg/L	SM 5310 C	1	0.50	11/27/98		11/28/98	7-0-475

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

			1.92	**mg/L**	**1.0 % RPD**						
331	TOX-ICR	TOX	164	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
332	TOX-ICR	TOX (Dupl)	144	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
			154	**µg Cl-/L**	**13.0 % RPD**						
333	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.4	%	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
334	THM-ICR	Bromodichloromethane	22.3	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
335	THM-ICR	Bromoform	3.7	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
336	THM-ICR	Chloroform	24.3	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
337	THM-ICR	Dibromochloromethane	17.7	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
338	UV-ICR	UV	0.037	1/cm	SM 5910 B	1	0.009	11/27/98		11/28/98	8-0-378
339	UV-ICR	UV (Dupl)	0.037	1/cm	SM 5910 B	1	0.009	11/27/98		11/28/98	8-0-378
			0.037	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-25 **S&H ID:** 9811-397 **Date Sampled:** 11/29/98 3:52:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
340	Cl2Dose	Chlorine Dose	2.70	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/30/98		11/30/98	n/a
341	Cl2Res	Chlorine Residual	0.80	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/30/98		12/2/98	n/a
342	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.0	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
343	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
344	HAA-ICR	Bromochloroacetic acid	8.0	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
345	HAA-ICR	Bromodichloroacetic acid	3.0	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
346	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
347	HAA-ICR	Dibromoacetic acid	4.8	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
348	HAA-ICR	Dichloroacetic acid	11.2	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
349	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
350	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
351	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/2/98	12/10/98	12/11/98	0-286-0
352	HAA-ICR	Trichloroacetic acid	7.0	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
353	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		12/2/98	n/a
354	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
355	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/29/98		11/29/98	n/a
356	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/30/98		12/2/98	n/a
357	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	11/29/98		11/29/98	n/a
358	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/30/98		12/2/98	n/a
359	TOC-ICR	TOC	2.03	mg/L	SM 5310 C	1	0.50	11/29/98		11/29/98	7-0-476
360	TOC-ICR	TOC (Dupl)	2.10	mg/L	SM 5310 C	1	0.50	11/29/98		11/29/98	7-0-476
			2.06	**mg/L**	**3.4 % RPD**						
361	TOX-ICR	TOX	152	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

362	TOX-ICR	TOX (Dupl)	158	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
			155	**µg Cl-/L**	**3.9 % RPD**						
363	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.8	%	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
364	THM-ICR	Bromodichloromethane	22.8	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
365	THM-ICR	Bromoform	3.1	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
366	THM-ICR	Chloroform	27.1	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
367	THM-ICR	Dibromochloromethane	17.1	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
368	UV-ICR	UV	0.040	1/cm	SM 5910 B	1	0.009	11/29/98		11/29/98	8-0-380
369	UV-ICR	UV (Dupl)	0.040	1/cm	SM 5910 B	1	0.009	11/29/98		11/29/98	8-0-380
			0.040	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-27 **S&H ID:** 9811-399 **Date Sampled:** 11/30/98 8:06:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
370	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
371	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	11/30/98		11/30/98	n/a
372	TOC-ICR	TOC	2.17	mg/L	SM 5310 C	1	0.50	11/30/98		11/30/98	7-0-477
373	TOC-ICR	TOC (Dupl)	2.19	mg/L	SM 5310 C	1	0.50	11/30/98		11/30/98	7-0-477
			2.18	**mg/L**	**0.9 % RPD**						
374	UV-ICR	UV	0.042	1/cm	SM 5910 B	1	0.009	11/30/98		11/30/98	8-0-381
375	UV-ICR	UV (Dupl)	0.042	1/cm	SM 5910 B	1	0.009	11/30/98		11/30/98	8-0-381
			0.042	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-6d **S&H ID:** 9811-403 **Date Sampled:** 11/21/98 2:17:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
376	Cl2Dose	Chlorine Dose	1.75	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/23/98		11/23/98	n/a
377	Cl2Res	Chlorine Residual	0.72	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/23/98		11/25/98	n/a
378	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.8	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
379	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
380	HAA-ICR	Bromochloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
381	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
382	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
383	HAA-ICR	Dibromoacetic acid	2.8	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
384	HAA-ICR	Dichloroacetic acid	7.0	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
385	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
386	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
387	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/25/98	12/1/98	12/2/98	0-273-0
388	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
389	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/25/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

390	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
391	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/21/98		11/21/98	n/a
392	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/23/98		11/25/98	n/a
393	TEMP	Temperature	21.2	ºC	SM 2550 B	1	n/a	11/21/98		11/21/98	n/a
394	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/23/98		11/25/98	n/a
395	TOC-ICR	TOC	0.54	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
396	TOC-ICR	TOC (Dupl)	0.54	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
			0.54	**mg/L**	**0.0 % RPD**						
397	TOX-ICR	TOX	34	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
398	TOX-ICR	TOX (Dupl)	32	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
			33	**µg Cl-/L**	**6.1 % RPD**						
399	THM-ICR	1,2,3-Trichloropropane (Surrogate)	88.4	%	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
400	THM-ICR	Bromodichloromethane	4.3	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
401	THM-ICR	Bromoform	9.2	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
402	THM-ICR	Chloroform	1.6	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
403	THM-ICR	Dibromochloromethane	9.9	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
404	UV-ICR	UV	0.009	1/cm	SM 5910 B	1	0.009	11/21/98		11/22/98	8-0-368
405	UV-ICR	UV (Dupl)	0.009	1/cm	SM 5910 B	1	0.009	11/21/98		11/22/98	8-0-368
			0.009	**1/cm**	**0.0 % RPD**						

Sample ID: 184.10.Eff-14d **S&H ID:** 9811-406 **Date Sampled:** 11/24/98 4:11:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
406	Cl2Dose	Chlorine Dose	2.26	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
407	Cl2Res	Chlorine Residual	0.77	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
408	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.0	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
409	HAA-ICR	2-Bromopropionic acid (Surrogate)	101.2	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
410	HAA-ICR	Bromochloroacetic acid	6.0	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
411	HAA-ICR	Bromodichloroacetic acid	1.5	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
412	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
413	HAA-ICR	Dibromoacetic acid	5.5	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
414	HAA-ICR	Dichloroacetic acid	8.4	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
415	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
416	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
417	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/10/98	12/10/98	0-286-0
418	HAA-ICR	Trichloroacetic acid	5.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
419	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
420	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
421	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/24/98		11/24/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

422	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
423	TEMP	Temperature	21.3	ºC	SM 2550 B	1	n/a	11/24/98		11/24/98	n/a
424	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
425	TOC-ICR	TOC	1.33	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
426	TOC-ICR	TOC (Dupl)	1.30	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
			1.31	**mg/L**	**2.3 % RPD**						
427	TOX-ICR	TOX	99	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
428	TOX-ICR	TOX (Dupl)	95	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			97	**µg Cl-/L**	**4.1 % RPD**						
429	THM-ICR	1,2,3-Trichloropropane (Surrogate)	99.2	%	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
430	THM-ICR	Bromodichloromethane	16.3	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
431	THM-ICR	Bromoform	6.6	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
432	THM-ICR	Chloroform	10.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
433	THM-ICR	Dibromochloromethane	18.3	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
434	UV-ICR	UV	0.023	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
435	UV-ICR	UV (Dupl)	0.024	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
			0.024	**1/cm**	**4.2 % RPD**						

Sample ID: 184.10.Eff-23d **S&H ID:** 9811-411 **Date Sampled:** 11/27/98 11:55:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
436	Cl2Dose	Chlorine Dose	2.59	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/30/98		11/30/98	n/a
437	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/30/98		12/2/98	n/a
438	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.0	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
439	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
440	HAA-ICR	Bromochloroacetic acid	7.3	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
441	HAA-ICR	Bromodichloroacetic acid	2.7	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
442	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
443	HAA-ICR	Dibromoacetic acid	4.5	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
444	HAA-ICR	Dichloroacetic acid	10.4	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
445	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
446	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
447	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/2/98	12/10/98	12/11/98	0-286-0
448	HAA-ICR	Trichloroacetic acid	6.5	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
449	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		12/2/98	n/a
450	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
451	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
452	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/30/98		12/2/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

453	TEMP	Temperature	21.8	ºC	SM 2550 B	1	n/a	11/27/98		11/27/98	n/a
454	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/30/98		12/2/98	n/a
455	TOC-ICR	TOC	1.89	mg/L	SM 5310 C	1	0.50	11/27/98		11/28/98	7-0-475
456	TOC-ICR	TOC (Dupl)	1.91	mg/L	SM 5310 C	1	0.50	11/27/98		11/28/98	7-0-475
			1.90	**mg/L**	**1.1 % RPD**						
457	TOX-ICR	TOX	143	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
458	TOX-ICR	TOX (Dupl)	147	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
			145	**µg Cl-/L**	**2.8 % RPD**						
459	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.2	%	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
460	THM-ICR	Bromodichloromethane	21.6	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
461	THM-ICR	Bromoform	3.5	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
462	THM-ICR	Chloroform	23.5	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
463	THM-ICR	Dibromochloromethane	17.2	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
464	UV-ICR	UV	0.037	1/cm	SM 5910 B	1	0.009	11/27/98		11/28/98	8-0-378
465	UV-ICR	UV (Dupl)	0.037	1/cm	SM 5910 B	1	0.009	11/27/98		11/28/98	8-0-378
			0.037	**1/cm**	**0.0 % RPD**						

Sample ID: 184.20.Eff-1 **S&H ID:** 9811-413 **Date Sampled:** 11/19/98 11:37:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
466	Cl2Dose	Chlorine Dose	1.47	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/23/98		11/23/98	n/a
467	Cl2Res	Chlorine Residual	0.85	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/23/98		11/25/98	n/a
468	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.0	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
469	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.6	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
470	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
471	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
472	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
473	HAA-ICR	Dibromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
474	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
475	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
476	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
477	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/25/98	12/1/98	12/2/98	0-273-0
478	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
479	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/25/98	n/a
480	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
481	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	11/19/98		11/19/98	n/a
482	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/23/98		11/25/98	n/a
483	TEMP	Temperature	22.2	ºC	SM 2550 B	1	n/a	11/19/98		11/19/98	n/a
484	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/23/98		11/25/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

485	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	11/19/98		11/20/98	7-0-468
486	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	11/19/98		11/20/98	7-0-468
			ND	**mg/L**							
487	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
488	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
			ND	**µg Cl-/L**							
489	THM-ICR	1,2,3-Trichloropropane (Surrogate)	89.6	%	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
490	THM-ICR	Bromodichloromethane	ND	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
491	THM-ICR	Bromoform	1.2	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
492	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
493	THM-ICR	Dibromochloromethane	ND	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
494	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	11/19/98		11/20/98	8-0-366
495	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	11/19/98		11/20/98	8-0-366
			ND	**1/cm**							

Sample ID: 184.20.Eff-3 **S&H ID:** 9811-415 **Date Sampled:** 11/22/98 10:33:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
496	Cl2Dose	Chlorine Dose	1.63	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/25/98		11/25/98	n/a
497	Cl2Res	Chlorine Residual	0.83	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/25/98		11/27/98	n/a
498	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.0	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
499	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.2	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
500	HAA-ICR	Bromochloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
501	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
502	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
503	HAA-ICR	Dibromoacetic acid	2.0	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
504	HAA-ICR	Dichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
505	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
506	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
507	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/27/98	12/1/98	12/2/98	0-273-0
508	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
509	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/27/98	n/a
510	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
511	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/22/98		11/22/98	n/a
512	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/25/98		11/27/98	n/a
513	TEMP	Temperature	21.7	ºC	SM 2550 B	1	n/a	11/22/98		11/22/98	n/a
514	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/25/98		11/27/98	n/a
515	TOC-ICR	TOC	ND	mg/L	SM 5310 C	1	0.50	11/22/98		11/23/98	7-0-471
516	TOC-ICR	TOC (Dupl)	ND	mg/L	SM 5310 C	1	0.50	11/22/98		11/23/98	7-0-471

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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			ND	**mg/L**							
517	TOX-ICR	TOX	ND	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/1/98	12-0-253
518	TOX-ICR	TOX (Dupl)	ND	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/1/98	12-0-253
			ND	**µg Cl-/L**							
519	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.6	%	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
520	THM-ICR	Bromodichloromethane	2.0	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
521	THM-ICR	Bromoform	7.2	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
522	THM-ICR	Chloroform	ND	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
523	THM-ICR	Dibromochloromethane	6.1	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
524	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	11/22/98		11/23/98	8-0-369
525	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	11/22/98		11/23/98	8-0-369
			ND	**1/cm**							

Sample ID: 184.20.Eff-4 **S&H ID:** 9811-416 **Date Sampled:** 11/23/98 12:44:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
526	Cl2Dose	Chlorine Dose	1.74	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/25/98		11/25/98	n/a
527	Cl2Res	Chlorine Residual	0.83	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/25/98		11/27/98	n/a
528	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	96.8	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
529	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.4	%	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
530	HAA-ICR	Bromochloroacetic acid	1.7	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
531	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
532	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
533	HAA-ICR	Dibromoacetic acid	3.2	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
534	HAA-ICR	Dichloroacetic acid	10.2	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
535	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
536	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/27/98	12/1/98	12/2/98	0-273-0
537	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/27/98	12/1/98	12/2/98	0-273-0
538	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/27/98	12/1/98	12/2/98	0-273-0
539	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/27/98	n/a
540	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
541	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
542	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/25/98		11/27/98	n/a
543	TEMP	Temperature	21.8	ºC	SM 2550 B	1	n/a	11/23/98		11/23/98	n/a
544	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/25/98		11/27/98	n/a
545	TOC-ICR	TOC	0.55	mg/L	SM 5310 C	1	0.50	11/23/98		11/23/98	7-0-471
546	TOC-ICR	TOC (Dupl)	0.53	mg/L	SM 5310 C	1	0.50	11/23/98		11/23/98	7-0-471
			0.54	**mg/L**	**3.7 % RPD**						
547	TOX-ICR	TOX	33	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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548	TOX-ICR	TOX (Dupl)	33	µg Cl-/L	SM 5320 B	1	25	11/27/98		12/2/98	12-0-254
			33	**µg Cl-/L**	**0.0 % RPD**						
549	THM-ICR	1,2,3-Trichloropropane (Surrogate)	97.6	%	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
550	THM-ICR	Bromodichloromethane	3.6	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
551	THM-ICR	Bromoform	9.0	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
552	THM-ICR	Chloroform	1.1	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
553	THM-ICR	Dibromochloromethane	9.4	µg/L	EPA 551.1	1	1.0	11/27/98	11/30/98	11/30/98	0-272-0
554	UV-ICR	UV	ND	1/cm	SM 5910 B	1	0.009	11/23/98		11/23/98	8-0-370
555	UV-ICR	UV (Dupl)	ND	1/cm	SM 5910 B	1	0.009	11/23/98		11/23/98	8-0-370
			ND	**1/cm**							

Sample ID: 184.20.Eff-7 **S&H ID:** 9811-419 **Date Sampled:** 11/24/98 10:56:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
556	Cl2Dose	Chlorine Dose	1.88	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
557	Cl2Res	Chlorine Residual	0.75	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
558	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.2	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
559	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
560	HAA-ICR	Bromochloroacetic acid	3.1	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
561	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
562	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
563	HAA-ICR	Dibromoacetic acid	4.0	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
564	HAA-ICR	Dichloroacetic acid	7.3	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
565	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
566	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
567	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/10/98	12/10/98	0-286-0
568	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
569	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
570	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
571	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/24/98		11/24/98	n/a
572	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
573	TEMP	Temperature	21.9	ºC	SM 2550 B	1	n/a	11/24/98		11/24/98	n/a
574	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
575	TOC-ICR	TOC	0.75	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
576	TOC-ICR	TOC (Dupl)	0.74	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
			0.75	**mg/L**	**1.3 % RPD**						
577	TOX-ICR	TOX	48	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
578	TOX-ICR	TOX (Dupl)	44	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			46	**µg Cl-/L**	**8.7 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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579	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.4	%	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
580	THM-ICR	Bromodichloromethane	6.4	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
581	THM-ICR	Bromoform	9.5	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
582	THM-ICR	Chloroform	2.1	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
583	THM-ICR	Dibromochloromethane	13.0	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
584	UV-ICR	UV	0.012	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
585	UV-ICR	UV (Dupl)	0.011	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
			0.012	**1/cm**	**8.3 % RPD**						

