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## Polychlorinated biphenyls in the bulk sediment and porewater of the surficial sediment from the Chicago Sanitary and Ship Canal

Colin Patrick O'Sullivan  
*University of Iowa*

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POLYCHLORINATED BIPHENYLS IN THE BULK SEDIMENT AND  
POREWATER OF THE SURFICIAL SEDIMENT FROM THE CHICAGO  
SANITARY AND SHIP CANAL

by

Colin Patrick O'Sullivan

A thesis submitted in partial fulfillment of the  
requirements for the Master of Science degree in  
Civil and Environmental Engineering in the  
Graduate College of  
The University of Iowa

May 2015

Thesis Supervisors: Professor Keri Hornbuckle  
Adjunct Assistant Professor Andres Martinez

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Graduate College  
The University of Iowa  
Iowa City, Iowa

CERTIFICATE OF APPROVAL

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MASTER'S THESIS

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This is to certify that the Master's thesis of

Colin Patrick O'Sullivan

has been approved by the Examining Committee for the thesis requirement for the Master of Science degree in Civil and Environmental Engineering at the May 2015 graduation.

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To Elwood Olsen

Now you have a huge tree and worry that it is useless: why not plant it in the vast plain of the homeland of Nothing Whatsoever, roaming in effortlessness by its side and sleeping in freedom beneath it? The reason it does not fall to the axe, is that it cannot be exploited. So what's the trouble?

Chuang-tzu

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## ABSTRACT

Polychlorinated Biphenyls (PCBs) are persistent organic pollutants known for their toxicological effects. Though industrial production of legacy PCBs was banned in 1977, they can still be measured in nearly all environmental matrices. The Chicago Sanitary and Ship Canal (CSSC) is lined with industry and the receiving waters to the Stickney Water Reclamation Plant, the World's largest waste water treatment plant and was therefore speculated to be a potential source of PCBs to the Greater Chicago Area.

Surficial sediment samples were acquired along a 45 km stretch of the CSSC, from Kedzie Ave. to Lockport. PCBs in the bulk sediment were extracted using accelerated solvent extraction while PCBs in the porewater were extracted using solid phase micro extraction. The PCBs were identified and quantified using a variation of EPA method 1668C.

A total of 176 individual and coeluting PCB congeners were identified and quantified in this study. The sum of PCB concentrations in the bulk sediment was found to range from 70 to 4970 ng/g dry wt. The sum of PCB concentrations in the freely dissolved sediment-porewater was found to range from 2 to 366 ng/L. The bulk and porewater concentrations were used to estimate an average mass flow rate of PCBs through the CSSC of 368 kg/y. The large mass flow rate of PCBs passing through the CSSC and the fact that the CSSC connects Lake Michigan to the Mississippi River suggest that continued monitoring of PCB concentrations are necessary to better understand the transport and fate of PCBs in and out of the Greater Chicago Area.



## PUBLIC ABSTRACT

Polychlorinated Biphenyls (PCBs) are persistent organic pollutants known for their toxicological effects. Though industrial production of PCBs was banned in 1977, they can still be measured in nearly all environmental matrices. The Chicago Sanitary and Ship Canal (CSSC) is lined with industry and the receiving waters to the Stickney Water Reclamation Plant, the World's largest waste water treatment plant and was therefore speculated to be a potential source of PCBs to the Greater Chicago Area.

PCBs were identified and quantified both in the sediment and freely dissolved in the porewater of the sediment. These values were used to estimate a yearly mass flow rate of PCBs through the CSSC. This data helps to better understand the fate and transport of these persistent organic pollutants in to and out of the Greater Chicago Area.

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# Chapter 1 Introduction and Background Information

## 1.1 Polychlorinated Biphenyls: A Brief Overview

### 1.1.1 History of Use

The commercial production of polychlorinated biphenyls (PCBs) began in the in 1929 by the Swann Chemical Company. PCB mixtures commercially produced and patented in the US were called Aroclors. These Aroclors were sold as fluids, waxes and solids. They were found to be highly stable materials which could be used as flame retardant transformer fluids, heat transfer fluids, and hydraulic fluids and were used as additives in paints, plastics, sealants, carbonless copy paper, and adhesives [1, 2]. The use of Aroclors improved the life span of the products they were combined with and greatly reduced fire hazards associated with transformers and capacitors. Ironically exposure to high temperatures, such as electrical transformer fires, can significantly increase the toxicity of Aroclor mixtures [3]. The very properties (resistance to both combustion and degradation) that made them so useful were found to be one of their greatest drawbacks. Commercial production of PCBs in the US ended in 1977 and was banned by the EPA in 1979 due to health concerns associated with exposure [1]. Though production has been banded for nearly 40 years, their persistence at toxic concentrations in the natural environments is still observed. PCB contamination accounts for roughly 12 % of all Superfund Sites for which Records of Decisions have been signed [4].

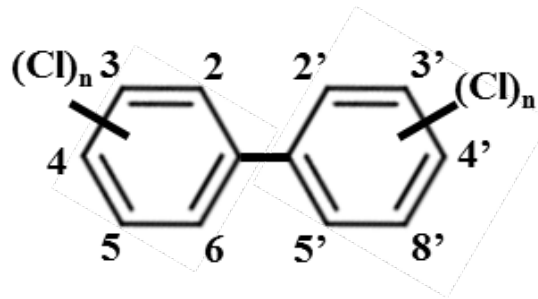
### 1.1.2 Health Effects

Non-occupational exposure to PCBs is most common through the ingestion of contaminated food and/or by inhalation [5]. Ingestion exposure is most likely by the ingestion of fish raised in contaminated water, PCBs are known to bioaccumulate in aquatic species and concentrations can increase up the food chain [6]. PCBs were produced as mixtures but their toxicity is characterized by the specific PCB congener. PCBs are known to effect hepatic, renal, endocrine, respiratory, and dermal functions. Symptoms in animal studies include but are not limited to acne, weight

loss, renal failure, mild to severe liver necrosis, and even cancer [3, 7]. The toxicity appears to be related to both concentration, frequency, and duration of exposure [3]. There is general consensus that PCBs' possible harm to human and non-human animals and its persistence and ubiquity throughout all natural systems are cause for the depth and scope of research of PCBs in scientific and health communities and surely compelled the advancement of this study.

### 1.1.3 Chemistry

PCBs are made up of two phenyl rings plus one to ten chlorines, see Figure 1-1.



**Figure 1-1. The general structure of a PCB molecule.**

There are 209 possible PCBs, referred to as PCB congeners. Though there are many ways to name each congener, in this study the general numbering system Ballschmiter and Zell (BZ) system was used, for example PCB 1, PCB 2, PCB 3 etc. The BZ system is based on the hierarchical order of the number of chlorines [1]. PCBs are also categorized into homolog groups based on the number of chlorines attached. There are ten homolog groups mono through decachlorinated PCBs. The chemical properties of the PCBs are based on both number and position of the chlorines. The molecular weight of PCBs range from 188.65 to 498.66 g/mol. PCB flash points (Cleveland open cup) have been reported in the range of 141 to 180 °C [1, 8]. PCBs are considered hydrophobic and semivolatile. Generally, the lower the molecular weight the greater the volatility.

The octanol-water partition coefficient ( $k_{ow}$ ) is the concentration of PCBs in equilibrium with octanol divided by the concentration of PCBs in equilibrium with water. The  $k_{ow}$  is a dimensionless and must be measured with equal volumes of both water and octanol. The  $\log k_{ow, PCBi}$  describes the affinity of PCBs to organic media (nonpolar phase), in the case of this study the carbon in sediment, in comparison to water (polar phase). The  $\log K_{ow, PCBi}$  ranges from 4.46 to 8.18, which suggest the greater the number of chlorines the greater the affinity to the organic phase. For reference, acetone (polar and is miscible with water) has a  $\log k_{ow}$  of -0.24 while benzene (nonpolar and is immiscible with water) has a  $\log k_{ow}$  of 2.13 [9]. The behavior of PCBs will depend on the matrix in which they reside. The matrices included in this study are surficial sediment and porewater.

## 1.2 The Chicago Sanitary and Ship Canal (CSSC)

The CSSC carries shipping traffic between Lake Michigan and the Mississippi River. The CSSC is lined with industrial properties, power plants, storage yards, and railroad right-of-ways [10]. The canal is fed by the Chicago River via the Lake Michigan, the Cal-Sag Channel, and also the Stickney Water Reclamation Plant, the world's largest waste water treatment plant [11, 12]. The CSSC is a 54.6 km channel with an estimated daily discharge of 160 m<sup>3</sup>/s, of which roughly 30 m<sup>3</sup>/s is from the Stickney WRP [13-15].

The Stickney WRP is a combined sewer system which treats municipal and industrial wastewaters and street sewer overflow [16]. The Stickney WRP effluent characteristics are 2 mg/L CBOD, 5 mg/L suspended solids, and 0.7 mg NH<sub>4</sub>-N/L [17]. The sludge from Stickney is heat-dried and pelletized for land application [18]. Wastewater treatment plants (WWTP) have long been considered a point of concentration for PCBs and therefore the effect of such a large discharge on the receiving waters and its adjacent communities made the study of the CSSC particularly interesting. The CSSC does not only play an important role in the transport of goods, it is also a transportation route for persistent organic pollutants (POPs) including PCBs.

### 1.3 Objectives

In recent studies led by Andres Martinez, the Indiana Harbor and Ship Canal (IHSC) was shown to be a contributor of PCBs to Lake Michigan and the atmosphere [19]. The PCB concentration data in both the sediment and porewater of the IHSC was successfully used to develop and test a sediment porewater water distribution model for PCB congeners [20]. The results from these studies brought to question the role of the Chicago Sanitary and Ship Canal in the observed PCB concentrations in Lake Michigan and the ambient air in and Chicago. Like IHSC the CSSC is lined with industries historically known to use PCBs, it has a long history of heavy shipping traffic and contamination. Unlike the IHSC the CSSC only has surficial sediment deposits, whereas the IHSC has deep sediments. The CSSC flows away from not into Lake Michigan, while the IHSC flows into the Lake Michigan. The volume and flowrate of the CSSC is also much greater than that of the IHSC. The similarities between the two canals suggested the study was valid while the differences suggested the study would be novel and interesting.