Sample ID: 184.20.Eff-10 **S&H ID:** 9811-422 **Date Sampled:** 11/25/98 4:42:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
586	Cl2Dose	Chlorine Dose	1.97	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
587	Cl2Res	Chlorine Residual	0.84	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
588	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	102.4	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
589	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
590	HAA-ICR	Bromochloroacetic acid	4.1	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
591	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
592	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
593	HAA-ICR	Dibromoacetic acid	4.8	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
594	HAA-ICR	Dichloroacetic acid	5.4	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
595	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
596	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
597	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/10/98	12/10/98	0-286-0
598	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
599	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
600	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
601	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
602	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
603	TEMP	Temperature	22.1	ºC	SM 2550 B	1	n/a	11/25/98		11/25/98	n/a
604	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
605	TOC-ICR	TOC	0.89	mg/L	SM 5310 C	1	0.50	11/25/98		11/26/98	7-0-474
606	TOC-ICR	TOC (Dupl)	0.90	mg/L	SM 5310 C	1	0.50	11/25/98		11/26/98	7-0-474
			0.90	**mg/L**	**1.1 % RPD**						
607	TOX-ICR	TOX	56	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
608	TOX-ICR	TOX (Dupl)	55	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			56	**µg Cl-/L**	**1.8 % RPD**						
609	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.4	%	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

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Study Title: ICR RSSCT #4

610	THM-ICR	Bromodichloromethane	9.1	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
611	THM-ICR	Bromoform	9.6	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
612	THM-ICR	Chloroform	3.5	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
613	THM-ICR	Dibromochloromethane	15.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
614	UV-ICR	UV	0.015	1/cm	SM 5910 B	1	0.009	11/25/98		11/26/98	8-0-375
615	UV-ICR	UV (Dupl)	0.014	1/cm	SM 5910 B	1	0.009	11/25/98		11/26/98	8-0-375
			0.014	**1/cm**	**7.1 % RPD**						

Sample ID: 184.20.Eff-12 **S&H ID:** 9811-424 **Date Sampled:** 11/26/98 3:20:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
616	Cl2Dose	Chlorine Dose	2.05	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
617	Cl2Res	Chlorine Residual	0.87	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
618	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	92.4	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
619	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
620	HAA-ICR	Bromochloroacetic acid	4.6	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
621	HAA-ICR	Bromodichloroacetic acid	1.0	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
622	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
623	HAA-ICR	Dibromoacetic acid	5.2	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
624	HAA-ICR	Dichloroacetic acid	6.2	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
625	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
626	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
627	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/10/98	12/10/98	0-286-0
628	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
629	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
630	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
631	pH	pH	8.9	Unit	SM 4500-H+ B	1	n/a	11/26/98		11/26/98	n/a
632	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
633	TEMP	Temperature	22.1	ºC	SM 2550 B	1	n/a	11/26/98		11/26/98	n/a
634	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
635	TOC-ICR	TOC	0.99	mg/L	SM 5310 C	1	0.50	11/26/98		11/26/98	7-0-474
636	TOC-ICR	TOC (Dupl)	1.00	mg/L	SM 5310 C	1	0.50	11/26/98		11/26/98	7-0-474
			1.00	**mg/L**	**1.0 % RPD**						
637	TOX-ICR	TOX	65	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/7/98	12-0-257
638	TOX-ICR	TOX (Dupl)	66	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/7/98	12-0-257
			66	**µg Cl-/L**	**1.5 % RPD**						
639	THM-ICR	1,2,3-Trichloropropane (Surrogate)	104.4	%	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
640	THM-ICR	Bromodichloromethane	11.5	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
641	THM-ICR	Bromoform	8.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

642	THM-ICR	Chloroform	5.0	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
643	THM-ICR	Dibromochloromethane	17.5	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
644	UV-ICR	UV	0.017	1/cm	SM 5910 B	1	0.009	11/26/98		11/27/98	8-0-377
645	UV-ICR	UV (Dupl)	0.017	1/cm	SM 5910 B	1	0.009	11/26/98		11/27/98	8-0-377
			0.017	**1/cm**	**0.0 % RPD**						

Sample ID: 184.20.Eff-16 **S&H ID:** 9811-428 **Date Sampled:** 11/28/98 5:50:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
646	Cl2Dose	Chlorine Dose	2.15	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/30/98		11/30/98	n/a
647	Cl2Res	Chlorine Residual	0.90	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/30/98		12/2/98	n/a
648	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.2	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
649	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.4	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
650	HAA-ICR	Bromochloroacetic acid	4.8	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
651	HAA-ICR	Bromodichloroacetic acid	1.2	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
652	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
653	HAA-ICR	Dibromoacetic acid	5.2	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
654	HAA-ICR	Dichloroacetic acid	4.1	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
655	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
656	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
657	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/2/98	12/10/98	12/11/98	0-286-0
658	HAA-ICR	Trichloroacetic acid	6.5	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
659	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		12/2/98	n/a
660	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
661	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	11/28/98		11/28/98	n/a
662	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/30/98		12/2/98	n/a
663	TEMP	Temperature	23.1	ºC	SM 2550 B	1	n/a	11/28/98		11/28/98	n/a
664	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/30/98		12/2/98	n/a
665	TOC-ICR	TOC	1.20	mg/L	SM 5310 C	1	0.50	11/28/98		11/29/98	7-0-476
666	TOC-ICR	TOC (Dupl)	1.21	mg/L	SM 5310 C	1	0.50	11/28/98		11/29/98	7-0-476
			1.21	**mg/L**	**0.8 % RPD**						
667	TOX-ICR	TOX	82	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/11/98	12-0-261
668	TOX-ICR	TOX (Dupl)	91	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/11/98	12-0-261
			87	**µg Cl-/L**	**10.3 % RPD**						
669	THM-ICR	1,2,3-Trichloropropane (Surrogate)	100.8	%	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
670	THM-ICR	Bromodichloromethane	15.3	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
671	THM-ICR	Bromoform	7.6	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
672	THM-ICR	Chloroform	8.8	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
673	THM-ICR	Dibromochloromethane	19.3	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

674	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	11/28/98		11/29/98	8-0-380
675	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	11/28/98		11/29/98	8-0-380
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 184.20.Eff-20 **S&H ID:** 9811-432 **Date Sampled:** 12/1/98 3:09:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
676	Cl2Dose	Chlorine Dose	2.20	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/3/98		12/3/98	n/a
677	Cl2Res	Chlorine Residual	0.93	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/3/98		12/5/98	n/a
678	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.4	%	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
679	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
680	HAA-ICR	Bromochloroacetic acid	6.1	µg/L	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
681	HAA-ICR	Bromodichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
682	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/5/98	12/14/98	12/14/98	0-289-0
683	HAA-ICR	Dibromoacetic acid	5.8	µg/L	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
684	HAA-ICR	Dichloroacetic acid	5.2	µg/L	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
685	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
686	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/5/98	12/14/98	12/14/98	0-289-0
687	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/5/98	12/14/98	12/14/98	0-289-0
688	HAA-ICR	Trichloroacetic acid	6.0	µg/L	EPA 552.2	1	1.0	12/5/98	12/14/98	12/14/98	0-289-0
689	pH	Cl2 pH - Final	9.1	Unit	SM 4500-H+ B	1	n/a	12/3/98		12/5/98	n/a
690	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	12/3/98		12/3/98	n/a
691	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	12/1/98		12/1/98	n/a
692	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	12/3/98		12/5/98	n/a
693	TEMP	Temperature	22.5	ºC	SM 2550 B	1	n/a	12/1/98		12/1/98	n/a
694	TIME	Cl2 Incubation Time	47.5	hrs	n/a	1	n/a	12/3/98		12/5/98	n/a
695	TOC-ICR	TOC	1.35	mg/L	SM 5310 C	1	0.50	12/1/98		12/1/98	7-0-478
696	TOC-ICR	TOC (Dupl)	1.37	mg/L	SM 5310 C	1	0.50	12/1/98		12/1/98	7-0-478
			1.36	**mg/L**	**1.5 % RPD**						
697	TOX-ICR	TOX	99	µg Cl-/L	SM 5320 B	1	25	12/5/98		12/14/98	12-0-262
698	TOX-ICR	TOX (Dupl)	99	µg Cl-/L	SM 5320 B	1	25	12/5/98		12/14/98	12-0-262
			99	**µg Cl-/L**	**0.0 % RPD**						
699	THM-ICR	1,2,3-Trichloropropane (Surrogate)	95.6	%	EPA 551.1	1	1.0	12/5/98	12/11/98	12/11/98	0-288-0
700	THM-ICR	Bromodichloromethane	15.9	µg/L	EPA 551.1	1	1.0	12/5/98	12/11/98	12/11/98	0-288-0
701	THM-ICR	Bromoform	5.2	µg/L	EPA 551.1	1	1.0	12/5/98	12/11/98	12/11/98	0-288-0
702	THM-ICR	Chloroform	10.6	µg/L	EPA 551.1	1	1.0	12/5/98	12/11/98	12/11/98	0-288-0
703	THM-ICR	Dibromochloromethane	17.4	µg/L	EPA 551.1	1	1.0	12/5/98	12/11/98	12/11/98	0-288-0
704	UV-ICR	UV	0.024	1/cm	SM 5910 B	1	0.009	12/1/98		12/1/98	8-0-382
705	UV-ICR	UV (Dupl)	0.024	1/cm	SM 5910 B	1	0.009	12/1/98		12/1/98	8-0-382

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

0.024 1/cm 0.0 % RPD

Sample ID: 184.20.Eff-21 **S&H ID:** 9811-433 **Date Sampled:** 12/3/98 1:16:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
706	Cl2Dose	Chlorine Dose	2.27	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/7/98		12/7/98	n/a
707	Cl2Res	Chlorine Residual	0.55	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/7/98		12/9/98	n/a
708	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	102.4	%	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
709	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
710	HAA-ICR	Bromochloroacetic acid	6.1	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
711	HAA-ICR	Bromodichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
712	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/9/98	12/14/98	12/15/98	0-289-0
713	HAA-ICR	Dibromoacetic acid	5.7	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
714	HAA-ICR	Dichloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
715	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
716	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/9/98	12/14/98	12/15/98	0-289-0
717	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/9/98	12/14/98	12/15/98	0-289-0
718	HAA-ICR	Trichloroacetic acid	5.3	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
719	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	12/7/98		12/9/98	n/a
720	pH	Cl2 pH - Initial	9.1	Unit	SM 4500-H+ B	1	n/a	12/7/98		12/7/98	n/a
721	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	12/3/98		12/3/98	n/a
722	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	12/7/98		12/9/98	n/a
723	TEMP	Temperature	22.7	ºC	SM 2550 B	1	n/a	12/3/98		12/3/98	n/a
724	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	12/7/98		12/9/98	n/a
725	TOC-ICR	TOC	1.54	mg/L	SM 5310 C	1	0.50	12/3/98		12/3/98	7-0-480
726	TOC-ICR	TOC (Dupl)	1.58	mg/L	SM 5310 C	1	0.50	12/3/98		12/3/98	7-0-480
			1.56	**mg/L**	**2.6 % RPD**						
727	TOX-ICR	TOX	100	µg Cl-/L	SM 5320 B	1	25	12/9/98		12/18/98	12-0-266
728	TOX-ICR	TOX (Dupl)	105	µg Cl-/L	SM 5320 B	1	25	12/9/98		12/18/98	12-0-266
			103	**µg Cl-/L**	**4.9 % RPD**						
729	THM-ICR	1,2,3-Trichloropropane (Surrogate)	96.8	%	EPA 551.1	1	1.0	12/9/98	12/11/98	12/11/98	0-288-0
730	THM-ICR	Bromodichloromethane	16.6	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/11/98	0-288-0
731	THM-ICR	Bromoform	4.4	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/11/98	0-288-0
732	THM-ICR	Chloroform	13.2	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/11/98	0-288-0
733	THM-ICR	Dibromochloromethane	17.1	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/11/98	0-288-0
734	UV-ICR	UV	0.028	1/cm	SM 5910 B	1	0.009	12/3/98		12/4/98	8-0-385
735	UV-ICR	UV (Dupl)	0.028	1/cm	SM 5910 B	1	0.009	12/3/98		12/4/98	8-0-385
			0.028	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Sample ID: 184.20.Eff-23 **S&H ID:** 9811-435 **Date Sampled:** 12/5/98 4:02:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
736	Cl2Dose	Chlorine Dose	2.32	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/7/98		12/7/98	n/a
737	Cl2Res	Chlorine Residual	1.19	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/7/98		12/9/98	n/a
738	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	104.0	%	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
739	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.2	%	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
740	HAA-ICR	Bromochloroacetic acid	6.4	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
741	HAA-ICR	Bromodichloroacetic acid	2.5	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
742	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/9/98	12/14/98	12/15/98	0-289-0
743	HAA-ICR	Dibromoacetic acid	4.9	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
744	HAA-ICR	Dichloroacetic acid	6.9	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
745	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
746	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/9/98	12/14/98	12/15/98	0-289-0
747	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/9/98	12/14/98	12/15/98	0-289-0
748	HAA-ICR	Trichloroacetic acid	5.6	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
749	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	12/7/98		12/9/98	n/a
750	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	12/7/98		12/7/98	n/a
751	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	12/5/98		12/5/98	n/a
752	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	12/7/98		12/9/98	n/a
753	TEMP	Temperature	23.2	ºC	SM 2550 B	1	n/a	12/5/98		12/5/98	n/a
754	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	12/7/98		12/9/98	n/a
755	TOC-ICR	TOC	1.66	mg/L	SM 5310 C	1	0.50	12/5/98		12/5/98	7-0-482
756	TOC-ICR	TOC (Dupl)	1.64	mg/L	SM 5310 C	1	0.50	12/5/98		12/5/98	7-0-482
			1.65	**mg/L**	**1.2 % RPD**						
757	TOX-ICR	TOX	127	µg Cl-/L	SM 5320 B	1	25	12/9/98		12/18/98	12-0-266
758	TOX-ICR	TOX (Dupl)	124	µg Cl-/L	SM 5320 B	1	25	12/9/98		12/18/98	12-0-266
			126	**µg Cl-/L**	**2.4 % RPD**						
759	THM-ICR	1,2,3-Trichloropropane (Surrogate)	102.4	%	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
760	THM-ICR	Bromodichloromethane	19.9	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
761	THM-ICR	Bromoform	4.0	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
762	THM-ICR	Chloroform	19.1	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
763	THM-ICR	Dibromochloromethane	16.7	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
764	UV-ICR	UV	0.031	1/cm	SM 5910 B	1	0.009	12/5/98		12/6/98	8-0-388
765	UV-ICR	UV (Dupl)	0.031	1/cm	SM 5910 B	1	0.009	12/5/98		12/6/98	8-0-388
			0.031	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Sample ID: 184.20.Eff-24 **S&H ID:** 9811-436 **Date Sampled:** 12/8/98 12:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
766	Cl2Dose	Chlorine Dose	2.44	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/8/98		12/8/98	n/a
767	Cl2Res	Chlorine Residual	1.20	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/8/98		12/10/98	n/a
768	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.2	%	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
769	HAA-ICR	2-Bromopropionic acid (Surrogate)	102.0	%	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
770	HAA-ICR	Bromochloroacetic acid	6.8	µg/L	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
771	HAA-ICR	Bromodichloroacetic acid	2.8	µg/L	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
772	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/10/98	12/21/98	12/22/98	0-291-0
773	HAA-ICR	Dibromoacetic acid	4.4	µg/L	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
774	HAA-ICR	Dichloroacetic acid	8.8	µg/L	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
775	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
776	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/10/98	12/21/98	12/22/98	0-291-0
777	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/10/98	12/21/98	12/22/98	0-291-0
778	HAA-ICR	Trichloroacetic acid	5.6	µg/L	EPA 552.2	1	1.0	12/10/98	12/21/98	12/22/98	0-291-0
779	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	12/8/98		12/10/98	n/a
780	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	12/8/98		12/8/98	n/a
781	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	12/8/98		12/8/98	n/a
782	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	12/8/98		12/10/98	n/a
783	TEMP	Temperature	21.4	ºC	SM 2550 B	1	n/a	12/8/98		12/8/98	n/a
784	TIME	Cl2 Incubation Time	47.9	hrs	n/a	1	n/a	12/8/98		12/10/98	n/a
785	TOC-ICR	TOC	1.85	mg/L	SM 5310 C	1	0.50	12/8/98		12/8/98	7-0-485
786	TOC-ICR	TOC (Dupl)	1.90	mg/L	SM 5310 C	1	0.50	12/8/98		12/8/98	7-0-485
			1.88	**mg/L**	**2.7 % RPD**						
787	TOX-ICR	TOX	132	µg Cl-/L	SM 5320 B	1	25	12/10/98		12/18/98	12-0-266
788	TOX-ICR	TOX (Dupl)	139	µg Cl-/L	SM 5320 B	1	25	12/10/98		12/18/98	12-0-266
			136	**µg Cl-/L**	**5.1 % RPD**						
789	THM-ICR	1,2,3-Trichloropropane (Surrogate)	103.2	%	EPA 551.1	1	1.0	12/10/98	12/15/98	12/15/98	0-290-0
790	THM-ICR	Bromodichloromethane	18.2	µg/L	EPA 551.1	1	1.0	12/10/98	12/15/98	12/15/98	0-290-0
791	THM-ICR	Bromoform	3.3	µg/L	EPA 551.1	1	1.0	12/10/98	12/15/98	12/15/98	0-290-0
792	THM-ICR	Chloroform	19.0	µg/L	EPA 551.1	1	1.0	12/10/98	12/15/98	12/15/98	0-290-0
793	THM-ICR	Dibromochloromethane	14.8	µg/L	EPA 551.1	1	1.0	12/10/98	12/15/98	12/15/98	0-290-0
794	UV-ICR	UV	0.034	1/cm	SM 5910 B	1	0.009	12/8/98		12/9/98	8-0-390
795	UV-ICR	UV (Dupl)	0.034	1/cm	SM 5910 B	1	0.009	12/8/98		12/9/98	8-0-390
			0.034	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Sample ID: 184.20.Eff-25 **S&H ID:** 9811-437 **Date Sampled:** 12/10/98 8:17:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
796	Cl2Dose	Chlorine Dose	2.05	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/10/98		12/10/98	n/a
797	Cl2Res	Chlorine Residual	0.82	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/10/98		12/12/98	n/a
798	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.2	%	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
799	HAA-ICR	2-Bromopropionic acid (Surrogate)	101.6	%	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
800	HAA-ICR	Bromochloroacetic acid	7.1	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
801	HAA-ICR	Bromodichloroacetic acid	3.0	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
802	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/12/98	12/21/98	12/22/98	0-291-0
803	HAA-ICR	Dibromoacetic acid	4.1	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
804	HAA-ICR	Dichloroacetic acid	10.2	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
805	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
806	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/12/98	12/21/98	12/22/98	0-291-0
807	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/12/98	12/21/98	12/22/98	0-291-0
808	HAA-ICR	Trichloroacetic acid	5.8	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
809	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	12/10/98		12/12/98	n/a
810	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	12/10/98		12/10/98	n/a
811	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	12/10/98		12/10/98	n/a
812	TEMP	Cl2 Temperature	11.2	ºC	SM 2550 B	1	n/a	12/10/98		12/12/98	n/a
813	TEMP	Temperature	22.1	ºC	SM 2550 B	1	n/a	12/10/98		12/10/98	n/a
814	TIME	Cl2 Incubation Time	48.6	hrs	n/a	1	n/a	12/10/98		12/12/98	n/a
815	TOC-ICR	TOC	2.06	mg/L	SM 5310 C	1	0.50	12/10/98		12/10/98	7-0-486
816	TOC-ICR	TOC (Dupl)	2.05	mg/L	SM 5310 C	1	0.50	12/10/98		12/10/98	7-0-486
			2.05	**mg/L**	**0.5 % RPD**						
817	TOX-ICR	TOX	147	µg Cl-/L	SM 5320 B	1	25	12/12/98		12/22/98	12-0-268
818	TOX-ICR	TOX (Dupl)	150	µg Cl-/L	SM 5320 B	1	25	12/12/98		12/22/98	12-0-268
			149	**µg Cl-/L**	**2.0 % RPD**						
819	THM-ICR	1,2,3-Trichloropropane (Surrogate)	94.0	%	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
820	THM-ICR	Bromodichloromethane	20.0	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
821	THM-ICR	Bromoform	3.3	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
822	THM-ICR	Chloroform	23.1	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
823	THM-ICR	Dibromochloromethane	14.8	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
824	UV-ICR	UV	0.040	1/cm	SM 5910 B	1	0.009	12/10/98		12/10/98	8-0-391
825	UV-ICR	UV (Dupl)	0.040	1/cm	SM 5910 B	1	0.009	12/10/98		12/10/98	8-0-391
			0.040	**1/cm**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Sample ID: 184.20.Eff-26 **S&H ID:** 9811-438 **Date Sampled:** 12/11/98 12:22:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
826	pH	pH	8.6	Unit	SM 4500-H+ B	1	n/a	12/11/98		12/11/98	n/a
827	TEMP	Temperature	22.0	ºC	SM 2550 B	1	n/a	12/11/98		12/11/98	n/a
828	TOC-ICR	TOC	2.07	mg/L	SM 5310 C	1	0.50	12/11/98		12/11/98	7-0-487
829	TOC-ICR	TOC (Dupl)	2.13	mg/L	SM 5310 C	1	0.50	12/11/98		12/11/98	7-0-487
			2.10	**mg/L**	**2.9 % RPD**						

Sample ID: 184.20.Eff-7d **S&H ID:** 9811-443 **Date Sampled:** 11/24/98 10:56:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
830	Cl2Dose	Chlorine Dose	1.88	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/27/98		11/27/98	n/a
831	Cl2Res	Chlorine Residual	0.89	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/27/98		11/29/98	n/a
832	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	95.6	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
833	HAA-ICR	2-Bromopropionic acid (Surrogate)	97.2	%	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
834	HAA-ICR	Bromochloroacetic acid	2.6	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
835	HAA-ICR	Bromodichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
836	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
837	HAA-ICR	Dibromoacetic acid	3.7	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
838	HAA-ICR	Dichloroacetic acid	6.9	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
839	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
840	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/29/98	12/10/98	12/10/98	0-286-0
841	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/29/98	12/10/98	12/10/98	0-286-0
842	HAA-ICR	Trichloroacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/29/98	12/10/98	12/10/98	0-286-0
843	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/29/98	n/a
844	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/27/98		11/27/98	n/a
845	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	11/24/98		11/24/98	n/a
846	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/27/98		11/29/98	n/a
847	TEMP	Temperature	21.9	ºC	SM 2550 B	1	n/a	11/24/98		11/24/98	n/a
848	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/27/98		11/29/98	n/a
849	TOC-ICR	TOC	0.74	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
850	TOC-ICR	TOC (Dupl)	0.75	mg/L	SM 5310 C	1	0.50	11/24/98		11/24/98	7-0-472
			0.75	**mg/L**	**1.3 % RPD**						
851	TOX-ICR	TOX	43	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
852	TOX-ICR	TOX (Dupl)	45	µg Cl-/L	SM 5320 B	1	25	11/29/98		12/8/98	12-0-258
			44	**µg Cl-/L**	**4.5 % RPD**						
853	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.8	%	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
854	THM-ICR	Bromodichloromethane	5.8	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

855	THM-ICR	Bromoform	9.6	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
856	THM-ICR	Chloroform	2.0	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
857	THM-ICR	Dibromochloromethane	12.4	µg/L	EPA 551.1	1	1.0	11/29/98	12/9/98	12/9/98	0-284-0
858	UV-ICR	UV	0.012	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
859	UV-ICR	UV (Dupl)	0.012	1/cm	SM 5910 B	1	0.009	11/24/98		11/24/98	8-0-372
			0.012	**1/cm**	**0.0 % RPD**						

Sample ID: 184.20.Eff-16d **S&H ID:** 9811-448 **Date Sampled:** 11/28/98 5:50:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
860	Cl2Dose	Chlorine Dose	2.15	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/30/98		11/30/98	n/a
861	Cl2Res	Chlorine Residual	0.84	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/30/98		12/2/98	n/a
862	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	100.0	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
863	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.2	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
864	HAA-ICR	Bromochloroacetic acid	4.7	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
865	HAA-ICR	Bromodichloroacetic acid	1.1	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
866	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
867	HAA-ICR	Dibromoacetic acid	5.3	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
868	HAA-ICR	Dichloroacetic acid	4.0	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
869	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
870	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
871	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/2/98	12/10/98	12/11/98	0-286-0
872	HAA-ICR	Trichloroacetic acid	6.4	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
873	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		12/2/98	n/a
874	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
875	pH	pH	8.7	Unit	SM 4500-H+ B	1	n/a	11/28/98		11/28/98	n/a
876	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/30/98		12/2/98	n/a
877	TEMP	Temperature	23.2	ºC	SM 2550 B	1	n/a	11/28/98		11/28/98	n/a
878	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/30/98		12/2/98	n/a
879	TOC-ICR	TOC	1.21	mg/L	SM 5310 C	1	0.50	11/28/98		11/29/98	7-0-476
880	TOC-ICR	TOC (Dupl)	1.20	mg/L	SM 5310 C	1	0.50	11/28/98		11/29/98	7-0-476
			1.21	**mg/L**	**0.8 % RPD**						
881	TOX-ICR	TOX	82	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
882	TOX-ICR	TOX (Dupl)	84	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
			83	**µg Cl-/L**	**2.4 % RPD**						
883	THM-ICR	1,2,3-Trichloropropane (Surrogate)	98.0	%	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
884	THM-ICR	Bromodichloromethane	14.8	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
885	THM-ICR	Bromoform	7.4	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
886	THM-ICR	Chloroform	8.3	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

887	THM-ICR	Dibromochloromethane	18.6	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/9/98	0-284-0
888	UV-ICR	UV	0.021	1/cm	SM 5910 B	1	0.009	11/28/98		11/29/98	8-0-380
889	UV-ICR	UV (Dupl)	0.021	1/cm	SM 5910 B	1	0.009	11/28/98		11/29/98	8-0-380
			0.021	**1/cm**	**0.0 % RPD**						

Sample ID: 184.20.Eff-23d **S&H ID:** 9811-451 **Date Sampled:** 12/5/98 4:02:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
890	Cl2Dose	Chlorine Dose	2.32	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/7/98		12/7/98	n/a
891	Cl2Res	Chlorine Residual	1.16	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/7/98		12/9/98	n/a
892	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	99.2	%	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
893	HAA-ICR	2-Bromopropionic acid (Surrogate)	99.6	%	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
894	HAA-ICR	Bromochloroacetic acid	6.5	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
895	HAA-ICR	Bromodichloroacetic acid	2.4	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
896	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/9/98	12/14/98	12/15/98	0-289-0
897	HAA-ICR	Dibromoacetic acid	4.9	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
898	HAA-ICR	Dichloroacetic acid	6.8	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
899	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
900	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/9/98	12/14/98	12/15/98	0-289-0
901	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/9/98	12/14/98	12/15/98	0-289-0
902	HAA-ICR	Trichloroacetic acid	5.5	µg/L	EPA 552.2	1	1.0	12/9/98	12/14/98	12/15/98	0-289-0
903	pH	Cl2 pH - Final	9.3	Unit	SM 4500-H+ B	1	n/a	12/7/98		12/9/98	n/a
904	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	12/7/98		12/7/98	n/a
905	pH	pH	8.8	Unit	SM 4500-H+ B	1	n/a	12/5/98		12/5/98	n/a
906	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	12/7/98		12/9/98	n/a
907	TEMP	Temperature	23.2	ºC	SM 2550 B	1	n/a	12/5/98		12/5/98	n/a
908	TIME	Cl2 Incubation Time	48.2	hrs	n/a	1	n/a	12/7/98		12/9/98	n/a
909	TOC-ICR	TOC	1.67	mg/L	SM 5310 C	1	0.50	12/5/98		12/5/98	7-0-482
910	TOC-ICR	TOC (Dupl)	1.64	mg/L	SM 5310 C	1	0.50	12/5/98		12/5/98	7-0-482
			1.65	**mg/L**	**1.8 % RPD**						
911	TOX-ICR	TOX	124	µg Cl-/L	SM 5320 B	1	25	12/9/98		12/18/98	12-0-266
912	TOX-ICR	TOX (Dupl)	122	µg Cl-/L	SM 5320 B	1	25	12/9/98		12/18/98	12-0-266
			123	**µg Cl-/L**	**1.6 % RPD**						
913	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.4	%	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
914	THM-ICR	Bromodichloromethane	18.5	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
915	THM-ICR	Bromoform	3.6	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
916	THM-ICR	Chloroform	17.8	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
917	THM-ICR	Dibromochloromethane	16.7	µg/L	EPA 551.1	1	1.0	12/9/98	12/11/98	12/12/98	0-288-0
918	UV-ICR	UV	0.031	1/cm	SM 5910 B	1	0.009	12/5/98		12/6/98	8-0-388

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

919	UV-ICR	UV (Dupl)	0.031	1/cm	SM 5910 B	1	0.009	12/5/98		12/6/98	8-0-388
			0.031	**1/cm**	**0.0 % RPD**						

Sample ID: 184.Inf.A-1 **S&H ID:** 9811-453 **Date Sampled:** 11/19/98 4:45:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
920	ALK	Alkalinity	53	mg/L	SM 2320 B	1	5	11/19/98		11/20/98	1-0-38
921	ALK	Alkalinity (Dupl)	50	mg/L	SM 2320 B	1	5	11/19/98		11/20/98	1-0-38
			52	**mg/L**	**5.8 % RPD**						
922	NH3	Ammonia Nitrogen	ND	mg/L	EPA 350.1	1	0.05	11/19/98		12/2/98	MW88171
923	BR	Bromide	0.081	mg/L	EPA 300.0 A	1	0.020	11/19/98		11/30/98	MW88138
924	CaHardM	Calcium Hardness	62	mg/L CaCO3	EPA 200.7	1	5	11/19/98		12/2/98	MW n/a
925	CaMW	Calcium, Total, ICAP	25	mg/L	EPA 200.7	1	1	11/19/98	12/2/98	12/2/98	MW88148
926	MgMW	Magnesium, Total, ICAP	9	mg/L	EPA 200.7	1	0	11/19/98	12/2/98	12/2/98	MW88153
927	TotHard	Total Hardness as CaCO3 by ICP	100	mg/L CaCO3	SM 2340B	1	7	11/19/98		12/2/98	MW n/a

Sample ID: 184.Inf.A-2 **S&H ID:** 9811-454 **Date Sampled:** 11/30/98 11:15:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
928	ALK	Alkalinity	53	mg/L	SM 2320 B	1	5	11/30/98		11/30/98	1-0-39
929	ALK	Alkalinity (Dupl)	52	mg/L	SM 2320 B	1	5	11/30/98		11/30/98	1-0-39
			53	**mg/L**	**1.9 % RPD**						
930	NH3	Ammonia Nitrogen	ND	mg/L	EPA 350.1	1	0.05	11/30/98		12/9/98	MW88718
931	BR	Bromide	0.078	mg/L	EPA 300.0 A	1	0.020	11/30/98		12/7/98	MW88492
932	CaHardM	Calcium Hardness	63	mg/L CaCO3	EPA 200.7	1	5	11/30/98		12/9/98	MW n/a
933	CaMW	Calcium, Total, ICAP	25	mg/L	EPA 200.7	1	1	11/30/98	12/9/98	12/9/98	MW88543
934	MgMW	Magnesium, Total, ICAP	9	mg/L	EPA 200.7	1	0	11/30/98	12/9/98	12/9/98	MW88546
935	TotHard	Total Hardness as CaCO3 by ICP	101	mg/L CaCO3	SM 2340B	1	7	11/30/98		12/9/98	MW n/a

Sample ID: 184.Inf.B-1 **S&H ID:** 9811-455 **Date Sampled:** 11/19/98 4:40:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
936	Cl2Dose	Chlorine Dose	3.39	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/23/98		11/23/98	n/a
937	Cl2Res	Chlorine Residual	0.86	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/23/98		11/25/98	n/a
938	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	98.8	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
939	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.0	%	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
940	HAA-ICR	Bromochloroacetic acid	8.6	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