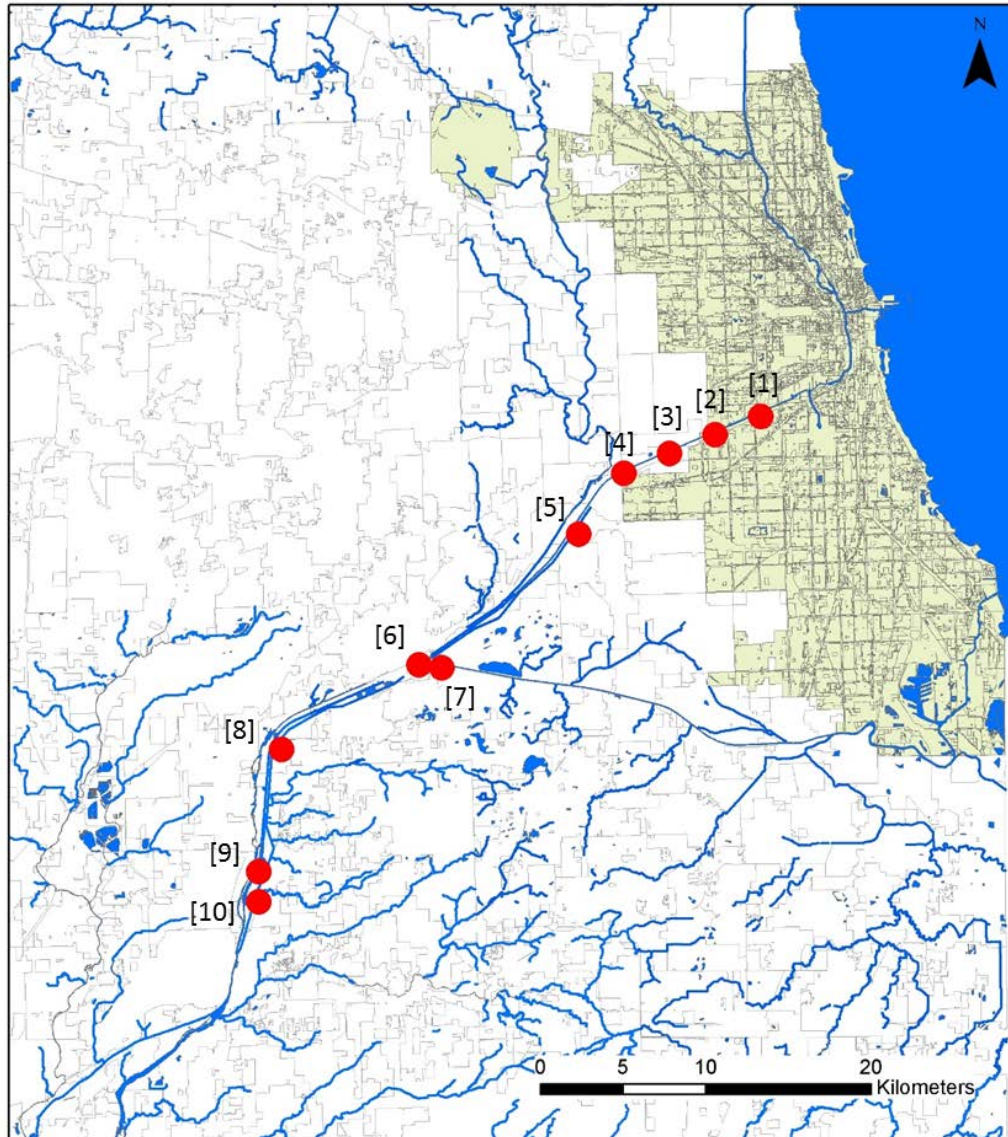
A set of objectives were compiled in order to better understand the behavior of PCBs in and their transport into and out of the Chicago Sanitary and Ship Canal.

- 1) Determine PCB concentrations in the both the bulk sediment (solid phase) and sediment porewater (freely dissolved phase).
- 2) Determine if the PCB congener profiles from sampling sites are characteristic of specific Aroclor mixtures.
- 3) Determine partitioning of PCBs between the solid and freely dissolved phases using the averaged concentrations for individual and coeluting PCBs from CSSC sampling sights.
- 4) Determine if distribution of PCB congeners is similar throughout the CSSC.
- 5) Determine the annual mass flow rate of PCBs through the CSSC.

## **Chapter 2 Methods and Materials**

### **2.1 Field Sampling**

Surficial sediment sampling was performed with help from the Metropolitan Water Reclamation District of Greater Chicago and the US EPA Great Lakes National Program Office. With use of the US EPA Great Lakes National Program Office's water vessel and sampling equipment, sediment samples were collected along a 45 km (Google Maps Distance Calculator) stretch of the Chicago Sanitary and Ship Canal from Kedzie Ave to Lockport, and one sample on the Cal-Sag Channel, see Figure 2-1.



**Figure 2-1. Surficial sediment was collected along a 45 km stretch of the Chicago Sanitary and Ship Canal with one additional sample collected from the Cal-Sag Channel. Sample names were based on nearby identifiers: 1) Kedzie Ave., 2) Cicero Ave., 3) Stickney Outflow, 4) Harlem Ave., 5) Corn Products, 6) Cal-Sag Channel Junction, 7) Cal-Sag Channel, 8) Citgo Refinery, 9) Near Lockport, and 10) Lockport.**

Sampling sites were selected based on PCB concentrations in CSSC sediment reported in a study by Metropolitan Water Reclamation District of Greater Chicago, Monitoring and Research Department, proximity to passive air samplers deployed by Keri Hornbuckle's Research Group,



and ultimately by the availability of extractable surficial sediment. A Ponar sediment sampler was used to extract the sediment, see Figure 2-2.



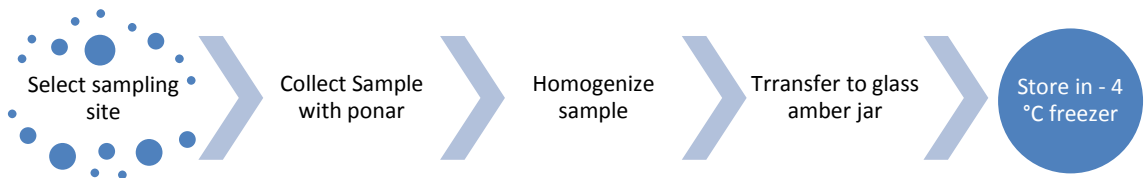
**Figure 2-2. The ponar, or Van Veen Grab Sampler, was used for sampling surficial sediment.**

The Ponar was locked in to an open position and lowered into the river. Once the Ponar reaches the bottom the rope was tugged so that the Ponar hits the river bed, this released a spring loaded pin allowing the compartment to close upon retrieval. The Ponar containing the sample was then retrieved, see Figure 2-3.



**Figure 2-3. Retrieving the ponar.**

Samples were homogenized on an aluminum cookie sheet with metal spatulas and then divided into glass amber jars. Amber jars were previously combusted at 450 °C to ensure no outside contamination. GPS coordinates were recorded, and samples were stored on ice until ultimately being stored in a 4 °C freezer until they could be analyzed. Four Field blanks of combusted diatomaceous earth (DE) were made and traveled the full duration of the acquisition, travel, and storage of the samples. See Figure 2-4.



**Figure 2-4. Sampling Summary: Acquisition of Sediment Samples From the CSSC.**

## **2.2 Determining the Bulk Sediment PCBs Concentrations**

The methods of extraction were based on those previously described and performed by Andres Martinez [19-22]. Identification and quantification of PCBs from sediment samples are adapted from EPA Method 1668C [23]. Variations on the method are the use of the Agilent GC/MS/MS, the use of the three surrogate standards and two internal standards, the sulfuric acid cleanup, the use of the acidified silica gel column for cleanup, and the drying of the sediment with diatomaceous earth (DE).

### **2.2.1 Materials List**

A list of materials required for the determination of PCBs in the bulk sediment was constructed, see Table 2-1.

**Table 2-1. List of materials for the extraction, cleanup, identification, and quantification of PCBs in sediment.**

<b>Product</b>	<b>Supplier</b>
Dionex ASE™ Prep DE Diatomaceous Earth	Thermo Scientific
Silica Gel Sorbent Flash Chromatography Grade 70-230 Mesh	Fisher Scientific
Hexanes Pesticide Grade	Fisher Scientific
Methylene Chloride (DCM) Pesticide Grade	Fisher Scientific
Acetone Pesticide Grade	Fisher Scientific
Methanol Pesticide Grade	Fisher Scientific
Sulfuric Acid Certified ACS Plus	Fisher Scientific
PCB14 (3,5- dichlorobiphenyl)	AccuStandard (New Haven, USA)
PCB30-d5 (2,4,6-trichlorobiphenyl-2',3',4',5',6'-d5, deuterated)	CDN Isotopes (Quebec, Canada)
PCB65-d5 (2,3,5,6-tetrachlorobiphenyl-2',3',4',5',6'-d5, deuterated)	CDN Isotopes (Quebec, Canada)
PCB166 (2,3,4,4',5,6-hexachlorobiphenyl)	AccuStandard (New Haven, USA)
PCB204 (2,20,3,4,4',5,6,6'-octachlorobiphenyl)	AccuStandard (New Haven, USA)

### **2.2.2 The Preparation of Diatomaceous Earth**

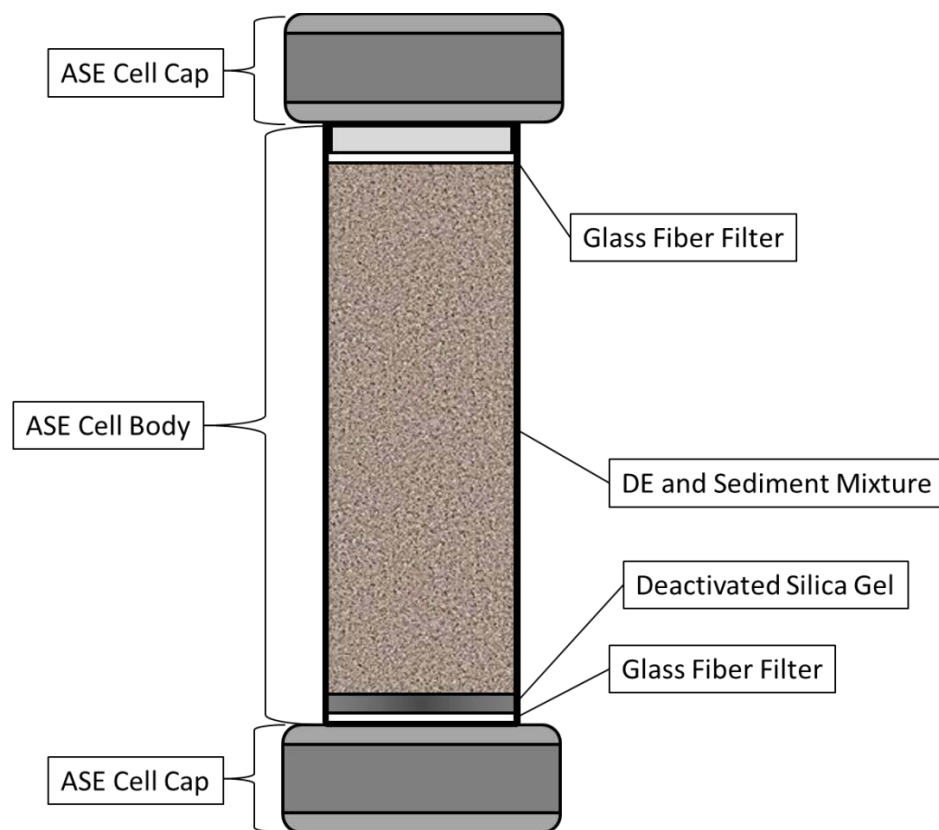
The diatomaceous earth (DE) was used for field blanks, lab blanks and sample preparation. This analytic method has been described in previous work by Martinez et al [20, 22]. All DE used in this study was combusted in a 450 °C oven for at least 12 h. The DE was covered with aluminum foil, and allowed to cool until ready for use. DE was not allowed to sit more than 20 days before use. If the 20 day limit was exceeded DE was again combusted before use.

### **2.2.3 Sediment Preparation**

With a mortar and pestle, sediment samples (2 to 4 g) were ground with enough DE (15 to 25 g) until the samples were dry. DE/Sediment mixture was considered dry once a consistency of flowing powder was obtained. The masses of sediment and DE were recorded. The mortar and pestle were cleaned with soap and water then triple rinsed with methanol, hexane, and acetone before each sediment preparation. If necessary, the DE/sediment mixture was placed in a combusted amber jar and stored in a 4 °C freezer until analysis.

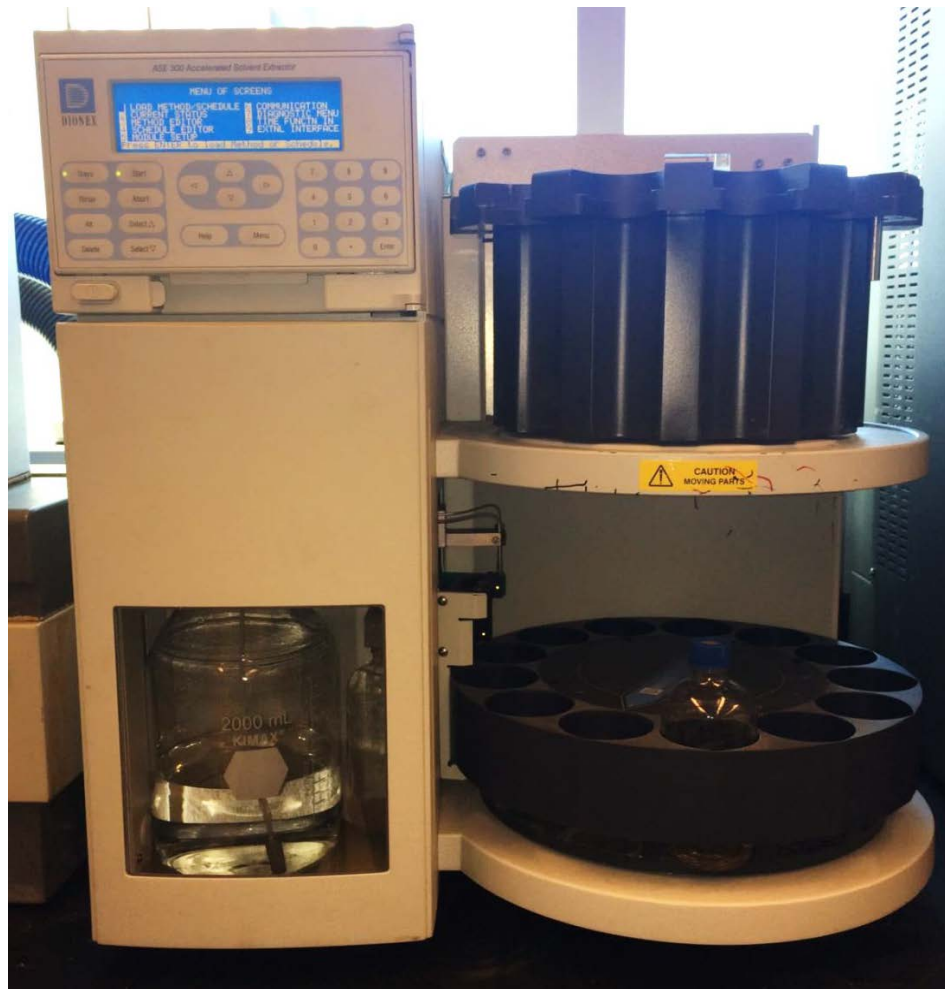
### **2.2.4 Accelerated Solvent Extraction**

Accelerated solvent extraction of PCBs from the sediment was performed by a passing a 1:1 (v:v) hexane/acetone solution through the DE/sediment mixture under high pressure and high temperature. Silica gel was combusted at 450 °C for at least 12 h. The silica gel was allowed to cool. Deactivated silica gel was made by adding deionized water (3% by mass) to silica gel. In a 100 mL ASE cell a glass fiber filter was placed in the bottom of the cell, followed by deactivated silica gel (2 to 4 g), then DE and sediment mixture (record mass), and finally a glass fiber filter, see Figure 2-5 for a summary .



**Figure 2-5. How to pack the ASE cell for accelerated solvent extraction.**

Once transferred into the ASE cells, samples were spiked with 100  $\mu\text{L}$  of surrogate standard (500  $\text{ng}\cdot\text{mL}^{-1}$  PCB 14, PCB D-65, and PCB 166). For a reference, 100  $\mu\text{L}$  of surrogate standard was injected into a combusted GC vial containing 0.5 mL of hexane. Before spiking samples and reference, the 100  $\mu\text{L}$  syringe was rinsed by both dichloromethane (DCM) and hexane. Samples were then run on a Dionex ASE 300 Accelerated Solvent Extractor, see Figure 2-6.



**Figure 2-6. Dionex Accelerated Solvent Extractor (ASE). The ASE performs solid-liquid extraction of PCBs with a 1:1 (v:v) solution of hexane and acetone.**

Extraction was performed with 1:1 solution of hexane and acetone at 1500 psi and 100 °C.

Extraction is based on EPA Method 3545A, details of ASE operation parameters can be found in Table 2-2 [24].

**Table 2-2. ASE operational parameters for the extraction of PCBs from sediment. Accelerated solvent extraction is based on EPA Method 3545.**

Operational Parameter	ASE Setting	
Pressure	1500	psi
Temperature	100	° C
Preheat	NA	
Heat	5	min
Static	5	min
Flush %	60	% volume
Purge	200	sec
Cycles	1	
Hexane	50	% volume
Acetone	50	% volume

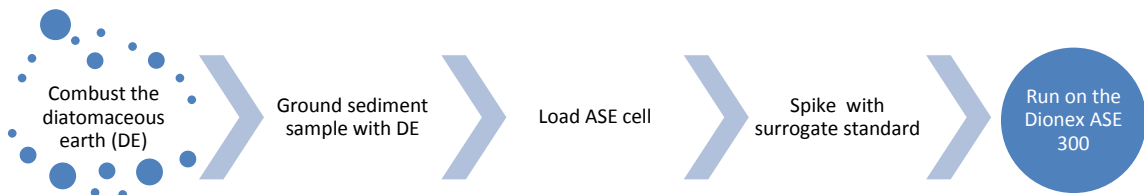
The ASE extract is collected in a glass jars that were triple rinsed with methanol, hexane, and acetone, see Figure 2-7.





**Figure 2-7. ASE collection bottles. Collection bottles were triple rinsed with methanol, hexanes, and acetone. Caps were triple rinsed and housed a Teflon lined septa which was replaced before each use.**

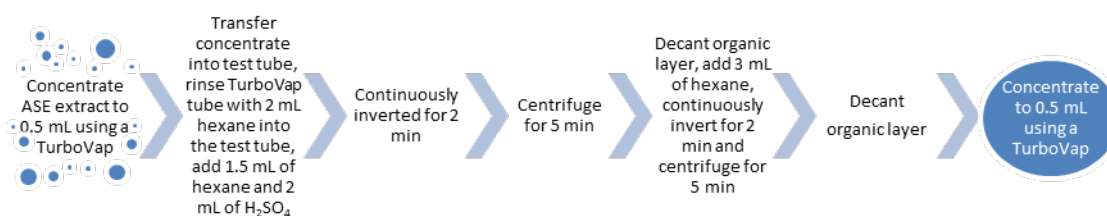
See Figure 2-8 for a summary of the preparation and extraction of PCBs.



**Figure 2-8. Sediment sample preparation for accelerated solvent extraction.**

## 2.2.5 Sulfuric Acid Cleanup

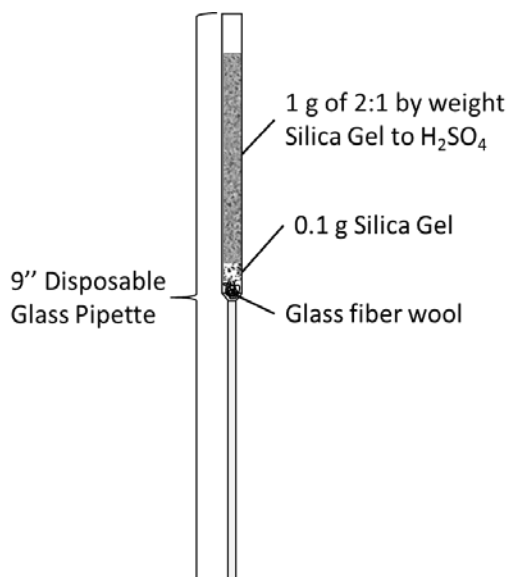
The extracts from the ACE collection bottles were transferred to a 200 mL TurboVap tubes. ASE collection bottles were rinsed with 2 mL of hexane, which was also transferred into TurboVap tubes. Each sample was then concentrated to 0.5 mL using a TurboVap®, an automated evaporation system that uses dry nitrogen gas, at a pressure of 0.5 bar and a temperature of 28 °C. The 0.5 mL samples were transferred in to combusted test tubes. TurboVap tubes were rinsed with 2 mL of hexane, and then hexane was added to the test tube to reach a sample volume of 4 mL, then 2 mL of glacial sulfuric acid (18 M H<sub>2</sub>SO<sub>4</sub>) was carefully added down the side of the test tube. Each sample was sealed with a Teflon lined cap, and then continuously inverted for 2 min on a Barnstead/Thermolyne Shaker Rotisserie. The samples were then centrifuged for 5 min on a Beckman Model J2-21M Induction Drive Centrifuge (rotor: 10, speed: 3,000 rpm, temperature: 20°C). The organic phase was then decanted into a 50 mL TurboVap tube. 3 mL of hexane was added to the test tube containing the H<sub>2</sub>SO<sub>4</sub> solution. The test tubes were again inverted for 2 min and centrifuged again for 5 min. The organic phase was decanted into the 50 mL TurboVap tube. The samples were concentrated to 0.5 mL in the TurboVap®, see Figure 2-9.



**Figure 2-9. Sulfuric acid cleanup summary**

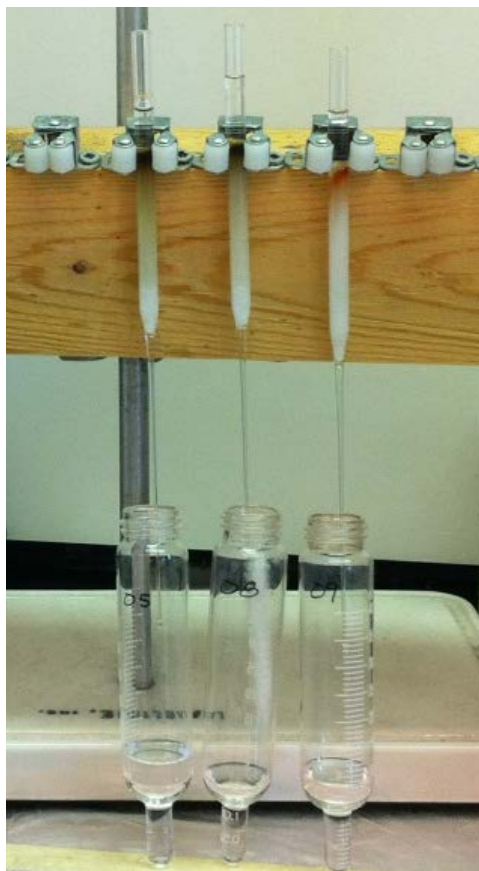
## 2.2.6 Acidified Silica Gel Cleanup

To remove impurities the samples were then run through acidified silica gel columns. Silica gel, glass fiber wool, and 9'' disposable glass pipettes were combusted over night at 450 °C. A 2:1 mass ratio of silica gel to glacial sulfuric acid was combined and shaken until a homogenous mixture was achieved. The 9'' pipettes were packed with glass wool, 0.1 g of silica gel, and 1 g of acidified silica gel, see Figure 2-10.



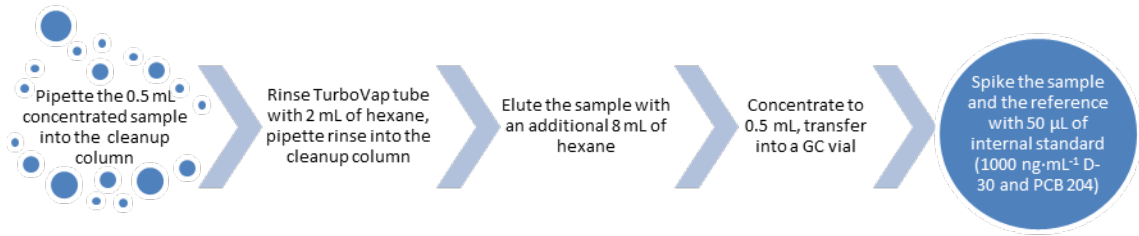
**Figure 2-10. Packing the acidified silica gel cleanup column.**

The concentrated 0.5 mL samples were pipetted from the TurboVap tubes into the cleanup columns, 2 mL of hexane was used to rinse the TurboVap tubes, and the hexane-rinse was passed through the cleanup columns. The samples were then eluted through the cleanup columns with an additional 8 mL of hexane, see Figure 2-11.



**Figure 2-11. Elution of sample through acidified silica gel column.**

Once the samples were passed through the columns they were concentrated to 0.5 mL in the TurboVap<sup>®</sup>. The samples were then transferred into GC vials and spiked with 50  $\mu\text{L}$  of internal standard (1000  $\text{ng}\cdot\text{mL}^{-1}$  D-30, and PCB 204). The reference containing 0.5 mL of hexane and 100  $\mu\text{L}$  of surrogate standard was also spiked with 50  $\mu\text{L}$  of the internal standard. Samples were then run on the Tandem Mass Spectrometry GC/MS/MS (Agilent 7890A GC System, Agilent 7000 GC/MS Triple Quad), see Instrument Analysis Section for details. See Figure 2-12 for a summary of the silica gel cleanup process.