941	HAA-ICR	Bromodichloroacetic acid	3.8	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
942	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
943	HAA-ICR	Dibromoacetic acid	2.9	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
944	HAA-ICR	Dichloroacetic acid	21.1	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
945	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
946	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	11/25/98	12/1/98	12/2/98	0-273-0
947	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	11/25/98	12/1/98	12/2/98	0-273-0
948	HAA-ICR	Trichloroacetic acid	9.6	µg/L	EPA 552.2	1	1.0	11/25/98	12/1/98	12/2/98	0-273-0
949	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/25/98	n/a
950	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/23/98		11/23/98	n/a
951	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	11/19/98		11/19/98	n/a
952	TEMP	Cl2 Temperature	11.0	ºC	SM 2550 B	1	n/a	11/23/98		11/25/98	n/a
953	TEMP	Temperature	19.6	ºC	SM 2550 B	1	n/a	11/19/98		11/19/98	n/a
954	TIME	Cl2 Incubation Time	48.0	hrs	n/a	1	n/a	11/23/98		11/25/98	n/a
955	TOC-ICR	TOC	2.96	mg/L	SM 5310 C	1	0.50	11/19/98		11/20/98	7-0-468
956	TOC-ICR	TOC (Dupl)	2.99	mg/L	SM 5310 C	1	0.50	11/19/98		11/20/98	7-0-468
			2.98	**mg/L**	**1.0 % RPD**						
957	TOX-ICR	TOX	266	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
958	TOX-ICR	TOX (Dupl)	260	µg Cl-/L	SM 5320 B	1	25	11/25/98		12/1/98	12-0-253
			263	**µg Cl-/L**	**2.3 % RPD**						
959	THM-ICR	1,2,3-Trichloropropane (Surrogate)	85.2	%	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
960	THM-ICR	Bromodichloromethane	29.0	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
961	THM-ICR	Bromoform	1.6	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
962	THM-ICR	Chloroform	51.6	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
963	THM-ICR	Dibromochloromethane	13.4	µg/L	EPA 551.1	1	1.0	11/25/98	11/30/98	11/30/98	0-272-0
964	TURB	Turbidity	0.15	ntu	SM 2130 B	1	0.05	11/19/98		11/19/98	9-0-21
965	UV-ICR	UV	0.064	1/cm	SM 5910 B	1	0.009	11/19/98		11/20/98	8-0-366
966	UV-ICR	UV (Dupl)	0.064	1/cm	SM 5910 B	1	0.009	11/19/98		11/20/98	8-0-366
			0.064	**1/cm**	**0.0 % RPD**						

Sample ID: 184.Inf.B-2 **S&H ID:** 9811-456 **Date Sampled:** 11/21/98 1:30:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
967	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	11/21/98		11/21/98	n/a
968	TEMP	Temperature	17.4	ºC	SM 2550 B	1	n/a	11/21/98		11/21/98	n/a
969	TOC-ICR	TOC	2.84	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
970	TOC-ICR	TOC (Dupl)	2.84	mg/L	SM 5310 C	1	0.50	11/21/98		11/21/98	7-0-469
			2.84	**mg/L**	**0.0 % RPD**						

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Sample ID: 184.Inf.B-3 **S&H ID:** 9811-457 **Date Sampled:** 11/25/98 1:10:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
971	pH	pH	9.1	Unit	SM 4500-H+ B	1	n/a	11/25/98		11/25/98	n/a
972	TEMP	Temperature	18.0	ºC	SM 2550 B	1	n/a	11/25/98		11/25/98	n/a
973	TOC-ICR	TOC	2.80	mg/L	SM 5310 C	1	0.50	11/25/98		11/25/98	7-0-473
974	TOC-ICR	TOC (Dupl)	2.90	mg/L	SM 5310 C	1	0.50	11/25/98		11/25/98	7-0-473
			2.85	**mg/L**	**3.5 % RPD**						

Sample ID: 184.Inf.B-4 **S&H ID:** 9811-458 **Date Sampled:** 11/30/98 11:10:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
975	Cl2Dose	Chlorine Dose	3.25	mg/L as Cl2	SM 4500-Cl B	1	n/a	11/30/98		11/30/98	n/a
976	Cl2Res	Chlorine Residual	0.68	mg/L as Cl2	SM 4500-Cl F	1	0.10	11/30/98		12/2/98	n/a
977	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	97.2	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
978	HAA-ICR	2-Bromopropionic acid (Surrogate)	100.8	%	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
979	HAA-ICR	Bromochloroacetic acid	9.3	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
980	HAA-ICR	Bromodichloroacetic acid	3.9	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
981	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
982	HAA-ICR	Dibromoacetic acid	3.4	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
983	HAA-ICR	Dichloroacetic acid	21.4	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
984	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
985	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/2/98	12/10/98	12/11/98	0-286-0
986	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/2/98	12/10/98	12/11/98	0-286-0
987	HAA-ICR	Trichloroacetic acid	10.6	µg/L	EPA 552.2	1	1.0	12/2/98	12/10/98	12/11/98	0-286-0
988	pH	Cl2 pH - Final	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		12/2/98	n/a
989	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
990	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	11/30/98		11/30/98	n/a
991	TEMP	Cl2 Temperature	11.1	ºC	SM 2550 B	1	n/a	11/30/98		12/2/98	n/a
992	TEMP	Temperature	18.0	ºC	SM 2550 B	1	n/a	11/30/98		11/30/98	n/a
993	TIME	Cl2 Incubation Time	48.1	hrs	n/a	1	n/a	11/30/98		12/2/98	n/a
994	TOC-ICR	TOC	2.85	mg/L	SM 5310 C	1	0.50	11/30/98		11/30/98	7-0-477
995	TOC-ICR	TOC (Dupl)	2.86	mg/L	SM 5310 C	1	0.50	11/30/98		11/30/98	7-0-477
			2.86	**mg/L**	**0.3 % RPD**						
996	TOX-ICR	TOX	248	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
997	TOX-ICR	TOX (Dupl)	244	µg Cl-/L	SM 5320 B	1	25	12/2/98		12/10/98	12-0-260
			246	**µg Cl-/L**	**1.6 % RPD**						
998	THM-ICR	1,2,3-Trichloropropane (Surrogate)	101.2	%	EPA 551.1	1	1.0	12/2/98	12/9/98	12/10/98	0-284-0
999	THM-ICR	Bromodichloromethane	31.6	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/10/98	0-284-0

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

1000	THM-ICR	Bromoform	1.8	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/10/98	0-284-0
1001	THM-ICR	Chloroform	59.2	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/10/98	0-284-0
1002	THM-ICR	Dibromochloromethane	14.4	µg/L	EPA 551.1	1	1.0	12/2/98	12/9/98	12/10/98	0-284-0
1003	TURB	Turbidity	0.10	ntu	SM 2130 B	1	0.05	11/30/98		11/30/98	9-0-21
1004	UV-ICR	UV	0.064	1/cm	SM 5910 B	1	0.009	11/30/98		11/30/98	8-0-381
1005	UV-ICR	UV (Dupl)	0.064	1/cm	SM 5910 B	1	0.009	11/30/98		11/30/98	8-0-381
			0.064	**1/cm**	**0.0 % RPD**						

Sample ID: 184.Inf.B-5 **S&H ID:** 9811-459 **Date Sampled:** 12/6/98 2:50:00 PM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1006	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	12/6/98		12/6/98	n/a
1007	TEMP	Temperature	19.2	ºC	SM 2550 B	1	n/a	12/6/98		12/6/98	n/a
1008	TOC-ICR	TOC	2.82	mg/L	SM 5310 C	1	0.50	12/6/98		12/6/98	7-0-483
1009	TOC-ICR	TOC (Dupl)	2.80	mg/L	SM 5310 C	1	0.50	12/6/98		12/6/98	7-0-483
			2.81	**mg/L**	**0.7 % RPD**						

Sample ID: 184.Inf.B-6 **S&H ID:** 9811-460 **Date Sampled:** 12/10/98 10:30:00 AM

#	Analysis	Type	Result	Units	Method	Dilution	MRL	Samp.	Prep.	Anal.	QC Batch
1010	Cl2Dose	Chlorine Dose	3.30	mg/L as Cl2	SM 4500-Cl B	1	n/a	12/10/98		12/10/98	n/a
1011	Cl2Res	Chlorine Residual	0.91	mg/L as Cl2	SM 4500-Cl F	1	0.10	12/10/98		12/12/98	n/a
1012	HAA-ICR	1,2,3-Trichloropropane (IS) (Internal Standard)	102.4	%	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1013	HAA-ICR	2-Bromopropionic acid (Surrogate)	98.0	%	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1014	HAA-ICR	Bromochloroacetic acid	8.1	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1015	HAA-ICR	Bromodichloroacetic acid	3.7	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1016	HAA-ICR	Chlorodibromoacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/12/98	12/21/98	12/22/98	0-291-0
1017	HAA-ICR	Dibromoacetic acid	2.8	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1018	HAA-ICR	Dichloroacetic acid	20.0	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1019	HAA-ICR	Monobromoacetic acid	ND	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1020	HAA-ICR	Monochloroacetic acid	ND	µg/L	EPA 552.2	1	2.0	12/12/98	12/21/98	12/22/98	0-291-0
1021	HAA-ICR	Tribromoacetic acid	ND	µg/L	EPA 552.2	1	4.0	12/12/98	12/21/98	12/22/98	0-291-0
1022	HAA-ICR	Trichloroacetic acid	8.2	µg/L	EPA 552.2	1	1.0	12/12/98	12/21/98	12/22/98	0-291-0
1023	pH	Cl2 pH - Final	9.3	Unit	SM 4500-H+ B	1	n/a	12/10/98		12/12/98	n/a
1024	pH	Cl2 pH - Initial	9.2	Unit	SM 4500-H+ B	1	n/a	12/10/98		12/10/98	n/a
1025	pH	pH	9.0	Unit	SM 4500-H+ B	1	n/a	12/10/98		12/10/98	n/a
1026	TEMP	Cl2 Temperature	11.2	ºC	SM 2550 B	1	n/a	12/10/98		12/12/98	n/a
1027	TEMP	Temperature	18.3	ºC	SM 2550 B	1	n/a	12/10/98		12/10/98	n/a
1028	TIME	Cl2 Incubation Time	48.6	hrs	n/a	1	n/a	12/10/98		12/12/98	n/a

ND (non-detect): Result is below mininum reporting level (MRL). NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Laboratory Test Results

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

1029	TOC-ICR	TOC	2.77	mg/L	SM 5310 C	1	0.50	12/10/98		12/10/98	7-0-486
1030	TOC-ICR	TOC (Dupl)	2.81	mg/L	SM 5310 C	1	0.50	12/10/98		12/10/98	7-0-486
			2.79	**mg/L**	**1.4 % RPD**						
1031	TOX-ICR	TOX	249	µg Cl-/L	SM 5320 B	1	25	12/12/98		12/22/98	12-0-268
1032	TOX-ICR	TOX (Dupl)	250	µg Cl-/L	SM 5320 B	1	25	12/12/98		12/22/98	12-0-268
			250	**µg Cl-/L**	**0.4 % RPD**						
1033	THM-ICR	1,2,3-Trichloropropane (Surrogate)	92.0	%	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
1034	THM-ICR	Bromodichloromethane	25.2	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
1035	THM-ICR	Bromoform	1.6	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
1036	THM-ICR	Chloroform	48.3	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
1037	THM-ICR	Dibromochloromethane	12.3	µg/L	EPA 551.1	1	1.0	12/12/98	12/15/98	12/15/98	0-290-0
1038	TURB	Turbidity	0.10	ntu	SM 2130 B	1	0.05	12/10/98		12/10/98	9-0-22
1039	UV-ICR	UV	0.064	1/cm	SM 5910 B	1	0.009	12/10/98		12/10/98	8-0-391
1040	UV-ICR	UV (Dupl)	0.064	1/cm	SM 5910 B	1	0.009	12/10/98		12/10/98	8-0-391
			0.064	**1/cm**	**0.0 % RPD**						

End of laboratory test results

ND (non-detect): Result is below mininum reporting level (MRL).

NR (not reportable): Result did not meet QC criteria.

Summers & Hooper, Inc.
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Quality Control Report

Mr. Bruce Northup
City of Topeka
3245 Water Works Drive
Topeka, KS 66606

Phone: 785-368-3882 Fax: 785-368-3869

Study#: 184
Study Title: ICR RSSCT #4

Analysis: ALK (Alkalinity) **Method:** SM 2320 B

QC Batch ID: 1-0-38

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	100	97	mg/L	97%		11/20/98	9811-453	5		
Matrix Spike (Dupl)	Matrix Spike	100	99	mg/L	99%		11/20/98	9811-453	5		
		100	**98**	**mg/L**	**98%**	**2.0 %**					
Method Blank	Method Blank		ND*	mg/L			11/20/98	9811-647	5		
Standard	Standard	100	101	mg/L	101%		11/20/98	9811-648	5		
Standard (Dupl)	Standard	100	100	mg/L	100%		11/20/98	9811-648	5		
		100	**100**	**mg/L**	**100%**	**1.0 %**					
Matrix Spike	Matrix Spike	100	100	mg/L	100%		11/21/98	9811-542	5		
Matrix Spike (Dupl)	Matrix Spike	100	98	mg/L	98%		11/21/98	9811-542	5		
		100	**98**	**mg/L**	**98%**	**2.0 %**					
Method Blank	Method Blank		ND*	mg/L			11/21/98	9811-654	5		
Standard	Standard	100	100	mg/L	100%		11/21/98	9811-655	5		
Standard (Dupl)	Standard	100	100	mg/L	100%		11/21/98	9811-655	5		
		100	**100**	**mg/L**	**100%**	**0.0 %**					
Matrix Spike	Matrix Spike	100	94	mg/L	94%		11/29/98	9811-543	5		
Matrix Spike (Dupl)	Matrix Spike	100	92	mg/L	92%		11/29/98	9811-543	5		
		100	**92**	**mg/L**	**92%**	**2.2 %**					
Method Blank	Method Blank		ND*	mg/L			11/29/98	9811-698	5		
Standard	Standard	100	99	mg/L	99%		11/29/98	9811-699	5		
Standard (Dupl)	Standard	100	100	mg/L	100%		11/29/98	9811-699	5		
		100	**100**	**mg/L**	**100%**	**1.0 %**					

Analysis: ALK (Alkalinity) **Method:** SM 2320 B

QC Batch ID: 1-0-39

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	100	96	mg/L	96%		11/30/98	9811-590	5		
Matrix Spike (Dupl)	Matrix Spike	100	94	mg/L	94%		11/30/98	9811-590	5		
		100	**95**	**mg/L**	**95%**	**1.1 %**					
Method Blank	Method Blank		ND*	mg/L			11/30/98	9811-712	5		
Standard	Standard	100	98	mg/L	98%		11/30/98	9811-713	5		
Standard (Dupl)	Standard	100	99	mg/L	99%		11/30/98	9811-713	5		
		100	**98**	**mg/L**	**98%**	**1.0 %**					
Matrix Spike	Matrix Spike	100	98	mg/L	98%		12/07/98	9811-637	5		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Matrix Spike (Dupl)	Matrix Spike	100	98	mg/L	98%		12/07/98	9811-637	5
		100	**98**	**mg/L**	**98%**	**0.0 %**			
Method Blank	Method Blank		ND*	mg/L			12/07/98	9812-87	5
Standard	Standard	100	97	mg/L	97%		12/07/98	9812-88	5
Standard (Dupl)	Standard	100	98	mg/L	98%		12/07/98	9812-88	5
		100	**97**	**mg/L**	**97%**	**1.0 %**			

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-465

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.98	mg/L	100%		9811-185	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.92	mg/L	98%		9811-185	0.5		
		4.00	**3.95**	**mg/L**	**99%**	**1.3 %**				
Method Blank	Method Blank		ND*	mg/L			9811-322	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-322	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9810-462	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.55	mg/L	110%		9810-462	0.5	50-150%	
		0.50	**0.55**	**mg/L**	**110%**	**1.8 %**			50-150%	20%
Standard	Standard	4.00	4.08	mg/L	102%		9810-493	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.10	mg/L	102%		9810-493	0.5	90-110%	
		4.00	**4.09**	**mg/L**	**102%**	**0.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-467

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.88	mg/L	97%		9811-348	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.97	mg/L	99%		9811-348	0.5		
		4.00	**3.93**	**mg/L**	**98%**	**2.3 %**				
Method Blank	Method Blank		ND*	mg/L			9811-342	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-342	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9810-462	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9810-462	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.92	mg/L	98%		9810-493	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9810-493	0.5	90-110%	
		4.00	**3.97**	**mg/L**	**99%**	**2.5 %**			90-110%	10%
Standard	Standard	10.00	9.45	mg/L	94%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.53	mg/L	95%		9811-152	0.5	90-110%	
		10.00	**9.49**	**mg/L**	**95%**	**0.8 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-468