**Figure 2-12. Acidified silica gel cleanup summary.**

### 2.3 Determination of Dry mass

The concentration of PCBs in the sediment is reported on the basis of dry weight of the sediment, so the percent dry weight was determined for each of the sediment samples. To do this, first the mass of the aluminum weigh boat is determined, then 1-2 g of sediment is placed in the weigh boat. The weigh boats containing wet sediment were placed in a 105 °C oven overnight. The samples were allowed to cool in a desiccator, then their masses were measured. The percent dry weight (%<sub>dry wt</sub>) was calculated by,

$$\% \text{ dry wt} = \frac{\text{mass}_{\text{dry}}}{\text{mass}_{\text{wet}}} \times 100 \quad (1)$$

where  $\text{mass}_{\text{dry}}$  is the mass of the sediment sample after drying and  $\text{mass}_{\text{wet}}$  is the mass of the sediment before drying. The dry mass of the sediment sample that had been analyzed for PCBs was determined by,

$$\text{mass}_{\text{sed,dry wt}} = \frac{\text{mass}_{\text{sed}}}{100} \times \% \text{ dry weight} \quad (2)$$

where  $\text{mass}_{\text{sed}}$  is the mass of sediment used in the analysis, and  $\text{mass}_{\text{sed,dry}}$  is the dry mass of sediment used in the analysis.

## 2.4 Determination of Total Organic Carbon

The estimation of the total organic carbon (TOC) is based on the assumption that TOC is equal to the total volatile solids in the sample. The sediment samples were determined first by drying the samples, see previous section. Once dried and the dry weight of the samples were determined the samples were combusted at 550 °C for 1 h. The samples were then transferred to a desiccator and allowed to cool. Once cooled the samples were weighed to the nearest 0.01 g. The difference in the mass left after combusting at 550 °C and the mass after drying the sample at 103 °C was the mass of the total organic carbon in the sample. The percent TOC (%<sub>TOC</sub>) was determined by,

$$\%_{TOC} = 100\% \times \frac{mass_{dry} - mass_{combusted}}{mass_{dry}} \quad (3)$$

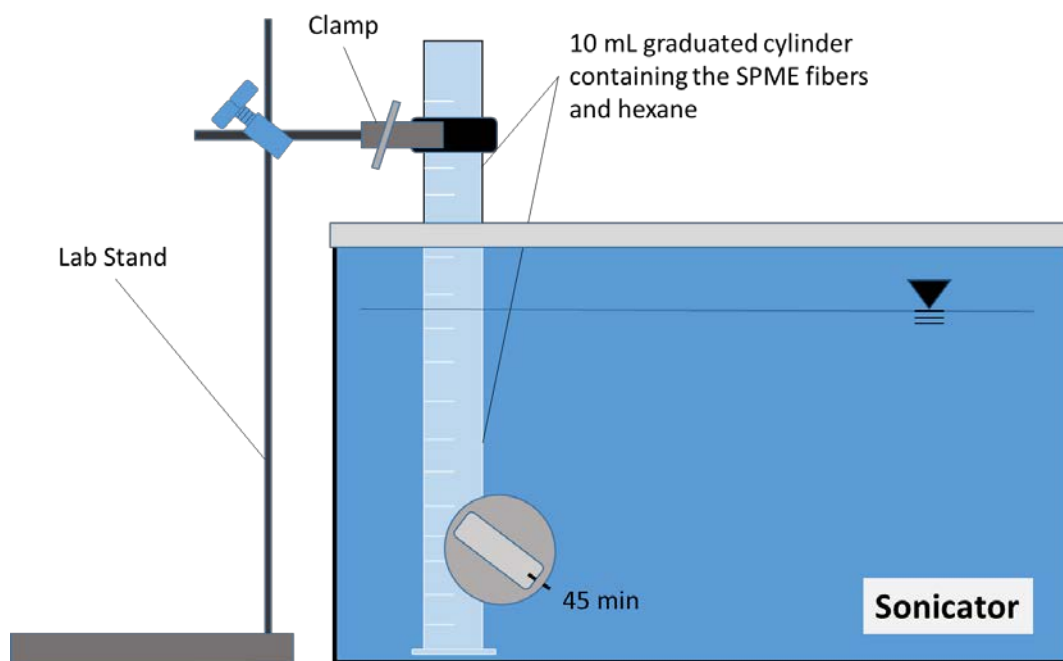
where  $mass_{combusted}$  is the mass of the sample after being combusted at 550 °C [25].

## 2.5 Determining the Concentration of PCBs in the Porewater

The determination of PCBs concentration in the porewater was a two-step process, the first step involved determining the time necessary for the PCBs in the sediment porewater to come to equilibrium with the passive sampling media (solid-phase microextraction (SPME) fibers) , this will be referred to as the uptake experiment. The time for SPME fibers to reach equilibrium needs to be determined in order to ensure valid and reproducible results. The uptake experiment was used to determine the sampling duration appropriate for the CSSC sediment samples. The uptake experiment used a total of 7 aliquots from a single sampling site (CSSC02: Cicero Ave) and two lab blanks. A triplicate set for 7 d, to simultaneously determine variability between samples, and four additional aliquots were tested at 14 d, 24 d, 39 d, and 63 d, the lab blanks were run for the 7 d (to coincide with the triplicate) and the full 63 d. The second step was to determine the pore water concentrations for the 10 CSSC samples along with a lab blank. A conservative duration of 29 d of passive sampling was chosen for this run, though results of the uptake experiment suggested that 14 d was sufficient. The extra time was used as insurance that equilibrium would

be met since the sediment from each site was assumed to have unique constituents, and therefore time to reach equilibrium may differ between samples. The following sections describe the methods of preparation of SPME fibers, passive sampling procedure, retrieval of fibers, and the identification and quantification of PCBs which was used for both the uptake experiment and determination of total PCBs concentrations in the sediment porewater from each sampling site.

Glass fibers manufactured by Fiberguide Industries, Inc. (Stirling, NJ) with a 210 mm inner diameter and a 10 mm coating of polydimethylsiloxane (PDMS) were used as the SPME fibers. The fiber was cut into 10 to 15 cm segments, submerged in 10 mL graduated cylinder containing hexane. Each sample required 30 cm of SPME fiber, but the fiber's small size meant that the fiber segments were easily lost so 40 cm of fiber was cut for each sample and lab blank. The graduated cylinder containing the SPME fibers and hexane was placed in a sonicator for 45 min, hexane evaporates during sonication so more was added throughout the process to ensure fibers were constantly submerged, see Figure 2-13 for the sonication set up.

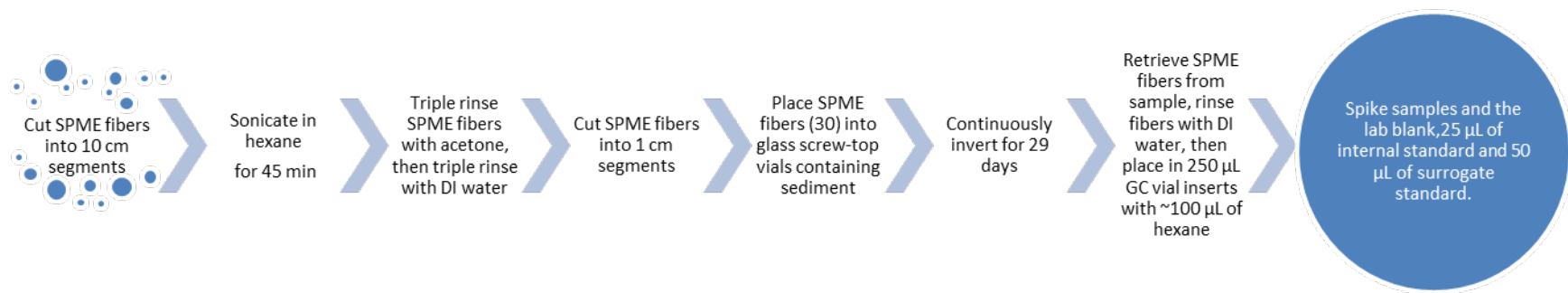


**Figure 2-13. Experimental setup for the sonication of SPME fibers.**

After sonication the fibers were triple rinsed with acetone, and then triple rinsed with DI water. The fibers were cut into 1 cm segments atop aluminum foil, using a metal ruler, a pair of metal-flat-edged tweezers, and scissors. Tweezers and scissors were 1<sup>st</sup> triple rinsed with methanol, hexane, and acetone. The 1 cm fiber segments (30 per sample) were placed into combusted glass screw-top vials containing sediment (15 to 25 g) and DI water (8 to 10 g), the vials were sealed with Teflon lined screw-caps. DI water was added to make a slurry, previous experiments performed without the addition of DI water resulted in irregular results, so the addition of DI water was necessary for the success of the experiments. The vials were continuously inverted on a Barnstead/Thermolyne Shaker Rotisserie, inversion duration varied depending on the experiment being conducted, see previous section for explanation. After inversion, the fibers were retrieved from the sediment, rinsed with DI water to remove any remaining particulate matter, and then placed in 250  $\mu\text{L}$  GC vial inserts with  $\sim 100 \mu\text{L}$  of hexane. The inserts were placed into combusted GC vials. Each sample and the lab blank were spiked with 25  $\mu\text{L}$  of internal standard (1000  $\text{ng}\cdot\text{mL}^{-1}$  D-30, and PCB 204) 50  $\mu\text{L}$  of surrogate standard (500  $\text{ng}\cdot\text{mL}^{-1}$  PCB 14, D-65, and



PCB 166). See Figure 2-14 for a summary of using the SPME fiber as passive samplers for porewater concentration determination.



**Figure 2-14. Using SPME fibers for determination of PCBs concentrations in porewater.**

## 2.6 Instrumental Analysis

The congener specific identification of PCBs in the sediment is based on a modification of EPA method 1668C [26]. The Agilent Technologies 7890A GC in series with the Agilent Technologies 7000 GC/MS Triple Quad were employed for the separation and identification of 176 PCB individual and coeluting PCB congeners and the two deuterated standards (D-30 and D-65). Agilent MassHunter Workstation software was used in the process of identification and quantification of the PCB congeners. The Spectrophotometer separates the PCBs by homolog group transitions and each deuterated compound has its own transition. The following is a description of the relevant equipment and operational parameters used for PCB analysis on the GC/MS/MS.

The GC was equipped with a 25  $\mu\text{L}$  syringe and SPB-Octyl capillary column (5% phenyl methyl siloxane, 30 m  $\times$  250  $\mu\text{m}$  ID, 0.25  $\mu\text{m}$  film thickness). The injection volume was set to 5  $\mu\text{L}$ . The method called for 3 pre and post injections of both dichloromethane and hexane for rinsing the syringe. For the front injector, solvent wash draw was set to 750  $\mu\text{L}\cdot\text{min}^{-1}$  and to dispense at 15000  $\mu\text{L}/\text{min}$ . Sample wash draw was set to 750  $\mu\text{L}\cdot\text{min}^{-1}$  and dispense at 750  $\mu\text{L}\cdot\text{min}^{-1}$ . Inject was set to dispense at 86 to 750  $\mu\text{L}\cdot\text{min}^{-1}$  and dispense at 15000  $\mu\text{L}\cdot\text{min}^{-1}$ . And there was a 1 sec viscosity delay. The inlet had a heater set point of 45  $^{\circ}\text{C}$  and a pressure set point of 4.4249 psi. The initial hold time was 0.06 min. The ramp was set for a rate of 600  $^{\circ}\text{C}/\text{min}$  to a value of 325  $^{\circ}\text{C}$ , a hold time of 5 min, and a run time of 70.86 min. The QQQ collision cell EPC had a 2.25  $\text{mL}\cdot\text{min}^{-1}$  set point for the helium (He) quench gas, and 1.5  $\text{mL}\cdot\text{min}^{-1}$  set point for  $\text{N}_2$  collision gas. The GC oven had an initial temperature of 45  $^{\circ}\text{C}$ , with a hold time of 2.56 min. Ramp 1 had a rate of 100  $^{\circ}\text{C}/\text{min}$ , a value of 75  $^{\circ}\text{C}$ , and a run time of 5 min. Ramp 2 had a rate of 15  $^{\circ}\text{C}\cdot\text{min}^{-1}$ , a value of 150  $^{\circ}\text{C}$ , and a hold time of 1 min, and ramp 3 had a rate of 2.5  $^{\circ}\text{C}\cdot\text{min}^{-1}$ , a value of 280  $^{\circ}\text{C}$ , and a run time of 5 min. The triple quadrupole MS electron ionization source had a set point of 260  $^{\circ}\text{C}$ .