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.08	mg/L	102%		9811-413	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.10	mg/L	102%		9811-413	0.5		
		4.00	**4.09**	**mg/L**	**102%**	**0.5 %**				
Method Blank	Method Blank		ND*	mg/L			9811-645	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-645	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9810-462	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.54	mg/L	108%		9810-462	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.04	mg/L	101%		9810-493	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.03	mg/L	101%		9810-493	0.5	90-110%	
		4.00	**4.04**	**mg/L**	**101%**	**0.2 %**			90-110%	10%
Standard	Standard	10.00	10.10	mg/L	101%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.22	mg/L	102%		9811-152	0.5	90-110%	
		10.00	**10.16**	**mg/L**	**102%**	**1.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-469

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.02	mg/L	100%		9811-461	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.97	mg/L	99%		9811-461	0.5		
		4.00	**4.00**	**mg/L**	**100%**	**1.2 %**				
Method Blank	Method Blank		ND*	mg/L			9811-653	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-653	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.55	mg/L	110%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**5.6 %**			50-150%	20%
Standard	Standard	4.00	3.97	mg/L	99%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**3.99**	**mg/L**	**100%**	**1.3 %**			90-110%	10%
Standard	Standard	10.00	9.82	mg/L	98%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.90	mg/L	99%		9811-152	0.5	90-110%	
		10.00	**9.86**	**mg/L**	**99%**	**0.8 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-470

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.91	mg/L	98%		9811-379	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.96	mg/L	99%		9811-379	0.5		
		4.00	**3.93**	**mg/L**	**98%**	**1.0 %**				
Method Blank	Method Blank		ND*	mg/L			9811-657	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-657	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.50	mg/L	100%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9811-301	0.5	50-150%	
		0.50	**0.50**	**mg/L**	**100%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	3.91	mg/L	98%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.96	mg/L	99%		9811-646	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**1.3 %**			90-110%	10%
Standard	Standard	10.00	9.73	mg/L	97%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.85	mg/L	98%		9811-152	0.5	90-110%	
		10.00	**9.79**	**mg/L**	**98%**	**1.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-471

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.16	mg/L	104%		9811-466	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.24	mg/L	106%		9811-466	0.5		
		4.00	**4.20**	**mg/L**	**105%**	**1.9 %**				
Method Blank	Method Blank		ND*	mg/L			9811-662	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-662	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**3.8 %**			50-150%	20%
Standard	Standard	4.00	4.04	mg/L	101%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.08	mg/L	102%		9811-646	0.5	90-110%	
		4.00	**4.06**	**mg/L**	**101%**	**1.0 %**			90-110%	10%
Standard	Standard	10.00	10.00	mg/L	100%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.98	mg/L	100%		9811-152	0.5	90-110%	
		10.00	**9.99**	**mg/L**	**100%**	**0.2 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-472

QC Type	Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Matrix Spike	Matrix Spike	4.00	4.01	mg/L	100%		9811-471	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.02	mg/L	100%		9811-471	0.5		
		4.00	**4.02**	**mg/L**	**100%**	**0.2 %**				
Method Blank	Method Blank		ND*	mg/L			9811-672	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-672	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**3.8 %**			50-150%	20%
Standard	Standard	4.00	4.01	mg/L	100%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.01	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**4.01**	**mg/L**	**100%**	**0.0 %**			90-110%	10%
Standard	Standard	10.00	9.71	mg/L	97%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.76	mg/L	98%		9811-152	0.5	90-110%	
		10.00	**9.73**	**mg/L**	**97%**	**0.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-473

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.99	mg/L	100%		9811-389	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.99	mg/L	100%		9811-389	0.5		
		4.00	**3.99**	**mg/L**	**100%**	**0.0 %**				
Method Blank	Method Blank		ND*	mg/L			9811-682	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-682	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.50	mg/L	100%		9811-301	0.5	50-150%	
		0.50	**0.51**	**mg/L**	**102%**	**3.9 %**			50-150%	20%
Standard	Standard	4.00	3.93	mg/L	98%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.95	mg/L	99%		9811-646	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**0.5 %**			90-110%	10%
Standard	Standard	10.00	9.76	mg/L	98%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.86	mg/L	99%		9811-152	0.5	90-110%	
		10.00	**9.81**	**mg/L**	**98%**	**1.0 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-474

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.98	mg/L	100%		9811-513	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.99	mg/L	100%		9811-513	0.5		
		4.00	**3.99**	**mg/L**	**100%**	**0.3 %**				
Method Blank	Method Blank		ND*	mg/L			9811-692	0.5		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-692	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.90	mg/L	97%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.97	mg/L	99%		9811-646	0.5	90-110%	
		4.00	**3.93**	**mg/L**	**98%**	**1.8 %**			90-110%	10%
Standard	Standard	10.00	9.79	mg/L	98%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.96	mg/L	100%		9811-152	0.5	90-110%	
		10.00	**9.88**	**mg/L**	**99%**	**1.7 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-475

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.90	mg/L	97%		9811-447	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.96	mg/L	99%		9811-447	0.5		
		4.00	**3.93**	**mg/L**	**98%**	**1.5 %**				
Method Blank	Method Blank		ND*	mg/L			9811-697	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-697	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	3.94	mg/L	98%		9811-646	0.5	90-110%	
		4.00	**3.94**	**mg/L**	**98%**	**0.0 %**			90-110%	10%
Standard	Standard	10.00	9.81	mg/L	98%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.88	mg/L	99%		9811-152	0.5	90-110%	
		10.00	**9.85**	**mg/L**	**98%**	**0.7 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-476

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	3.92	mg/L	98%		9811-524	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.94	mg/L	98%		9811-524	0.5		
		4.00	**3.93**	**mg/L**	**98%**	**0.3 %**				
Method Blank	Method Blank		ND*	mg/L			9811-700	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-700	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.51	mg/L	102%		9811-301	0.5	50-150%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.98	mg/L	100%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.00	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**3.99**	**mg/L**	**100%**	**0.5 %**			90-110%	10%
Standard	Standard	10.00	9.75	mg/L	97%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.85	mg/L	98%		9811-152	0.5	90-110%	
		10.00	**9.80**	**mg/L**	**98%**	**1.0 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-477

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.05	mg/L	101%		9811-398	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.07	mg/L	102%		9811-398	0.5		
		4.00	**4.06**	**mg/L**	**101%**	**0.5 %**				
Method Blank	Method Blank		ND*	mg/L			9811-702	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9811-702	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
		0.50	**0.54**	**mg/L**	**108%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	4.01	mg/L	100%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.05	mg/L	101%		9811-646	0.5	90-110%	
		4.00	**4.03**	**mg/L**	**101%**	**1.0 %**			90-110%	10%
Standard	Standard	10.00	9.96	mg/L	100%		9811-152	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.95	mg/L	99%		9811-152	0.5	90-110%	
		10.00	**9.95**	**mg/L**	**99%**	**0.1 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-478

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.10	mg/L	102%		9811-550	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.14	mg/L	103%		9811-550	0.5		
		4.00	**4.12**	**mg/L**	**103%**	**1.0 %**				
Method Blank	Method Blank		ND*	mg/L			9812-1	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-1	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.03	mg/L	101%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.06	mg/L	101%		9811-646	0.5	90-110%	
		4.00	**4.05**	**mg/L**	**101%**	**0.7 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Mr. Bruce Northup
City of Topeka

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Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-480

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.00	mg/L	100%		9811-602	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.10	mg/L	102%		9811-602	0.5		
		4.00	**4.05**	**mg/L**	**101%**	**2.5 %**				
Method Blank	Method Blank		ND*	mg/L			9812-48	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-48	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.03	mg/L	101%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.13	mg/L	103%		9811-646	0.5	90-110%	
		4.00	**4.08**	**mg/L**	**102%**	**2.5 %**			90-110%	10%
Standard	Standard	10.00	10.07	mg/L	101%		9812-54	0.5	90-110%	
Standard (Dupl)	Standard	10.00	10.16	mg/L	102%		9812-54	0.5	90-110%	
		10.00	**10.12**	**mg/L**	**101%**	**0.9 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-482

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.89	mg/L	97%		9811-608	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.98	mg/L	100%		9811-608	0.5		
		4.00	**3.94**	**mg/L**	**98%**	**2.3 %**				
Method Blank	Method Blank		ND*	mg/L			9812-71	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-71	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.51	mg/L	102%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
		0.50	**0.51**	**mg/L**	**102%**	**2.0 %**			50-150%	20%
Standard	Standard	4.00	3.98	mg/L	100%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.01	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**4.00**	**mg/L**	**100%**	**0.7 %**			90-110%	10%
Standard	Standard	10.00	9.79	mg/L	98%		9812-54	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.92	mg/L	99%		9812-54	0.5	90-110%	
		10.00	**9.86**	**mg/L**	**99%**	**1.3 %**			90-110%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-483

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.89	mg/L	97%		9811-566	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.96	mg/L	99%		9811-566	0.5		
		4.00	**3.93**	**mg/L**	**98%**	**2.0 %**				
Method Blank	Method Blank		ND*	mg/L			9812-73	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-73	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.52	mg/L	104%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
		0.50	**0.52**	**mg/L**	**104%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.94	mg/L	98%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.00	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**3.97**	**mg/L**	**99%**	**1.5 %**			90-110%	10%
Standard	Standard	10.00	9.83	mg/L	98%		9812-54	0.5	90-110%	
Standard (Dupl)	Standard	10.00	9.91	mg/L	99%		9812-54	0.5	90-110%	
		10.00	**9.87**	**mg/L**	**99%**	**0.8 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-485

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	3.96	mg/L	99%		9811-436	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	3.99	mg/L	100%		9811-436	0.5		
		4.00	**3.98**	**mg/L**	**100%**	**0.5 %**				
Method Blank	Method Blank		ND*	mg/L			9812-92	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-92	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.55	mg/L	110%		9811-301	0.5	50-150%	
		0.50	**0.55**	**mg/L**	**110%**	**1.8 %**			50-150%	20%
Standard	Standard	4.00	4.00	mg/L	100%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.02	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**4.01**	**mg/L**	**100%**	**0.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-486

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Matrix Spike	Matrix Spike	4.00	4.08	mg/L	102%		9811-437	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.08	mg/L	102%		9811-437	0.5		
		4.00	**4.08**	**mg/L**	**102%**	**0.2 %**				

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Method Blank	Method Blank		ND*	mg/L			9812-106	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-106	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.54	mg/L	108%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.53	mg/L	106%		9811-301	0.5	50-150%	
		0.50	**0.53**	**mg/L**	**106%**	**1.9 %**			50-150%	20%
Standard	Standard	4.00	3.98	mg/L	100%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.00	mg/L	100%		9811-646	0.5	90-110%	
		4.00	**3.99**	**mg/L**	**100%**	**0.5 %**			90-110%	10%

Analysis: TOC-ICR (Total Organic Carbon) **Method:** SM 5310 C

QC Batch ID: 7-0-487

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	4.00	4.71	mg/L	118%		9811-438	0.5		
Matrix Spike (Dupl)	Matrix Spike	4.00	4.15	mg/L	104%		9811-438	0.5		
		4.00	**4.43**	**mg/L**	**111%**	**12.6 %**				
Method Blank	Method Blank		ND*	mg/L			9812-116	0.5		
Method Blank (Dupl)	Method Blank		ND*	mg/L			9812-116	0.5		
			ND*	**mg/L**						
Standard	Standard	0.50	0.51	mg/L	102%		9811-301	0.5	50-150%	
Standard (Dupl)	Standard	0.50	0.51	mg/L	102%		9811-301	0.5	50-150%	
		0.50	**0.51**	**mg/L**	**102%**	**0.0 %**			50-150%	20%
Standard	Standard	4.00	4.08	mg/L	102%		9811-646	0.5	90-110%	
Standard (Dupl)	Standard	4.00	4.04	mg/L	101%		9811-646	0.5	90-110%	
		4.00	**4.06**	**mg/L**	**101%**	**1.0 %**			90-110%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-366

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9811-644	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-644	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-644	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-644	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.007	1/cm	78%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9811-299	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.085	1/cm	97%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9811-300	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-367

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-656	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-656	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-656	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-656	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.007	1/cm	78%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9811-299	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**1.2 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-368

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-658	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-658	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-658	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-658	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-369

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-671	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-671	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-671	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-671	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.085	1/cm	97%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9811-300	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-370

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9811-671	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-671	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-671	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-671	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9811-300	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**1.2 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-372

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9811-681	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-681	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-681	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-681	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9811-300	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**1.2 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-374

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-688	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-688	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-688	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-688	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9811-299	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**14.3 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9811-300	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-375

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-691	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-691	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-691	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-691	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-299	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-376

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-691	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-691	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-691	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-691	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.009	0.007	1/cm	78%		9811-690	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9811-690	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-377

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9811-693	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-693	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-693	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-693	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.007	1/cm	78%		9811-690	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.007	1/cm	78%		9811-690	0.009	75-125%	
		0.009	**0.007**	**1/cm**	**78%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-378

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9811-696	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-696	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-696	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-696	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-380

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-701	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-701	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-701	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-701	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
		0.088	**0.083**	**1/cm**	**94%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-381

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9811-707	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-707	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9811-707	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9811-707	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9811-689	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**0.0 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-382

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9812-37	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-37	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9812-37	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-37	0.009		
			ND*	**1/cm**						

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.083	1/cm	94%		9811-689	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**1.2 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-385

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9812-60	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-60	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9812-60	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-60	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.085	1/cm	97%		9811-689	0.009	85-115%	
		0.088	**0.085**	**1/cm**	**97%**	**1.2 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-388

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Method Blank	Method Blank		ND*	1/cm			9812-74	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-74	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9812-74	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-74	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.084	1/cm	95%		9811-689	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.084	1/cm	95%		9811-689	0.009	85-115%	
		0.088	**0.084**	**1/cm**	**95%**	**0.0 %**			85-115%	10%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-390

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9812-101	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-101	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9812-101	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-101	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.087	1/cm	99%		9812-85	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.088	1/cm	100%		9812-85	0.009	85-115%	
		0.088	**0.087**	**1/cm**	**99%**	**1.1 %**			85-115%	10%

Analysis: UV-ICR (UV-254) **Method:** SM 5910 B

QC Batch ID: 8-0-391

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Method Blank	Method Blank		ND*	1/cm			9812-115	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-115	0.009		
			ND*	**1/cm**						
Method Blank	Method Blank		ND*	1/cm			9812-115	0.009		
Method Blank (Dupl)	Method Blank		ND*	1/cm			9812-115	0.009		
			ND*	**1/cm**						
Standard	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
Standard (Dupl)	Standard	0.009	0.008	1/cm	89%		9811-695	0.009	75-125%	
		0.009	**0.008**	**1/cm**	**89%**	**0.0 %**			75-125%	20%
Standard	Standard	0.088	0.087	1/cm	99%		9812-85	0.009	85-115%	
Standard (Dupl)	Standard	0.088	0.087	1/cm	99%		9812-85	0.009	85-115%	
		0.088	**0.087**	**1/cm**	**99%**	**0.0 %**			85-115%	10%

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-21

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Standard	Standard	5.41	5.55	ntu	103%		11/06/98	9807-108	0.05		
Standard	Standard	5.41	5.55	ntu	103%		11/06/98	9807-108	0.05		
Standard	Standard	5.41	5.58	ntu	103%		11/10/98	9807-108	0.05		
Standard	Standard	5.41	5.51	ntu	102%		11/16/98	9807-108	0.05		
Standard	Standard	5.41	5.55	ntu	103%		11/17/98	9807-108	0.05		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Standard	Standard	5.41	5.60	ntu	104%		11/19/98	9807-108	0.05		
Standard	Standard	5.41	5.57	ntu	103%		11/20/98	9807-108	0.05		
Standard	Standard	5.41	5.59	ntu	103%		11/23/98	9807-108	0.05		
Standard	Standard	5.41	5.58	ntu	103%		11/28/98	9807-108	0.05		
Standard	Standard	5.41	5.56	ntu	103%		11/30/98	9807-108	0.05		

Analysis: TURB (Turbidity) **Method:** SM 2130 B

QC Batch ID: 9-0-22

QC Type		Spike	Recovery	Unit	Yield	RPD	Date Run	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard	Standard	5.41	5.52	ntu	102%		11/30/98	9807-108	0.05		
Standard	Standard	5.41	5.53	ntu	102%		12/07/98	9807-108	0.05		
Standard	Standard	5.41	5.56	ntu	103%		12/07/98	9807-108	0.05		
Standard	Standard	5.41	5.53	ntu	102%		12/08/98	9807-108	0.05		
Standard	Standard	5.41	5.56	ntu	103%		12/10/98	9807-108	0.05		
Standard	Standard	5.41	5.55	ntu	103%		01/10/99	9807-108	0.05		
Standard	Standard	5.41	5.57	ntu	103%		01/19/99	9807-108	0.05		
Standard	Standard	5.41	5.60	ntu	104%		01/23/99	9807-108	0.05		
Standard	Standard	5.41	5.54	ntu	102%		01/28/99	9807-108	0.05		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-253

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	22	µg Cl-/L	88%		9812-8	25	75-125%	
Standard - TCP Aqueous	Standard	200	193	µg Cl-/L	96%		9812-7	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-9	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-254

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	206	µg Cl-/L	103%		9811-379	25		
Matrix Spike (Dupl)	Matrix Spike	200	206	µg Cl-/L	103%		9811-379	25		
		200	**206**	**µg Cl-/L**	**103%**	**0.0 %**				
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9812-46	25	75-125%	
Standard - TCP Aqueous	Standard	200	206	µg Cl-/L	103%		9812-45	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-47	25		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-257

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	24	µg Cl-/L	96%		9812-82	25	75-125%	
Standard - TCP Aqueous	Standard	200	198	µg Cl-/L	99%		9812-81	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-83	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-258

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	24	µg Cl-/L	96%		9812-95	25	75-125%	
Standard - TCP Aqueous	Standard	200	197	µg Cl-/L	98%		9812-94	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-96	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-260

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	23	µg Cl-/L	92%		9812-113	25	75-125%	
Standard - TCP Aqueous	Standard	200	195	µg Cl-/L	97%		9812-112	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-114	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-261

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	24	µg Cl-/L	96%		9812-123	25	75-125%	
Standard - TCP Aqueous	Standard	200	191	µg Cl-/L	95%		9812-122	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-124	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-262

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Matrix Spike	Matrix Spike	200	197	µg Cl-/L	98%		9811-432	25		
Matrix Spike (Dupl)	Matrix Spike	200	194	µg Cl-/L	97%		9811-432	25		
		200	**195**	**µg Cl-/L**	**97%**	**1.5 %**				
Standard - TCP Aqueous	Standard	25	21	µg Cl-/L	84%		9812-128	25	75-125%	
Standard - TCP Aqueous	Standard	200	172	µg Cl-/L	86%		9812-127	25	85-115%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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System Blank	Blank		ND*	µg Cl-/L			9812-129	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-266

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	25	µg Cl-/L	100%		9812-156	25	75-125%	
Standard - TCP Aqueous	Standard	200	197	µg Cl-/L	98%		9812-155	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-153	25		

Analysis: TOX-ICR (Total Organic Halide) **Method:** SM 5320 B

QC Batch ID: 12-0-268

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Standard - TCP Aqueous	Standard	25	24	µg Cl-/L	96%		9812-200	25	75-125%	
Standard - TCP Aqueous	Standard	200	191	µg Cl-/L	95%		9812-199	25	85-115%	
System Blank	Blank		ND*	µg Cl-/L			9812-201	25		

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-272-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	RPD
Bromodichloromethane	Duplicate	19.5	19.4	µg/L		0.5%	9811-224	1		
Bromodichloromethane	Matrix Spike	40.0	43.7	µg/L	109%		9811-455	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9811-703	1		
Bromodichloromethane	Secondary Source Std	20.0	21.5	µg/L	108%		9811-704	1	70-130%	
Bromodichloromethane	Standard	20.0	20.3	µg/L	102%		9811-705	1	80-120%	
Bromodichloromethane	Standard	20.0	21.0	µg/L	105%		9811-705	1	80-120%	
Bromodichloromethane	Standard	40.0	40.1	µg/L	100%		9811-706	1	80-120%	
Bromoform	Duplicate	44.6	41.9	µg/L		6.2%	9811-224	1		
Bromoform	Matrix Spike	40.0	46.9	µg/L	117%		9811-455	1		
Bromoform	Method Blank		ND*	µg/L			9811-703	1		
Bromoform	Secondary Source Std	20.0	19.8	µg/L	99%		9811-704	1	70-130%	
Bromoform	Standard	20.0	19.5	µg/L	97%		9811-705	1	80-120%	
Bromoform	Standard	20.0	21.9	µg/L	110%		9811-705	1	80-120%	
Bromoform	Standard	40.0	41.7	µg/L	104%		9811-706	1	80-120%	
Chloroform	Duplicate	4.2	4.0	µg/L		4.9%	9811-224	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Chloroform	Matrix Spike	40.0	35.3	µg/L	88%		9811-455	1		
Chloroform	Method Blank		ND*	µg/L			9811-703	1		
Chloroform	Secondary Source Std	20.0	22.2	µg/L	111%		9811-704	1	70-130%	
Chloroform	Standard	20.0	19.8	µg/L	99%		9811-705	1	80-120%	
Chloroform	Standard	20.0	20.4	µg/L	102%		9811-705	1	80-120%	
Chloroform	Standard	40.0	41.1	µg/L	103%		9811-706	1	80-120%	
Dibromochloromethane	Duplicate	51.7	48.9	µg/L		5.6%	9811-224	1		
Dibromochloromethane	Matrix Spike	40.0	45.9	µg/L	115%		9811-455	1		
Dibromochloromethane	Method Blank		ND*	µg/L			9811-703	1		
Dibromochloromethane	Secondary Source Std	20.0	20.7	µg/L	103%		9811-704	1	70-130%	
Dibromochloromethane	Standard	20.0	20.6	µg/L	103%		9811-705	1	80-120%	
Dibromochloromethane	Standard	20.0	21.4	µg/L	107%		9811-705	1	80-120%	
Dibromochloromethane	Standard	40.0	40.8	µg/L	102%		9811-706	1	80-120%	

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-279-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	1.0	1.2	µg/L		18.2%	9811-492	1		
Bromodichloromethane	Matrix Spike	40.0	42.3	µg/L	106%		9811-505	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9812-56	1		
Bromodichloromethane	Secondary Source Std	20.0	23.6	µg/L	118%		9812-57	1	70-130%	
Bromodichloromethane	Standard	20.0	21.8	µg/L	109%		9812-58	1	80-120%	
Bromodichloromethane	Standard	20.0	23.2	µg/L	116%		9812-58	1	80-120%	
Bromodichloromethane	Standard	40.0	39.8	µg/L	99%		9812-59	1	80-120%	
Bromoform	Duplicate	ND	ND	µg/L		NA	9811-492	1		
Bromoform	Matrix Spike	40.0	42.8	µg/L	107%		9811-505	1		
Bromoform	Method Blank		ND*	µg/L			9812-56	1		
Bromoform	Secondary Source Std	20.0	20.5	µg/L	102%		9812-57	1	70-130%	
Bromoform	Standard	20.0	20.0	µg/L	100%		9812-58	1	80-120%	
Bromoform	Standard	20.0	22.0	µg/L	110%		9812-58	1	80-120%	
Bromoform	Standard	40.0	41.3	µg/L	103%		9812-59	1	80-120%	
Chloroform	Duplicate	ND	ND	µg/L		NA	9811-492	1		
Chloroform	Matrix Spike	40.0	43.2	µg/L	108%		9811-505	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Chloroform	Method Blank		ND*	µg/L			9812-56	1	
Chloroform	Secondary Source Std	20.0	22.8	µg/L	114%		9812-57	1	70-130%
Chloroform	Standard	20.0	21.2	µg/L	106%		9812-58	1	80-120%
Chloroform	Standard	20.0	23.1	µg/L	116%		9812-58	1	80-120%
Chloroform	Standard	40.0	40.4	µg/L	101%		9812-59	1	80-120%
Dibromochloromethane	Duplicate	1.2	1.2	µg/L		0.0%	9811-492	1	
Dibromochloromethane	Matrix Spike	40.0	42.5	µg/L	106%		9811-505	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9812-56	1	
Dibromochloromethane	Secondary Source Std	20.0	22.7	µg/L	114%		9812-57	1	70-130%
Dibromochloromethane	Standard	20.0	22.2	µg/L	111%		9812-58	1	80-120%
Dibromochloromethane	Standard	20.0	23.7	µg/L	119%		9812-58	1	80-120%
Dibromochloromethane	Standard	40.0	40.3	µg/L	101%		9812-59	1	80-120%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-284-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	2.8	2.8	µg/L		0.0%	9811-513	1		
Bromodichloromethane	Matrix Spike	40.0	41.3	µg/L	103%		9811-428	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9812-97	1		
Bromodichloromethane	Secondary Source Std	20.0	21.5	µg/L	108%		9812-98	1	70-130%	
Bromodichloromethane	Standard	20.0	20.6	µg/L	103%		9812-99	1	80-120%	
Bromodichloromethane	Standard	20.0	21.1	µg/L	106%		9812-99	1	80-120%	
Bromodichloromethane	Standard	40.0	39.5	µg/L	99%		9812-100	1	80-120%	
Bromodichloromethane	Standard	40.0	40.3	µg/L	101%		9812-100	1	80-120%	
Bromoform	Duplicate	ND	ND	µg/L		NA	9811-513	1		
Bromoform	Matrix Spike	40.0	44.5	µg/L	111%		9811-428	1		
Bromoform	Method Blank		ND*	µg/L			9812-97	1		
Bromoform	Secondary Source Std	20.0	19.0	µg/L	95%		9812-98	1	70-130%	
Bromoform	Standard	20.0	20.7	µg/L	103%		9812-99	1	80-120%	
Bromoform	Standard	20.0	20.4	µg/L	102%		9812-99	1	80-120%	
Bromoform	Standard	40.0	38.4	µg/L	96%		9812-100	1	80-120%	
Bromoform	Standard	40.0	42.0	µg/L	105%		9812-100	1	80-120%	
Chloroform	Duplicate	1.8	1.8	µg/L		0.0%	9811-513	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Chloroform	Matrix Spike	40.0	44.0	µg/L	110%		9811-428	1	
Chloroform	Method Blank		ND*	µg/L			9812-97	1	
Chloroform	Secondary Source Std	20.0	21.7	µg/L	109%		9812-98	1	70-130%
Chloroform	Standard	20.0	19.8	µg/L	99%		9812-99	1	80-120%
Chloroform	Standard	20.0	20.5	µg/L	102%		9812-99	1	80-120%
Chloroform	Standard	40.0	39.8	µg/L	99%		9812-100	1	80-120%
Chloroform	Standard	40.0	40.3	µg/L	101%		9812-100	1	80-120%
Dibromochloromethane	Duplicate	2.8	2.8	µg/L		0.0%	9811-513	1	
Dibromochloromethane	Matrix Spike	40.0	40.7	µg/L	102%		9811-428	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9812-97	1	
Dibromochloromethane	Secondary Source Std	20.0	21.1	µg/L	106%		9812-98	1	70-130%
Dibromochloromethane	Standard	20.0	20.9	µg/L	104%		9812-99	1	80-120%
Dibromochloromethane	Standard	20.0	21.1	µg/L	106%		9812-99	1	80-120%
Dibromochloromethane	Standard	40.0	39.8	µg/L	99%		9812-100	1	80-120%
Dibromochloromethane	Standard	40.0	40.6	µg/L	102%		9812-100	1	80-120%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-288-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	ND	ND	µg/L		NA	9811-552	1		
Bromodichloromethane	Matrix Spike	40.0	41.2	µg/L	103%		9811-603	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9812-117	1		
Bromodichloromethane	Secondary Source Std	20.0	21.1	µg/L	106%		9812-118	1	70-130%	
Bromodichloromethane	Standard	20.0	18.9	µg/L	94%		9812-119	1	80-120%	
Bromodichloromethane	Standard	20.0	19.5	µg/L	97%		9812-119	1	80-120%	
Bromodichloromethane	Standard	40.0	43.0	µg/L	108%		9812-120	1	80-120%	
Bromoform	Duplicate	ND	ND	µg/L		NA	9811-552	1		
Bromoform	Matrix Spike	40.0	39.5	µg/L	99%		9811-603	1		
Bromoform	Method Blank		ND*	µg/L			9812-117	1		
Bromoform	Secondary Source Std	20.0	18.8	µg/L	94%		9812-118	1	70-130%	
Bromoform	Standard	20.0	18.6	µg/L	93%		9812-119	1	80-120%	
Bromoform	Standard	20.0	18.6	µg/L	93%		9812-119	1	80-120%	
Bromoform	Standard	40.0	40.9	µg/L	102%		9812-120	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Chloroform	Duplicate	ND	ND	µg/L		NA	9811-552	1	
Chloroform	Matrix Spike	40.0	42.8	µg/L	107%		9811-603	1	
Chloroform	Method Blank		ND*	µg/L			9812-117	1	
Chloroform	Secondary Source Std	20.0	21.3	µg/L	106%		9812-118	1	70-130%
Chloroform	Standard	20.0	18.1	µg/L	91%		9812-119	1	80-120%
Chloroform	Standard	20.0	19.5	µg/L	97%		9812-119	1	80-120%
Chloroform	Standard	40.0	44.3	µg/L	111%		9812-120	1	80-120%
Dibromochloromethane	Duplicate	ND	ND	µg/L		NA	9811-552	1	
Dibromochloromethane	Matrix Spike	40.0	41.5	µg/L	104%		9811-603	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9812-117	1	
Dibromochloromethane	Secondary Source Std	20.0	20.2	µg/L	101%		9812-118	1	70-130%
Dibromochloromethane	Standard	20.0	19.0	µg/L	95%		9812-119	1	80-120%
Dibromochloromethane	Standard	20.0	19.4	µg/L	97%		9812-119	1	80-120%
Dibromochloromethane	Standard	40.0	42.6	µg/L	106%		9812-120	1	80-120%