## 2.7 Congener Identification and Mass Determination from GC/MS/MS Data

Identification and quantification was based on a standard calibration solution. The 209 PCBs standard calibration solution used contained 50 ng·ml<sup>-1</sup> for the mono- through the tri-chlorinated PCBs, 100 ng·ml<sup>-1</sup> for the tetra- through the hepta-chlorinated PCBs, 150 ng·ml<sup>-1</sup> for the octa- through the deca-chlorinated PCBs, 50 ng·ml<sup>-1</sup> for the deuterated-PCB 30 (D-30), and 100 ng·ml<sup>-1</sup> for the deuterated-PCB 65 (D-65). The internal standards were used to determine the Relative Response Factors (RRF) for 147 individual PCBs and 27 RRFs for coeluting PCBs, and RRFs for both D-30 and D65 by,

$$RRF = \frac{\left(\frac{mass_{cal,PCBi}}{Area_{cal,PCBi}}\right)}{\left(\frac{mass_{int\ std,PCBi}}{Area_{int\ std,PCBi}}\right)} \quad (4)$$

where  $mass_{cal, PCB_i}$  is the mass of  $PCB_i$  in the standard calibration solution,  $Area_{cal, PCB_i}$  is the area measured under the chromatograph curve for  $PCB_i$  in the internal standard,  $mass_{int\ std, PCB_i}$  is the mass of  $PCB_i$  used as an internal standard (either D-30, or PCB 204) in the standard calibration solution, and  $Area_{int\ std, PCB_i}$  is the area measured under the chromatograph curve for the PCB used as an internal standard (either D-30, or PCB 204) in the standard calibration solution. The ratio

$$\left(\frac{mass_{int\ std,D-30}}{Area_{int\ std,D-30}}\right)$$

was used for mono- through penta-chlorinated PCBs (see Equation 4), and the ratio

$$\left(\frac{mass_{int\ std,PCB\ 204}}{Area_{int\ std,PCB\ 204}}\right)$$

was used for hexa- through deca-chlorinated PCBs (see Equation 4). Note, the RRF for both internal standards PCB 204 and D-30 must be equal to 1. Once the RRF was determined the mass of PCBs in the sample can be determined by,

$$mass_{PCBi} = n \times RRF \times area_{PCBi} \times \left(\frac{mass_{int\ std,PCBi}}{Area_{int\ std,PCBi}}\right) \quad (5)$$

where  $mass_{PCBi}$  is the measured mass in the sample,  $n$  is the number of PCBs coeluting in the peak and  $area_{PCBi}$  is the measured area under the peak for PCB<sub>i</sub> of that sample. The internal standard and the calibration standard provide the mass measured in the sample but the surrogate standard can be used to find the percent recovery which can then be used to estimate the mass loss during the extraction and cleanup. First the mass of the surrogate standards are determined as described above. Then the percent recovery is calculated by,

$$\%_{recovery} = \frac{mass_{surrogate\ std, sample}}{mass_{surrogate\ std, ref}} \times 100 \quad (6)$$

where  $mass_{surrogate\ std, sample}$  is the mass of the surrogate standard in the sample and  $mass_{surrogate\ std, ref}$  is the mass of the surrogate standard in the reference. The  $\%_{recovery}$  is found for each of the three surrogate standards. The  $\%_{recovery}$  for PCB 14 is used to correct masses for mono- through tri-chlorinated PCBs, the  $\%_{recovery}$  for D-65 is used to correct masses for tetra- through hexa-chlorinated PCBs, and the  $\%_{recovery}$  for PCB 166 is used to correct masses for hepta- through deca-chlorinated PCBs. The corrected mass ( $mass_{cor, PCBi}$ ) is calculated by,

$$mass_{cor, PCBi} = \frac{mass_{PCBi}}{\%_{recovery}} \times 100 \quad (7)$$

where  $mass_{cor, PCBi}$  is reported mass. The bulk concentration of PCB<sub>i</sub> in the sediment calculated by,

$$C_{PCBi, bulk} = \frac{mass_{cor, PCBi}}{mass_{sed, dry\ wt}} \quad (8)$$

where  $C_{PCBi, bulk}$  is the bulk concentration of PCB<sub>i</sub> in the sediment.

## 2.8 Determination of the Porewater Concentration

Quantification of the mass of PCBs in the sediment-porewater is determined the same way as described for the mass of PCBs in the bulk sediment except that the %<sub>recovery</sub> step is not necessary since the fibers are removed from the sediment and placed directly in hexane, then spiked with the standards, all of which act as internal standard used for quantification. Determining the concentration of PCBs in the porewater is based on the mass of PCB<sub>i</sub> per volume of water while the bulk sediment concentration is based on the mass of PCB<sub>i</sub> per dry mass of sediment. The octanol-water partitioning coefficient ( $K_{PCBi,ow}$ ) is used to determine the partition coefficient between the SPME fiber and water ( $K_{PCBi,f-w}$ ) which can then be used along with the concentration of PCB<sub>i</sub> on the SPME fiber to estimate the PCB<sub>i</sub> porewater concentration in the sediment. There are a total of 209 PCB congeners and two deuterated PCB congeners but many of these congeners coelute while passing through the GC column, resulting in 176 identifiable peaks. This requires that a  $K_{PCBi,ow}$  must be estimated for those congeners which coelute. Frame et. al. published the weight percent (wt %) of all 209 PCB congeners in Aroclor mixtures A1016, A1242, A1248, A1254, and A1260 [27]. The average weight percent (wt %) of PCB congeners from these five Aroclors was used to determine most likely PCB was in the coeluting peak and therefore which  $K_{PCBi,ow}$  to use for the coeluting PCBs. The  $K_{PCBi,ow}$  of the coeluting PCB congener with the greatest wt % of the set of coeluting congeners was used. The  $K_{PCBi,ow}$  used for the PCB congeners in this research were reported by Hawker et al. [28]. To determine the  $K_{PCBi,f-w}$  the following relationship was used,

$$\log K_{PCBi,f-w} = 1.06(\pm 0.058) \cdot \log K_{PCBi,OW} - 1.16 (\pm 0.35) \quad (9)$$

as described by Lu et al. [29], see Appendix Table A-1 for a list of  $K_{OW}$  for each congener and coeluting congener group and their corresponding  $K_{PCBi,f-w}$ . Once the  $K_{PCBi,f-w}$  was found the pore water concentration ( $C_{PCBi,pw}$ ) was determined by,

$$C_{PCBi,pw} = \frac{\frac{mass_{f,i}}{V_{fiber}}}{K_{PCBi,f-w}} \quad (10)$$

where  $mass_{f,i}$  is the mass of  $PCB_i$  on the fiber (ng), and  $V_{fiber}$  is the volume of fiber used in the experiment (L), and  $C_{PCB_i, pw}$  is in concentration of  $PCB_i$  in the sediment pore water ( $ng \cdot L^{-1}$ ) [29].

## Chapter 3 Results and Discussion

### 3.1 Quality Assurance and Quality Control

#### 3.1.1 Introduction

The purpose of the quality assurance and quality control (QA/QC) in this project is to account for sample that is loss in process of preparing samples for quantification, to quantify and to correct for the sample contamination, and validate methods of sample extraction, cleaning, identification and quantification through analysis of a Standard Reference Material (NIST).

The loss of sample during its processing is accounted for by spiking both the samples and a reference (hexane) with a known mass of surrogate standards. During the quantification step, the mass of surrogate standard in the samples is compared to the mass of surrogate in the reference to determine the surrogate recovery. All reported masses (blanks) and concentrations (bulk sediment and porewater) have been corrected using surrogate recoveries.

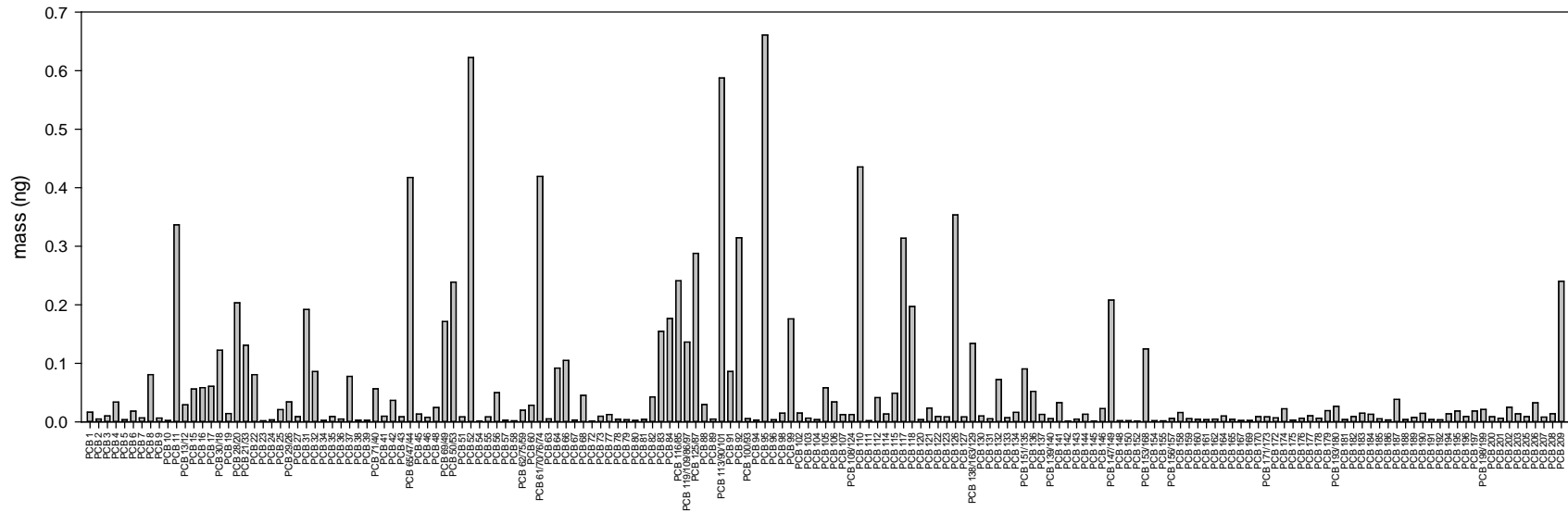
The quantification and correction of contamination was achieved by determining the Limits of Quantification (LOQ) for individual and co-eluting PCB congeners. The LOQ uses the mass data quantified in the blanks. Blanks for this study were processed in the same way as the sediment samples but only contained DE, the ASE cells were packed the same way as described in the methods section, see Figure 2-5. Blanks used for the LOQ were from three studies: 1) a lab/field blank study, 2) blanks from an SRM study, and 3) a CSSC bulk sediment blank. The mean and standard deviation of each PCB<sub>i</sub> congener and co-eluting congener group were then used to find the upper 95% confidence interval about the mean (95% CI) in nanograms. The upper 95% CI was used as the LOQ. If the mass of any PCB<sub>i</sub> in the sample was less than or equal to the upper 95% CI for a given PCB<sub>i</sub>, the mass was reported as non-detect



A Standard Reference Material (SRM) was processed and quantified using the same methods as those used for the bulk sediment samples. Once quantified the concentrations measured in the study were compared to those reported by NIST. This provided a measure of accuracy in the findings and also provided insight into any anomalies that may have come up during the study. Surrogate recoveries, the LOQ study, and the SRM study were meant to maintain high level of confidence in the lab practices and results for this study.

### 3.1.2 Limits of Quantification

Limits of quantification (LOQ) represent the mass of contamination predicted to be in the samples. The LOQ masses were determined for both the sediment bulk PCB congener concentrations and the porewater PCB congener concentrations, blanks for the bulk sediment were combusted DE and blanks for the porewater were deionized water. In order to get a broad spectrum of potential contamination in samples the LOQ was determined for the bulk concentrations by running a lab blank with the CSSC bulk sediment samples, a blank study that included 4 lab blanks and 3 field blanks, and 4 lab blanks that were run during the SRM study for a total of 12 blanks. The mass of each PCB congener was quantified using the same method as described for the SRM and CSSC bulk sediment samples. The masses in the blanks were surrogate corrected, with average surrogate recoveries of  $36.3 \pm 12.0\%$  (PCB 14),  $58.1 \pm 22.4\%$  (PCB D-65), and  $79.0 \pm 18.0\%$  (PCB 166), see Figure A-1 in the Appendix. The statistical analysis software SPSS 22 was used to analyze the data from the 12 blanks samples. SPSS 22 was used to bootstrap the data, meaning the data was re-sampled 1000 times by approximation to provide a normalized distribution. The SPSS 22 code and output data can be found in the Appendix Table A-2. The standard deviation and the upper 95 % confidence interval (95% CI) around the mean were then calculated for each individual PCB congener and set of co-eluting PCB congeners. The upper 95 % confidence interval about the mean was used for the LOQ. The 95 % CI can be seen in Figure 3-1.



**Figure 3-1. Upper 95% Mass of PCBs by congener calculated from the blanks. The mass of PCBs were quantified in a total of 12 blanks (3 field blanks and 9 lab blanks) to determine the LOQ for the bulk PCB concentrations in the CSSC sediment samples.**

The congeners contributing to most the mass (40 mass %) in the blanks were PCB 11 (3.3 mass %), co-eluting PCBs 44, 47, & 65 (4.1 mass %), PCB 52 (6.1 mass %), co-eluting PCBs 61, 70, 74 & 76 (4.1 mass %), co-eluting PCBs 90, 101, & 113 (5.7 mass %), PPCB 95 (6.4 mass %), PCB 110 (4.2 mass %), PCB 117 (3.1 mass %), and PCB 126 (3.4 mass %). The LOQ was used to determine if mass of congeners quantified in the bulk sediment samples should be reported. If the mass of a given PCB found in the sediment sample was less than or equal to the LOQ then the mass of that PCB was not reported. The masses of all bulk sediment samples were corrected with the LOQ before determining their concentrations.

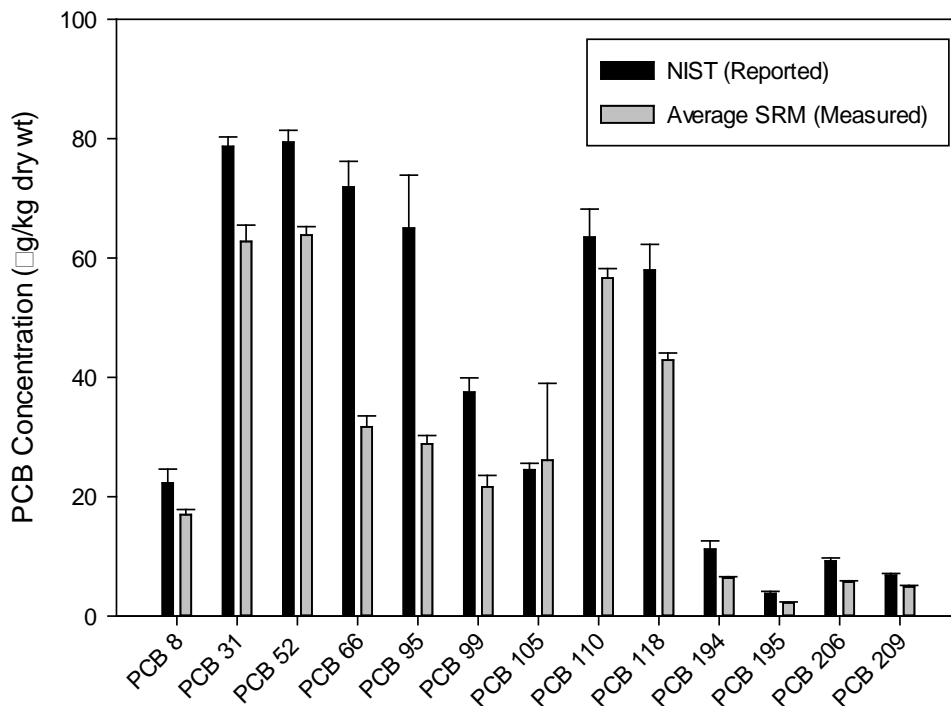
### **3.1.3 Standard Reference Material**

The National Institute of Standards & Technology (NIST) Standard Reference Material® 1944 New York/New Jersey Waterway Sediment was used to check the accuracy of the method used to determine the bulk PCB concentrations in sediment. The standard reference material (SRM) provides certified values for concentrations of 35 PCB congeners. The SRM was analyzed by the same method as the CSSC bulk sediment samples, four replicates and four blanks were analyzed in the study. This provides a way to assess any anomalies in the processing and quantifications of the CSSC samples. As with this study, NIST PCB congener concentrations are reported in mass of PCB<sub>i</sub> per mass dry weight sediment. Not all 35 PCB congener concentrations reported by NIST were able to be used for this experiment.

The analytical method used for this project and the analytical methods used by NIST resulted in co-elution of PCB congeners. Chromatographic co-elution, a common problem in complex samples, occurs when two or more congeners have the same retention times and proper separation is not achieved [30]. The co-eluting peaks in the NIST analysis did not match up with those that co-eluted in this project. Therefore the co-eluting congeners were not able to be used for this

study. Only 13 of the 35 PCB congener concentrations reported by NIST were considered in this study.

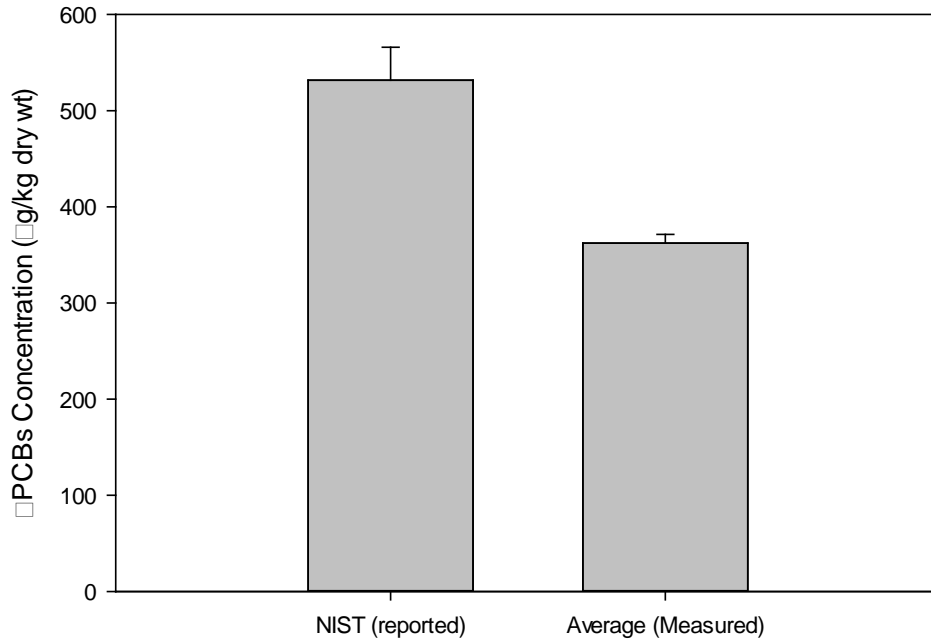
The masses of PCBs in the SRM were surrogate corrected. The average and standard deviations of surrogate recoveries for the SRM replicates were  $81 \pm 8.1\%$  for PCB 14,  $80 \pm 8.5\%$  for PCB D-65, and  $118 \pm 13.2\%$  for PCB 166, see figure A-2 in the Appendix. The mass of each of the 13 PCB congeners were also corrected for contamination using the LOQ. The resulting concentrations were found, see Figure 3-2.



**Figure 3-2. NIST reported and average lab measured SRM PCB concentrations. NIST provided concentration data for 35 PCB congeners, but due to different co-elution of congeners between the NIST experiments and those conducted for this study only the concentrations of 13 PCB congeners were able to be compared.**

This study consistently underestimated the congener concentration but all were within an order of magnitude. All but one of the 13 measured PCB congener concentrations ( $n = 4$ ) for SRM had

standard deviations between  $\pm 0.14$  to  $2.74$  ( $\mu\text{g}/\text{kg}$ ), PCB 110 had a higher standard deviation of  $\pm 12.86$  ( $\mu\text{g}/\text{kg}$ ). The sum of the PCB concentrations for the 13 PCB congeners reported by NIST was  $531.8$  ( $\mu\text{g}/\text{kg}$ ) while the measured concentration was found to be  $370.7 \pm 20.5$  ( $\mu\text{g}/\text{kg}$ ), see Figure 3-3.

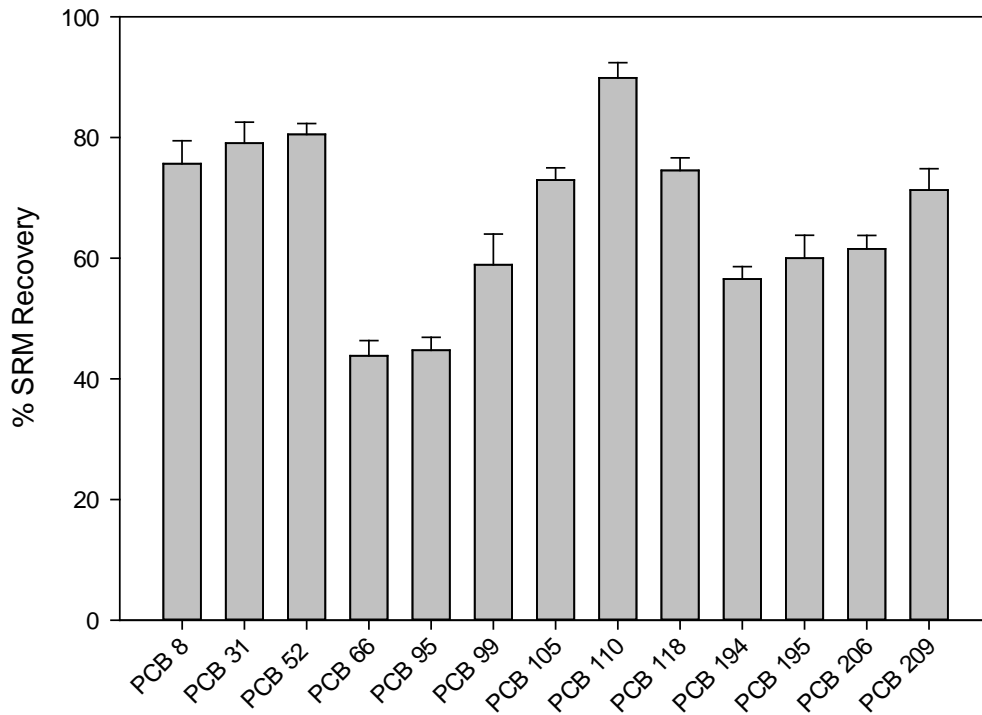


**Figure 3-3. Sum of the 13 PCB congener concentrations. The total concentration for the 13 congeners was  $531.8 \pm 34.2$  ( $\mu\text{g}/\text{kg}$ ) for the NIST reported while the measured concentration was  $362.3 \pm 9.0$  ( $\mu\text{g}/\text{kg}$ ).**

The mass fraction of recovery was used to further compare the measured and NIST reported congener concentrations. The percent recovery was determined by the following equation,

$$\text{percent recovery} = \frac{C_{PCBi, \text{measured}}}{C_{PCBi, \text{reported}}} \times 100\% \quad (11)$$

where  $C_{PCBi, \text{measured}}$  is the concentration ( $\mu\text{g}/\text{kg}$ ) measured for  $PCB_i$  and  $C_{PCBi, \text{reported}}$  is the concentration ( $\mu\text{g}/\text{kg}$ ) of  $PCB_i$  as reported by NIST. The average percent recovery for the 13 congeners ranged from  $43.8 \pm 2.5\%$  to  $89.9 \pm 2.5\%$ , see Figure 3-4.