Analysis: THM-ICR (Trihalomethanes (ICR)) **Method:** EPA 551.1

QC Batch ID: 0-290-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromodichloromethane	Duplicate	11.1	11.4	µg/L		2.7%	9811-641	1		
Bromodichloromethane	Matrix Spike	40.0	35.8	µg/L	89%		9811-437	1		
Bromodichloromethane	Method Blank		ND*	µg/L			9812-137	1		
Bromodichloromethane	Secondary Source Std	20.0	23.6	µg/L	118%		9812-138	1	70-130%	
Bromodichloromethane	Standard	20.0	18.8	µg/L	94%		9812-139	1	80-120%	
Bromodichloromethane	Standard	20.0	19.1	µg/L	96%		9812-139	1	80-120%	
Bromodichloromethane	Standard	20.0	19.5	µg/L	97%		9812-139	1	80-120%	
Bromodichloromethane	Standard	40.0	41.4	µg/L	103%		9812-140	1	80-120%	
Bromodichloromethane	Standard	40.0	41.5	µg/L	104%		9812-140	1	80-120%	
Bromoform	Duplicate	ND	ND	µg/L		NA	9811-641	1		
Bromoform	Matrix Spike	40.0	42.7	µg/L	107%		9811-437	1		
Bromoform	Method Blank		ND*	µg/L			9812-137	1		
Bromoform	Secondary Source Std	20.0	22.6	µg/L	113%		9812-138	1	70-130%	
Bromoform	Standard	20.0	18.2	µg/L	91%		9812-139	1	80-120%	
Bromoform	Standard	20.0	18.2	µg/L	91%		9812-139	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Bromoform	Standard	20.0	20.1	µg/L	101%		9812-139	1	80-120%
Bromoform	Standard	40.0	41.8	µg/L	104%		9812-140	1	80-120%
Bromoform	Standard	40.0	42.9	µg/L	107%		9812-140	1	80-120%
Chloroform	Duplicate	25.2	25.8	µg/L		2.4%	9811-641	1	
Chloroform	Matrix Spike	40.0	37.8	µg/L	94%		9811-437	1	
Chloroform	Method Blank		ND*	µg/L			9812-137	1	
Chloroform	Secondary Source Std	20.0	21.9	µg/L	110%		9812-138	1	70-130%
Chloroform	Standard	20.0	18.0	µg/L	90%		9812-139	1	80-120%
Chloroform	Standard	20.0	18.9	µg/L	94%		9812-139	1	80-120%
Chloroform	Standard	20.0	19.0	µg/L	95%		9812-139	1	80-120%
Chloroform	Standard	40.0	42.5	µg/L	106%		9812-140	1	80-120%
Chloroform	Standard	40.0	41.4	µg/L	103%		9812-140	1	80-120%
Dibromochloromethane	Duplicate	2.1	2.3	µg/L		9.1%	9811-641	1	
Dibromochloromethane	Matrix Spike	40.0	36.6	µg/L	92%		9811-437	1	
Dibromochloromethane	Method Blank		ND*	µg/L			9812-137	1	
Dibromochloromethane	Secondary Source Std	20.0	23.7	µg/L	119%		9812-138	1	70-130%
Dibromochloromethane	Standard	20.0	19.1	µg/L	96%		9812-139	1	80-120%
Dibromochloromethane	Standard	20.0	19.1	µg/L	96%		9812-139	1	80-120%
Dibromochloromethane	Standard	20.0	19.0	µg/L	95%		9812-139	1	80-120%
Dibromochloromethane	Standard	40.0	41.5	µg/L	104%		9812-140	1	80-120%
Dibromochloromethane	Standard	40.0	42.1	µg/L	105%		9812-140	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-273-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	5.9	5.2	µg/L		12.6%	9811-282	1		
Bromochloroacetic acid	Matrix Spike	40.0	40.0	µg/L	100%		9811-379	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9812-2	1		
Bromochloroacetic acid	Secondary Source Std	20.0	20.6	µg/L	103%		9812-3	1	70-130%	
Bromochloroacetic acid	Standard	20.0	20.2	µg/L	101%		9812-4	1	80-120%	
Bromochloroacetic acid	Standard	20.0	20.2	µg/L	101%		9812-4	1	80-120%	
Bromochloroacetic acid	Standard	40.0	39.5	µg/L	99%		9812-5	1	80-120%	
Bromodichloroacetic acid	Duplicate	2.7	2.2	µg/L		20.4%	9811-282	1		
Bromodichloroacetic acid	Matrix Spike	40.0	38.3	µg/L	96%		9811-379	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Bromodichloroacetic acid	Method Blank		ND*	µg/L			9812-2	1	
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9812-3	1	70-130%
Bromodichloroacetic acid	Standard	20.0	19.8	µg/L	99%		9812-4	1	80-120%
Bromodichloroacetic acid	Standard	20.0	19.4	µg/L	97%		9812-4	1	80-120%
Bromodichloroacetic acid	Standard	40.0	39.5	µg/L	99%		9812-5	1	80-120%
Chlorodibromoacetic acid	Duplicate	3.2	2.6	µg/L		20.7%	9811-282	2	
Chlorodibromoacetic acid	Matrix Spike	40.0	35.9	µg/L	90%		9811-379	2	
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9812-2	2	
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9812-3	2	70-130%
Chlorodibromoacetic acid	Standard	20.0	19.2	µg/L	96%		9812-4	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	18.2	µg/L	91%		9812-4	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	39.6	µg/L	99%		9812-5	2	80-120%
Dibromoacetic acid	Duplicate	13.3	11.1	µg/L		18.0%	9811-282	1	
Dibromoacetic acid	Matrix Spike	40.0	39.9	µg/L	100%		9811-379	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9812-2	1	
Dibromoacetic acid	Secondary Source Std	20.0	20.6	µg/L	103%		9812-3	1	70-130%
Dibromoacetic acid	Standard	20.0	20.4	µg/L	102%		9812-4	1	80-120%
Dibromoacetic acid	Standard	20.0	19.4	µg/L	97%		9812-4	1	80-120%
Dibromoacetic acid	Standard	40.0	39.3	µg/L	98%		9812-5	1	80-120%
Dichloroacetic acid	Duplicate	2.6	2.3	µg/L		12.2%	9811-282	1	
Dichloroacetic acid	Matrix Spike	40.0	39.5	µg/L	99%		9811-379	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9812-2	1	
Dichloroacetic acid	Secondary Source Std	20.0	21.8	µg/L	109%		9812-3	1	70-130%
Dichloroacetic acid	Standard	20.0	19.8	µg/L	99%		9812-4	1	80-120%
Dichloroacetic acid	Standard	20.0	19.5	µg/L	97%		9812-4	1	80-120%
Dichloroacetic acid	Standard	40.0	39.0	µg/L	97%		9812-5	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-282	1	
Monobromoacetic acid	Matrix Spike	40.0	38.1	µg/L	95%		9811-379	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9812-2	1	
Monobromoacetic acid	Secondary Source Std	20.0	22.6	µg/L	113%		9812-3	1	70-130%
Monobromoacetic acid	Standard	20.0	18.6	µg/L	93%		9812-4	1	80-120%
Monobromoacetic acid	Standard	20.0	18.5	µg/L	93%		9812-4	1	80-120%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc. 6 Knollcrest Drive Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Monobromoacetic acid	Standard	40.0	40.9	µg/L	102%		9812-5	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-282	2	
Monochloroacetic acid	Matrix Spike	40.0	39.9	µg/L	100%		9811-379	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9812-2	2	
Monochloroacetic acid	Secondary Source Std	20.0	19.3	µg/L	97%		9812-3	2	70-130%
Monochloroacetic acid	Standard	20.0	19.0	µg/L	95%		9812-4	2	80-120%
Monochloroacetic acid	Standard	20.0	19.6	µg/L	98%		9812-4	2	80-120%
Monochloroacetic acid	Standard	40.0	39.3	µg/L	98%		9812-5	2	80-120%
Tribromoacetic acid	Duplicate	5.6	4.6	µg/L		19.6%	9811-282	4	
Tribromoacetic acid	Matrix Spike	40.0	34.4	µg/L	86%		9811-379	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9812-2	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9812-3	4	70-130%
Tribromoacetic acid	Standard	20.0	18.4	µg/L	92%		9812-4	4	80-120%
Tribromoacetic acid	Standard	20.0	17.7	µg/L	89%		9812-4	4	80-120%
Tribromoacetic acid	Standard	40.0	39.1	µg/L	98%		9812-5	4	80-120%
Trichloroacetic acid	Duplicate	2.3	2.0	µg/L		14.0%	9811-282	1	
Trichloroacetic acid	Matrix Spike	40.0	39.2	µg/L	98%		9811-379	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9812-2	1	
Trichloroacetic acid	Secondary Source Std	20.0	20.0	µg/L	100%		9812-3	1	70-130%
Trichloroacetic acid	Standard	20.0	20.5	µg/L	102%		9812-4	1	80-120%
Trichloroacetic acid	Standard	20.0	20.3	µg/L	102%		9812-4	1	80-120%
Trichloroacetic acid	Standard	40.0	39.2	µg/L	98%		9812-5	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-280-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	1		
Bromochloroacetic acid	Matrix Spike	40.0	42.7	µg/L	107%		9811-473	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9812-76	1		
Bromochloroacetic acid	Secondary Source Std	20.0	21.5	µg/L	108%		9812-77	1	70-130%	
Bromochloroacetic acid	Standard	20.0	21.0	µg/L	105%		9812-78	1	80-120%	
Bromochloroacetic acid	Standard	20.0	21.3	µg/L	106%		9812-78	1	80-120%	
Bromochloroacetic acid	Standard	40.0	38.3	µg/L	96%		9812-79	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Bromodichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	1	
Bromodichloroacetic acid	Matrix Spike	40.0	45.9	µg/L	115%		9811-473	1	
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9812-76	1	
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9812-77	1	70-130%
Bromodichloroacetic acid	Standard	20.0	23.0	µg/L	115%		9812-78	1	80-120%
Bromodichloroacetic acid	Standard	20.0	21.5	µg/L	108%		9812-78	1	80-120%
Bromodichloroacetic acid	Standard	40.0	41.4	µg/L	103%		9812-79	1	80-120%
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	2	
Chlorodibromoacetic acid	Matrix Spike	40.0	45.1	µg/L	113%		9811-473	2	
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9812-76	2	
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9812-77	2	70-130%
Chlorodibromoacetic acid	Standard	20.0	23.6	µg/L	118%		9812-78	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	22.3	µg/L	112%		9812-78	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	42.9	µg/L	107%		9812-79	2	80-120%
Dibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	1	
Dibromoacetic acid	Matrix Spike	40.0	43.6	µg/L	109%		9811-473	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9812-76	1	
Dibromoacetic acid	Secondary Source Std	20.0	22.5	µg/L	113%		9812-77	1	70-130%
Dibromoacetic acid	Standard	20.0	22.2	µg/L	111%		9812-78	1	80-120%
Dibromoacetic acid	Standard	20.0	22.3	µg/L	112%		9812-78	1	80-120%
Dibromoacetic acid	Standard	40.0	39.1	µg/L	98%		9812-79	1	80-120%
Dichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	1	
Dichloroacetic acid	Matrix Spike	40.0	40.1	µg/L	100%		9811-473	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9812-76	1	
Dichloroacetic acid	Secondary Source Std	20.0	21.3	µg/L	106%		9812-77	1	70-130%
Dichloroacetic acid	Standard	20.0	20.1	µg/L	101%		9812-78	1	80-120%
Dichloroacetic acid	Standard	20.0	20.4	µg/L	102%		9812-78	1	80-120%
Dichloroacetic acid	Standard	40.0	37.6	µg/L	94%		9812-79	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	1	
Monobromoacetic acid	Matrix Spike	40.0	37.7	µg/L	94%		9811-473	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9812-76	1	
Monobromoacetic acid	Secondary Source Std	20.0	19.7	µg/L	98%		9812-77	1	70-130%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Mr. Bruce Northup
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Monobromoacetic acid	Standard	20.0	19.9	µg/L	99%		9812-78	1	80-120%
Monobromoacetic acid	Standard	20.0	19.9	µg/L	99%		9812-78	1	80-120%
Monobromoacetic acid	Standard	40.0	38.0	µg/L	95%		9812-79	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	2	
Monochloroacetic acid	Matrix Spike	40.0	39.3	µg/L	98%		9811-473	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9812-76	2	
Monochloroacetic acid	Secondary Source Std	20.0	20.2	µg/L	101%		9812-77	2	70-130%
Monochloroacetic acid	Standard	20.0	20.3	µg/L	102%		9812-78	2	80-120%
Monochloroacetic acid	Standard	20.0	21.2	µg/L	106%		9812-78	2	80-120%
Monochloroacetic acid	Standard	40.0	38.5	µg/L	96%		9812-79	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	4	
Tribromoacetic acid	Matrix Spike	40.0	44.6	µg/L	112%		9811-473	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9812-76	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9812-77	4	70-130%
Tribromoacetic acid	Standard	20.0	22.3	µg/L	112%		9812-78	4	80-120%
Tribromoacetic acid	Standard	20.0	20.9	µg/L	104%		9812-78	4	80-120%
Tribromoacetic acid	Standard	40.0	42.4	µg/L	106%		9812-79	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-466	1	
Trichloroacetic acid	Matrix Spike	40.0	45.1	µg/L	113%		9811-473	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9812-76	1	
Trichloroacetic acid	Secondary Source Std	20.0	21.9	µg/L	110%		9812-77	1	70-130%
Trichloroacetic acid	Standard	20.0	21.5	µg/L	108%		9812-78	1	80-120%
Trichloroacetic acid	Standard	20.0	21.8	µg/L	109%		9812-78	1	80-120%
Trichloroacetic acid	Standard	40.0	37.1	µg/L	93%		9812-79	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-286-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	1.1	1.2	µg/L		8.7%	9811-512	1		
Bromochloroacetic acid	Matrix Spike	40.0	39.6	µg/L	99%		9811-411	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9812-107	1		
Bromochloroacetic acid	Secondary Source Std	20.0	22.9	µg/L	115%		9812-108	1	70-130%	
Bromochloroacetic acid	Standard	20.0	20.3	µg/L	102%		9812-109	1	80-120%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Study Title: ICR RSSCT #4

Bromochloroacetic acid	Standard	20.0	20.6	µg/L	103%		9812-109	1	80-120%
Bromochloroacetic acid	Standard	40.0	40.7	µg/L	102%		9812-110	1	80-120%
Bromodichloroacetic acid	Duplicate	1.1	1.1	µg/L		0.0%	9811-512	1	
Bromodichloroacetic acid	Matrix Spike	40.0	42.4	µg/L	106%		9811-411	1	
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9812-107	1	
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9812-108	1	70-130%
Bromodichloroacetic acid	Standard	20.0	20.4	µg/L	102%		9812-109	1	80-120%
Bromodichloroacetic acid	Standard	20.0	20.7	µg/L	103%		9812-109	1	80-120%
Bromodichloroacetic acid	Standard	40.0	39.3	µg/L	98%		9812-110	1	80-120%
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	2	
Chlorodibromoacetic acid	Matrix Spike	40.0	42.3	µg/L	106%		9811-411	2	
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9812-107	2	
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9812-108	2	70-130%
Chlorodibromoacetic acid	Standard	20.0	20.4	µg/L	102%		9812-109	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	20.3	µg/L	102%		9812-109	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	39.3	µg/L	98%		9812-110	2	80-120%
Dibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	1	
Dibromoacetic acid	Matrix Spike	40.0	40.4	µg/L	101%		9811-411	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9812-107	1	
Dibromoacetic acid	Secondary Source Std	20.0	23.2	µg/L	116%		9812-108	1	70-130%
Dibromoacetic acid	Standard	20.0	20.5	µg/L	102%		9812-109	1	80-120%
Dibromoacetic acid	Standard	20.0	20.7	µg/L	103%		9812-109	1	80-120%
Dibromoacetic acid	Standard	40.0	40.1	µg/L	100%		9812-110	1	80-120%
Dichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	1	
Dichloroacetic acid	Matrix Spike	40.0	38.3	µg/L	96%		9811-411	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9812-107	1	
Dichloroacetic acid	Secondary Source Std	20.0	23.3	µg/L	117%		9812-108	1	70-130%
Dichloroacetic acid	Standard	20.0	19.8	µg/L	99%		9812-109	1	80-120%
Dichloroacetic acid	Standard	20.0	19.4	µg/L	97%		9812-109	1	80-120%
Dichloroacetic acid	Standard	40.0	39.8	µg/L	99%		9812-110	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	1	
Monobromoacetic acid	Matrix Spike	40.0	36.5	µg/L	91%		9811-411	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9812-107	1	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Study Title: ICR RSSCT #4