**Figure 3-4. Average percent recovery for measured PCB concentrations in the SRM. The percent recovery was used to compare the measured and NIST reported PCB concentrations of 13 PCB congeners. The lowest recovery was for PCB 66 ( $43.8 \pm 2.5$  %) while the highest recovery was PCB 110 ( $89.9 \pm 2.5$  %).**

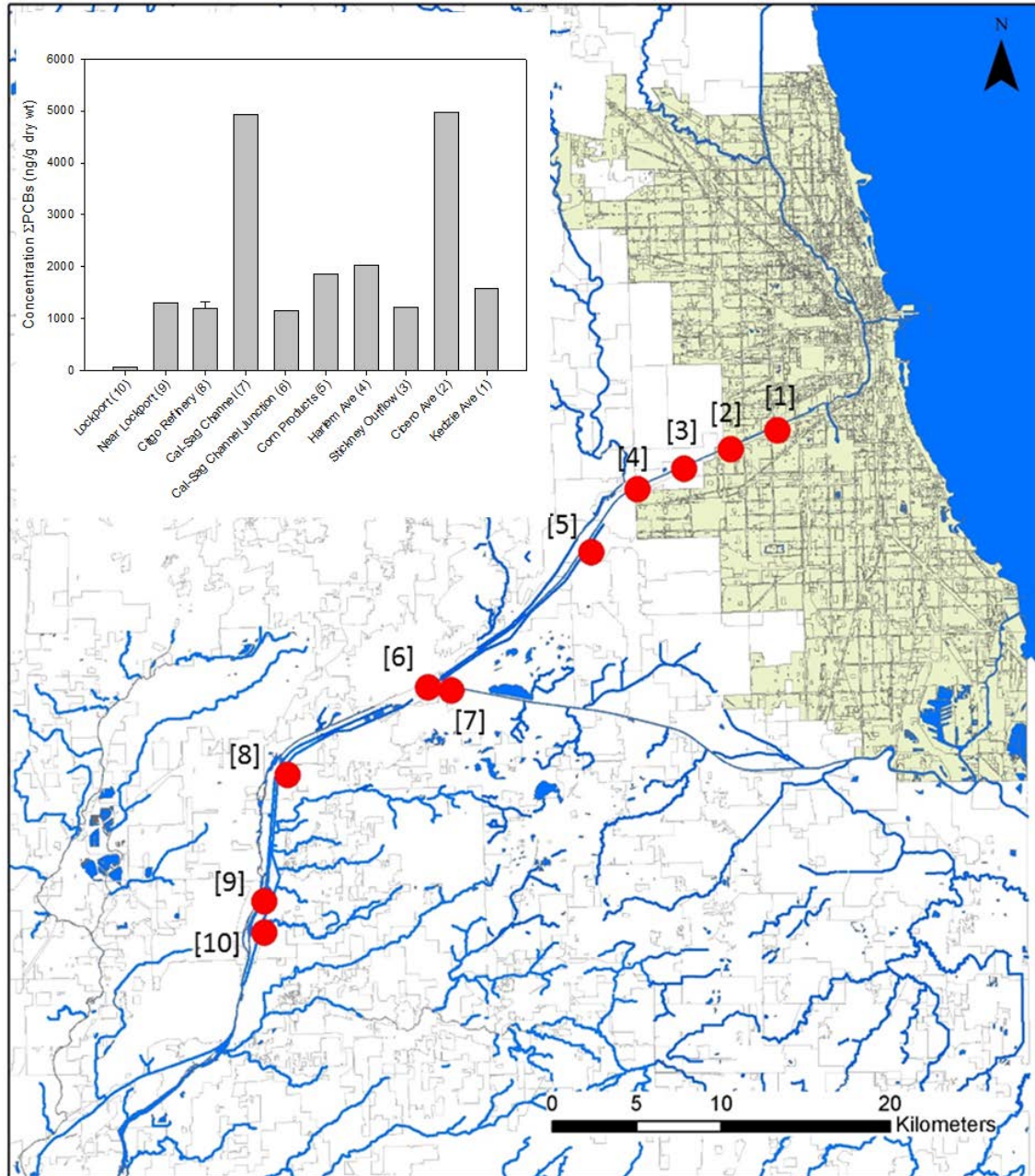
The average percent of recovery of the 13 PCB congeners was  $68.1 \pm 13.9$  %, which is acceptable considering the difference in methods used by NIST and those used in in this study.

The NIST Standard Reference Material® 1944 New York/New Jersey Waterway Sediment was used in this study, from which 13 PCB congener concentrations were able to be compared to the lab measured concentrations. The mass fraction of recoveries for the 13 congeners and the high surrogate standard recoveries suggest that the methods used in this and the accompanying study were reliable.

### 3.2 PCB Concentrations in the Bulk Sediment Samples from the CSSC and Cal-Sag Channel

If present in the sample, 147 individual PCBs and 27 for coeluting PCBs were identified and quantified in this study. The masses quantified in the bulk sediment were LOQ corrected and also surrogate corrected. The average surrogate recoveries were  $68 \pm 14$  % for PCB 14,  $72 \pm 16$  % for PCB D-65, and  $95 \pm 19$  % for PCB 166, see Figure A-3 in the Appendix. The high standard deviations seen in the surrogate recoveries are due to the loss of the CITGO sample during one of the transfer steps, see A-4 in the Appendix. A triplicate of the CITGO sample was run, the average surrogate recoveries were  $85 \pm 4$  % for PCB 14,  $85 \pm 3$  % for PCB D-65, and  $119 \pm 2$  % for PCB 166, see Figure A-5 in the Appendix.

The total concentrations of 147 individual PCBs and 27 coeluting PCBs ( $\Sigma$ PCBs) ranged from 70 to 4970 ng/g dry wt in the CSSC surficial sediment and the one sample taken in the Cal-Sag Channel had a concentration of 4920 ng/g dry wt resulting in an average  $\Sigma$ PCBs concentration of  $2020 \pm 1600$  ng/g dry wt. The measured  $\Sigma$ PCBs concentrations by site were: 1) 1590 ng/g dry wt (Kedzie Ave), 2) 4970 ng/g dry wt (Cicero Ave), 3) 1220 ng/g dry wt (Stickney Outflow), 4) 2020 ng/g dry wt (Harlem Ave), 5) 1860 ng/g dry wt (Corn Products), 6) 1160 ng/g dry wt (Cal-Sag Channel Junction), 7) 4920 ng/g dry wt (Cal-Sag Channel), 8)  $1110 \pm 70$  ng/g dry wt (CITGOGO Refinery (n=3)), 9) 1300 ng/g dry wt (Near Lockport), and 10) 70 ng/g dry wt (Lockport), see Figure 3-5.

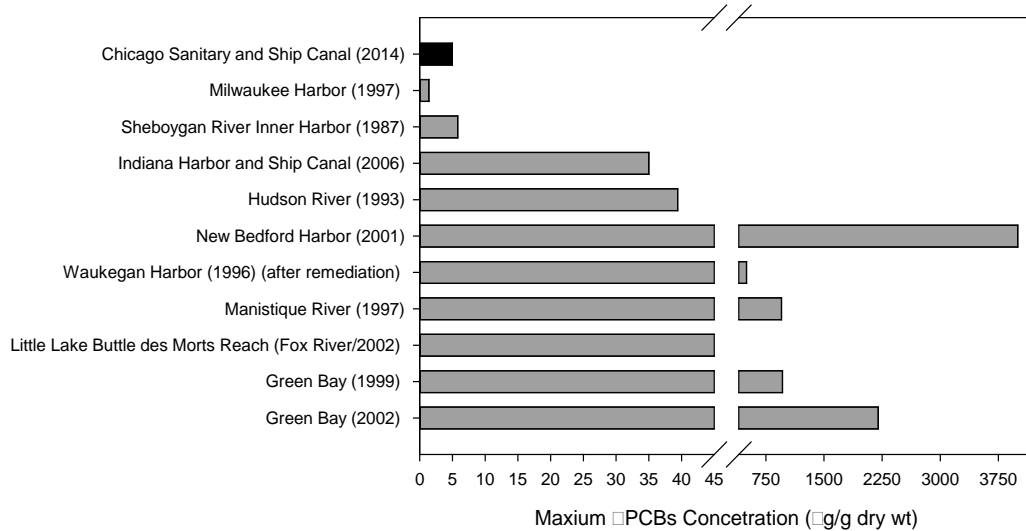


**Figure 3-5. The total sum of PCB concentrations and corresponding sites. The total sum of PCB ( $\Sigma$ PCBs) concentrations in the CSSC ranged from 70 to 4970 ng/g dry wt and 4920 ng/g dry wt in the Cal-Sag Channel, there does not appear to be a spatial correlation of total concentration between the sites.**

The highest  $\Sigma$ PCBs concentration was measured at the Cicero Ave. site while the lowest  $\Sigma$ PCBs concentration was measured at the Lockport site, there does not appear to be a spatial correlation

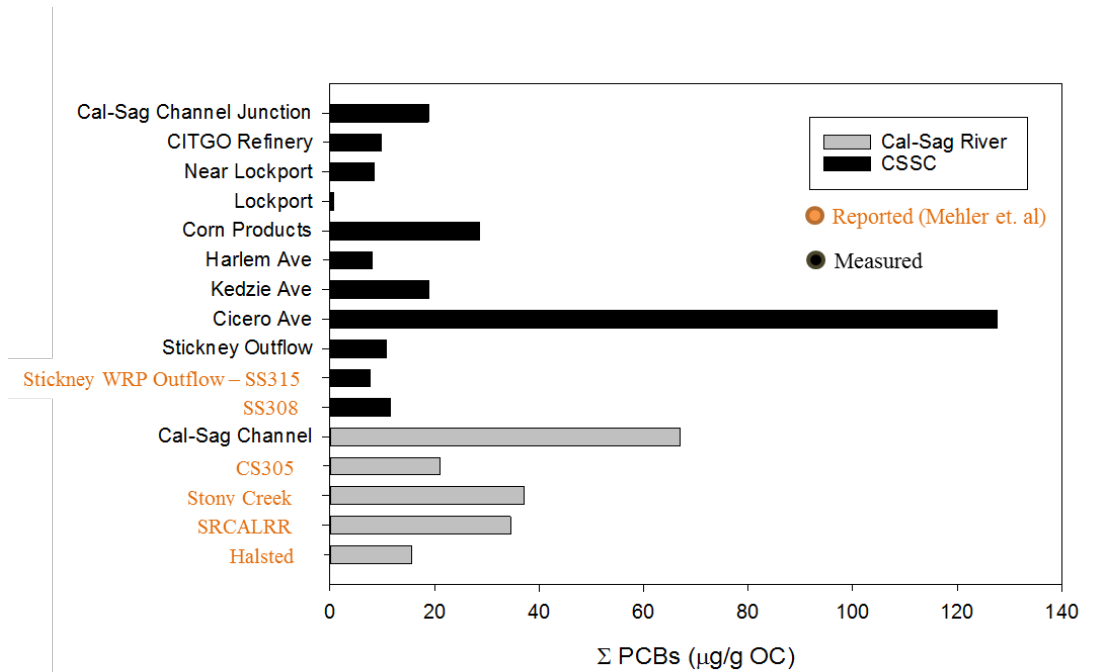


between  $\Sigma$ PCBs concentrations measured at the sites. The measured  $\Sigma$ PCBs concentrations from the CSSC fall within the range of other reported  $\Sigma$ PCBs concentrations of surficial sediment measured in other studies, see Figure 3-6.