Monobromoacetic acid	Secondary Source Std	20.0	21.8	µg/L	109%		9812-108	1	70-130%
Monobromoacetic acid	Standard	20.0	18.3	µg/L	92%		9812-109	1	80-120%
Monobromoacetic acid	Standard	20.0	17.9	µg/L	89%		9812-109	1	80-120%
Monobromoacetic acid	Standard	40.0	42.7	µg/L	107%		9812-110	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	2	
Monochloroacetic acid	Matrix Spike	40.0	38.5	µg/L	96%		9811-411	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9812-107	2	
Monochloroacetic acid	Secondary Source Std	20.0	21.1	µg/L	106%		9812-108	2	70-130%
Monochloroacetic acid	Standard	20.0	18.4	µg/L	92%		9812-109	2	80-120%
Monochloroacetic acid	Standard	20.0	17.4	µg/L	87%		9812-109	2	80-120%
Monochloroacetic acid	Standard	40.0	41.7	µg/L	104%		9812-110	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	4	
Tribromoacetic acid	Matrix Spike	40.0	41.1	µg/L	103%		9811-411	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9812-107	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9812-108	4	70-130%
Tribromoacetic acid	Standard	20.0	20.4	µg/L	102%		9812-109	4	80-120%
Tribromoacetic acid	Standard	20.0	20.3	µg/L	102%		9812-109	4	80-120%
Tribromoacetic acid	Standard	40.0	38.4	µg/L	96%		9812-110	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-512	1	
Trichloroacetic acid	Matrix Spike	40.0	40.2	µg/L	101%		9811-411	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9812-107	1	
Trichloroacetic acid	Secondary Source Std	20.0	23.0	µg/L	115%		9812-108	1	70-130%
Trichloroacetic acid	Standard	20.0	20.7	µg/L	103%		9812-109	1	80-120%
Trichloroacetic acid	Standard	20.0	20.5	µg/L	102%		9812-109	1	80-120%
Trichloroacetic acid	Standard	40.0	39.5	µg/L	99%		9812-110	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-289-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	1		
Bromochloroacetic acid	Matrix Spike	40.0	44.7	µg/L	112%		9811-602	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9812-130	1		
Bromochloroacetic acid	Secondary Source Std	20.0	20.9	µg/L	104%		9812-131	1	70-130%	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Bromochloroacetic acid	Standard	20.0	18.8	µg/L	94%		9812-132	1	80-120%
Bromochloroacetic acid	Standard	20.0	19.0	µg/L	95%		9812-132	1	80-120%
Bromochloroacetic acid	Standard	40.0	41.5	µg/L	104%		9812-133	1	80-120%
Bromodichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	1	
Bromodichloroacetic acid	Matrix Spike	40.0	44.2	µg/L	111%		9811-602	1	
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9812-130	1	
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9812-131	1	70-130%
Bromodichloroacetic acid	Standard	20.0	17.8	µg/L	89%		9812-132	1	80-120%
Bromodichloroacetic acid	Standard	20.0	17.7	µg/L	89%		9812-132	1	80-120%
Bromodichloroacetic acid	Standard	40.0	43.4	µg/L	109%		9812-133	1	80-120%
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	2	
Chlorodibromoacetic acid	Matrix Spike	40.0	47.0	µg/L	118%		9811-602	2	
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9812-130	2	
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9812-131	2	70-130%
Chlorodibromoacetic acid	Standard	20.0	17.7	µg/L	89%		9812-132	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	17.6	µg/L	88%		9812-132	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	44.0	µg/L	110%		9812-133	2	80-120%
Dibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	1	
Dibromoacetic acid	Matrix Spike	40.0	46.1	µg/L	115%		9811-602	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9812-130	1	
Dibromoacetic acid	Secondary Source Std	20.0	21.0	µg/L	105%		9812-131	1	70-130%
Dibromoacetic acid	Standard	20.0	18.5	µg/L	93%		9812-132	1	80-120%
Dibromoacetic acid	Standard	20.0	18.6	µg/L	93%		9812-132	1	80-120%
Dibromoacetic acid	Standard	40.0	42.1	µg/L	105%		9812-133	1	80-120%
Dichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	1	
Dichloroacetic acid	Matrix Spike	40.0	40.0	µg/L	100%		9811-602	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9812-130	1	
Dichloroacetic acid	Secondary Source Std	20.0	22.2	µg/L	111%		9812-131	1	70-130%
Dichloroacetic acid	Standard	20.0	19.1	µg/L	96%		9812-132	1	80-120%
Dichloroacetic acid	Standard	20.0	18.7	µg/L	93%		9812-132	1	80-120%
Dichloroacetic acid	Standard	40.0	40.6	µg/L	102%		9812-133	1	80-120%
Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	1	
Monobromoacetic acid	Matrix Spike	40.0	37.9	µg/L	95%		9811-602	1	

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Monobromoacetic acid	Method Blank		ND*	µg/L			9812-130	1	
Monobromoacetic acid	Secondary Source Std	20.0	23.1	µg/L	116%		9812-131	1	70-130%
Monobromoacetic acid	Standard	20.0	19.1	µg/L	96%		9812-132	1	80-120%
Monobromoacetic acid	Standard	20.0	19.1	µg/L	96%		9812-132	1	80-120%
Monobromoacetic acid	Standard	40.0	40.7	µg/L	102%		9812-133	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	2	
Monochloroacetic acid	Matrix Spike	40.0	38.6	µg/L	97%		9811-602	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9812-130	2	
Monochloroacetic acid	Secondary Source Std	20.0	22.8	µg/L	114%		9812-131	2	70-130%
Monochloroacetic acid	Standard	20.0	19.5	µg/L	97%		9812-132	2	80-120%
Monochloroacetic acid	Standard	20.0	19.3	µg/L	97%		9812-132	2	80-120%
Monochloroacetic acid	Standard	40.0	40.9	µg/L	102%		9812-133	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	4	
Tribromoacetic acid	Matrix Spike	40.0	44.1	µg/L	110%		9811-602	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9812-130	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9812-131	4	70-130%
Tribromoacetic acid	Standard	20.0	18.6	µg/L	93%		9812-132	4	80-120%
Tribromoacetic acid	Standard	20.0	18.0	µg/L	90%		9812-132	4	80-120%
Tribromoacetic acid	Standard	40.0	44.0	µg/L	110%		9812-133	4	80-120%
Trichloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-551	1	
Trichloroacetic acid	Matrix Spike	40.0	47.2	µg/L	118%		9811-602	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9812-130	1	
Trichloroacetic acid	Secondary Source Std	20.0	20.4	µg/L	102%		9812-131	1	70-130%
Trichloroacetic acid	Standard	20.0	18.0	µg/L	90%		9812-132	1	80-120%
Trichloroacetic acid	Standard	20.0	17.9	µg/L	89%		9812-132	1	80-120%
Trichloroacetic acid	Standard	40.0	42.1	µg/L	105%		9812-133	1	80-120%

Analysis: HAA-ICR (Haloacetic Acids) **Method:** EPA 552.2

QC Batch ID: 0-291-0

QC Type		Spike	Recovery	Unit	Yield	RPD	S&H ID	MRL	Acceptance Criteria Range	Acceptance Criteria RPD
Bromochloroacetic acid	Duplicate	2.8	2.9	µg/L		3.5%	9811-630	1		
Bromochloroacetic acid	Matrix Spike	40.0	34.9	µg/L	87%		9811-583	1		
Bromochloroacetic acid	Method Blank		ND*	µg/L			9812-195	1		

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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Bromochloroacetic acid	Secondary Source Std	20.0	20.1	µg/L	101%		9812-196	1	70-130%
Bromochloroacetic acid	Standard	20.0	19.3	µg/L	97%		9812-197	1	80-120%
Bromochloroacetic acid	Standard	20.0	19.6	µg/L	98%		9812-197	1	80-120%
Bromochloroacetic acid	Standard	40.0	41.0	µg/L	102%		9812-198	1	80-120%
Bromodichloroacetic acid	Duplicate	2.8	2.7	µg/L		3.6%	9811-630	1	
Bromodichloroacetic acid	Matrix Spike	40.0	36.6	µg/L	92%		9811-583	1	
Bromodichloroacetic acid	Method Blank		ND*	µg/L			9812-195	1	
Bromodichloroacetic acid	Secondary Source Std		ND	µg/L			9812-196	1	70-130%
Bromodichloroacetic acid	Standard	20.0	18.9	µg/L	94%		9812-197	1	80-120%
Bromodichloroacetic acid	Standard	20.0	20.8	µg/L	104%		9812-197	1	80-120%
Bromodichloroacetic acid	Standard	40.0	42.4	µg/L	106%		9812-198	1	80-120%
Chlorodibromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-630	2	
Chlorodibromoacetic acid	Matrix Spike	40.0	36.1	µg/L	90%		9811-583	2	
Chlorodibromoacetic acid	Method Blank		ND*	µg/L			9812-195	2	
Chlorodibromoacetic acid	Secondary Source Std		ND	µg/L			9812-196	2	70-130%
Chlorodibromoacetic acid	Standard	20.0	18.8	µg/L	94%		9812-197	2	80-120%
Chlorodibromoacetic acid	Standard	20.0	21.3	µg/L	106%		9812-197	2	80-120%
Chlorodibromoacetic acid	Standard	40.0	44.7	µg/L	112%		9812-198	2	80-120%
Dibromoacetic acid	Duplicate	1.0	1.0	µg/L		0.0%	9811-630	1	
Dibromoacetic acid	Matrix Spike	40.0	33.8	µg/L	84%		9811-583	1	
Dibromoacetic acid	Method Blank		ND*	µg/L			9812-195	1	
Dibromoacetic acid	Secondary Source Std	20.0	19.5	µg/L	97%		9812-196	1	70-130%
Dibromoacetic acid	Standard	20.0	19.1	µg/L	96%		9812-197	1	80-120%
Dibromoacetic acid	Standard	20.0	19.4	µg/L	97%		9812-197	1	80-120%
Dibromoacetic acid	Standard	40.0	41.4	µg/L	103%		9812-198	1	80-120%
Dichloroacetic acid	Duplicate	5.2	5.3	µg/L		1.9%	9811-630	1	
Dichloroacetic acid	Matrix Spike	40.0	36.4	µg/L	91%		9811-583	1	
Dichloroacetic acid	Method Blank		ND*	µg/L			9812-195	1	
Dichloroacetic acid	Secondary Source Std	20.0	22.8	µg/L	114%		9812-196	1	70-130%
Dichloroacetic acid	Standard	20.0	19.7	µg/L	98%		9812-197	1	80-120%
Dichloroacetic acid	Standard	20.0	19.3	µg/L	97%		9812-197	1	80-120%
Dichloroacetic acid	Standard	40.0	39.7	µg/L	99%		9812-198	1	80-120%

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

Summers & Hooper, Inc.
6 Knollcrest Drive
Cincinnati, OH 45237

Quality Control Report

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

Monobromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-630	1	
Monobromoacetic acid	Matrix Spike	40.0	38.5	µg/L	96%		9811-583	1	
Monobromoacetic acid	Method Blank		ND*	µg/L			9812-195	1	
Monobromoacetic acid	Secondary Source Std	20.0	22.3	µg/L	112%		9812-196	1	70-130%
Monobromoacetic acid	Standard	20.0	19.2	µg/L	96%		9812-197	1	80-120%
Monobromoacetic acid	Standard	20.0	18.9	µg/L	94%		9812-197	1	80-120%
Monobromoacetic acid	Standard	40.0	41.0	µg/L	102%		9812-198	1	80-120%
Monochloroacetic acid	Duplicate	ND	ND	µg/L		NA	9811-630	2	
Monochloroacetic acid	Matrix Spike	40.0	39.4	µg/L	98%		9811-583	2	
Monochloroacetic acid	Method Blank		ND*	µg/L			9812-195	2	
Monochloroacetic acid	Secondary Source Std	20.0	21.9	µg/L	110%		9812-196	2	70-130%
Monochloroacetic acid	Standard	20.0	19.6	µg/L	98%		9812-197	2	80-120%
Monochloroacetic acid	Standard	20.0	19.2	µg/L	96%		9812-197	2	80-120%
Monochloroacetic acid	Standard	40.0	40.2	µg/L	101%		9812-198	2	80-120%
Tribromoacetic acid	Duplicate	ND	ND	µg/L		NA	9811-630	4	
Tribromoacetic acid	Matrix Spike	40.0	36.6	µg/L	92%		9811-583	4	
Tribromoacetic acid	Method Blank		ND*	µg/L			9812-195	4	
Tribromoacetic acid	Secondary Source Std		ND	µg/L			9812-196	4	70-130%
Tribromoacetic acid	Standard	20.0	18.7	µg/L	93%		9812-197	4	80-120%
Tribromoacetic acid	Standard	20.0	21.8	µg/L	109%		9812-197	4	80-120%
Tribromoacetic acid	Standard	40.0	44.4	µg/L	111%		9812-198	4	80-120%
Trichloroacetic acid	Duplicate	5.2	5.1	µg/L		1.9%	9811-630	1	
Trichloroacetic acid	Matrix Spike	40.0	33.3	µg/L	83%		9811-583	1	
Trichloroacetic acid	Method Blank		ND*	µg/L			9812-195	1	
Trichloroacetic acid	Secondary Source Std	20.0	18.7	µg/L	93%		9812-196	1	70-130%
Trichloroacetic acid	Standard	20.0	18.8	µg/L	94%		9812-197	1	80-120%
Trichloroacetic acid	Standard	20.0	19.2	µg/L	96%		9812-197	1	80-120%
Trichloroacetic acid	Standard	40.0	41.7	µg/L	104%		9812-198	1	80-120%

End of quality control report

ND: non-detect. *Recovery is below 1/2 minimum reporting level (MRL). NA (not applicable): RPD calculation is not applicable.

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QC Results from Montgomery Watson Laboratories

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Topeka, KS 66606

Study#: 184
Study Title: ICR RSSCT #4

Phone: 785-368-3882 Fax: 785-368-3869

QC Batch ID: 88138 **Report #:** 49666
49667

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.021	105.0%		(50 - 150)
LCS2	Bromide	0.1	0.1	100.0%		(90 - 110)
MBLK	Bromide	ND	ND			(70 - 130)
MS	Bromide	0.1	0.098	98.0%		(80 - 120)
MSD	Bromide	0.1	0.099	99.0%		(80 - 120)

QC Batch ID: 88148 **Report #:** 49666
49667

Analysis: CA **Method:** EPA/ML 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Calcium, Total, ICAP	50	47.8	96.0%		(85 - 115)
LCS2	Calcium, Total, ICAP	50	48	96.0%		(85 - 115)
MBLK	Calcium, Total, ICAP	ND	ND			
MS	Calcium, Total, ICAP	50	52.4	105.0%		(70 - 130)

QC Batch ID: 88153 **Report #:** 49666
49667

Analysis: MG **Method:** ML/EPA 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Magnesium, Total, ICAP	20	20.2	101.0%		(85 - 115)
LCS2	Magnesium, Total, ICAP	20	20.1	100.0%		(85 - 115)
MBLK	Magnesium, Total, ICAP	ND	ND			
MS	Magnesium, Total, ICAP	20	20.7	104.0%		(70 - 130)

QC Batch ID: 88171 **Report #:** 49666
49667

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	0.908	91.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	0.82	82.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

QC Results from Montgomery Watson Laboratories

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

MS	Ammonia Nitrogen	1	0.941	94.0%		(80 - 120)
MSD	Ammonia Nitrogen	1	0.942	94.0%		(80 - 120)

QC Batch ID: 88492 **Report #:** 49829, 49830

Analysis: BR **Method:** ML/EPA 300

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Bromide	0.02	0.02	100.0%		(50 - 150)
LCS2	Bromide	0.1	0.101	101.0%		(90 - 110)
MBLK	Bromide	ND	ND			(70 - 130)
MS	Bromide	0.1	0.1	100.0%		(80 - 120)
MSD	Bromide	0.1	0.101	101.0%		(80 - 120)

QC Batch ID: 88543 **Report #:** 49829, 49830

Analysis: CA **Method:** EPA/ML 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Calcium, Total, ICAP	50	48.7	97.0%		(85 - 115)
LCS2	Calcium, Total, ICAP	50	48.4	97.0%		(85 - 115)
MBLK	Calcium, Total, ICAP	ND	ND			
MS	Calcium, Total, ICAP	50	50.2	100.0%		(70 - 130)

QC Batch ID: 88546 **Report #:** 49829, 49830

Analysis: MG **Method:** ML/EPA 200.7

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Magnesium, Total, ICAP	20	19.9	100.0%		(85 - 115)
LCS2	Magnesium, Total, ICAP	20	19.6	98.0%		(85 - 115)
MBLK	Magnesium, Total, ICAP	ND	ND			
MS	Magnesium, Total, ICAP	20	19.7	98.0%		(70 - 130)

QC Batch ID: 88718 **Report #:** 49829, 49830

Analysis: NH3 **Method:** ML/EPA 350.1

QC	Analyte	Spike	Recovery	Yield	RPD	Acceptance Criteria Range
LCS1	Ammonia Nitrogen	1	1.01	101.0%		(80 - 120)
LCS2	Ammonia Nitrogen	1	0.997	100.0%		(80 - 120)
MBLK	Ammonia Nitrogen	ND	ND			
MS	Ammonia Nitrogen	0.5	0.458	92.0%		(80 - 120)

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

QC Results from Montgomery Watson Laboratories

Mr. Bruce Northup
City of Topeka

Study#: 184
Study Title: ICR RSSCT #4

MSD	Ammonia Nitrogen	0.5	0.461	92.0%	(80 - 120)

End of MW QC report

ND (non-detect): Result is below 1/2 minimum reporting level (MRL).

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Comments

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Study#: 184
Study Title: ICR RSSCT #4

Analysis comments

Analysis: Turbidity
Method: SM 2130 B

Reported turbidity data has been rounded following the requirements of SM 2130 B, reproduced in the table below (Standard Methods, 1995). Note that the reported digits are not necessarily significant.

Turbidity Range	Report to Nearest
0-1.0	0.05
1-10	0.1
10-40	1
40-100	5
100-400	10
400-1000	50
> 1000	100

End of comments