**Figure 3-6. Comparison of reported maximum  $\Sigma$ PCBs concentrations to measured CSSC maximum  $\Sigma$ PCBs concentration [22, 31-39]. The CSSC maximum  $\Sigma$ PCBs concentration falls within the range of concentrations measured in other studies.**

The maximum  $\Sigma$ PCBs concentrations of surficial sediment reported in other studies ranged from 1.4  $\mu\text{g/g dry wt}$  (Milwaukee Harbor, 1997) to 4000  $\mu\text{g/g dry wt}$  (New Bedford Harbor, 2001) [22, 31-39]. The maximum PCB concentrations measured in the CSSC was found to be in the lower range when compared to these other studies. Another study by Mehler et al. measured the concentration of PCBs with respect to the organic carbon (OC) in sediments from the Illinois River Complex (IRC), which includes the CSSC and Cal-Sag Channel. They reported the sum of 44 PCB congeners (congeners: 8, 18, 28, 31, 43, 44, 48, 49, 52, 66, 70, 77, 86, 87, 95, 97, 99, 101, 105, 110, 114, 118, 123, 126, 128, 138, 153, 156, 157, 167, 169, 170, 174, 180, 183, 187, 189, 194, 195, 200, 201, 203 and 206) [40]. The Mehler study found that the  $\Sigma$ PCBs concentrations in the Cal-Sag Channel ranged from 15.7 to 37.2  $\mu\text{g/g OC}$  and the  $\Sigma$ PCBs concentrations in the CSSC ranged from 7.6 to 11.5  $\mu\text{g/g OC}$ , see Figure 3-7.



**Figure 3-7. Comparison of measured and reported  $\Sigma$  PCB Concentrations ( $\mu\text{g/g OC}$ ) in surficial sediment in the Chicago Sanitary and the Cal-Sag Channel. In the summer of 2007 a study of surficial sediment contamination in the Illinois River Complex (IRC) reported PCB concentrations in micrograms of PCBs per gram of organic carbon (OC) [40]. The reported IRC values are in orange writing.**

The CSSC samples analyzed in this study had  $\Sigma\text{PCB}$  concentrations of  $7.6 \mu\text{g/g OC}$  (*Kedzie Ave.*),  $11.5 \mu\text{g/g OC}$  (*Cercero Ave.*),  $10.9 \mu\text{g/g OC}$  (*Stickney Outflow*),  $8.0 \mu\text{g/g OC}$  (*Harlem Ave.*),  $28.6 \mu\text{g/g OC}$  (*Corn Products*),  $0.7 \mu\text{g/g OC}$  (*Lockport*),  $8.4 \mu\text{g/g OC}$  (*Near Lockport*),  $9.7 \mu\text{g/g OC}$  (*CITGO Refinery*), and  $18.9 \mu\text{g/g OC}$  (*Cal-Sag Channel Junction*). The IRC reported concentrations for two sites along the CSSC, SS15 ( $7.6 \mu\text{g/g OC}$ ) and SS308 ( $11.5 \mu\text{g/g OC}$ ), which falls within the range found in this study ( $0.7$  to  $127.6 \mu\text{g/g OC}$ ).

Though the measured maximum  $\Sigma\text{PCBs}$  concentrations for both the Cal-Sag Channel and the CSSC were higher than the highest IRC reported values this could be due to the IRC report only quantifying 44 PCB congeners as opposed to the 209 congeners that were quantified in this study. The sampling site SS15, located at the outflow of the Stickney WRP, reported a  $\Sigma\text{PCBs}$  concentration of  $7.6 \mu\text{g/g OC}$  which is similar to the concentration measured in this study, only a  $2.3 \mu\text{g/g OC}$  difference.

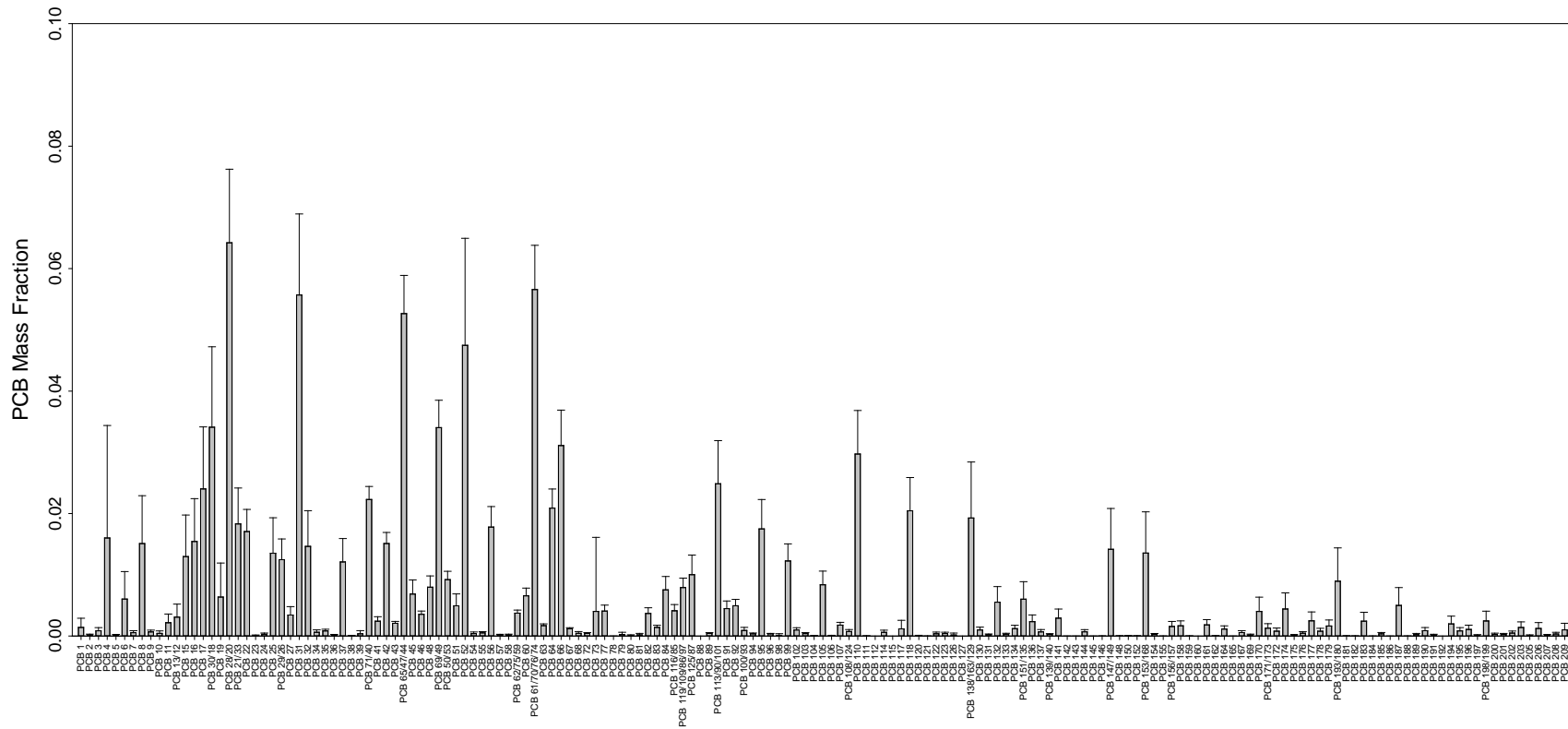
### 3.3 PCB Mass Fractions and Congener Profiles in the Bulk Sediment Samples from the Chicago Sanitary and Ship Canal and Cal-Sag Channel

The Congener profile of the PCBs describes the mass distribution of PCBs by a plot of the mass fraction of each congener. The congener profiles were constructed for each site, see Figures A-6 through A-15 in the Appendix. An average congener profile was constructed to determine which congeners are most prevalent in the CSSC sediment samples and the standard deviation of each congener provides a measure of variation between sites. The PCBs found to contribute most to the total mass in the sediment samples were 18/30, 28/20, 31, 65/47/44, 69/49, 52, 61/70/76/74, and 66 (the forward slash (/) indicates coeluting congeners), see Table 3-1.

**Table 3-1. Primary contributors of mass to bulk sediment samples.**

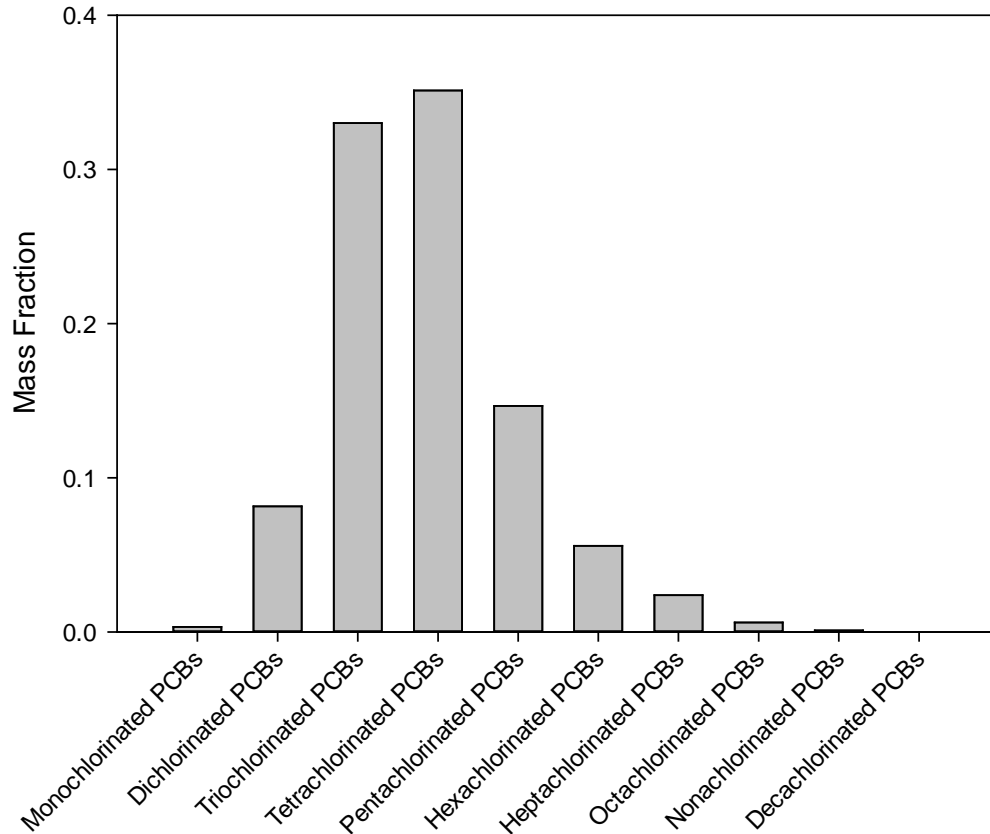
Congener	Mass Percent	Standard Deviation ( $\pm$ )
PCBs 30/18	3.4%	1.3%
PCBs 28/20	6.4%	1.2%
PCB 31	5.6%	1.3%
PCBs 65/47/44	5.3%	0.6%
PCBs 69/49	3.4%	0.4%
PCB 52	4.7%	1.7%
PCBs 61/70/76/74	5.7%	0.7%
PCB 66	3.1%	0.6%
Sum	37.6%	

The average congener profile describes the distribution of all measured PCBs in the Bulk sediment samples from CSSC and the Cal-Sag Channel, See Figure 3-8.



**Figure 3-8. Average CSSC bulk PCB congener profile and standard deviations. Mass fractions were arranged by congener name. The lower to mid molecular weight PCBs dominate the mass of PCBs in the CSSC sediment samples. Note the low standard deviation for each congener.**

In terms of homolog groups, the dichlorinated through hexachlorinated PCBs dominated the mass fractions in the bulk sediment samples, see Figure 3-9.



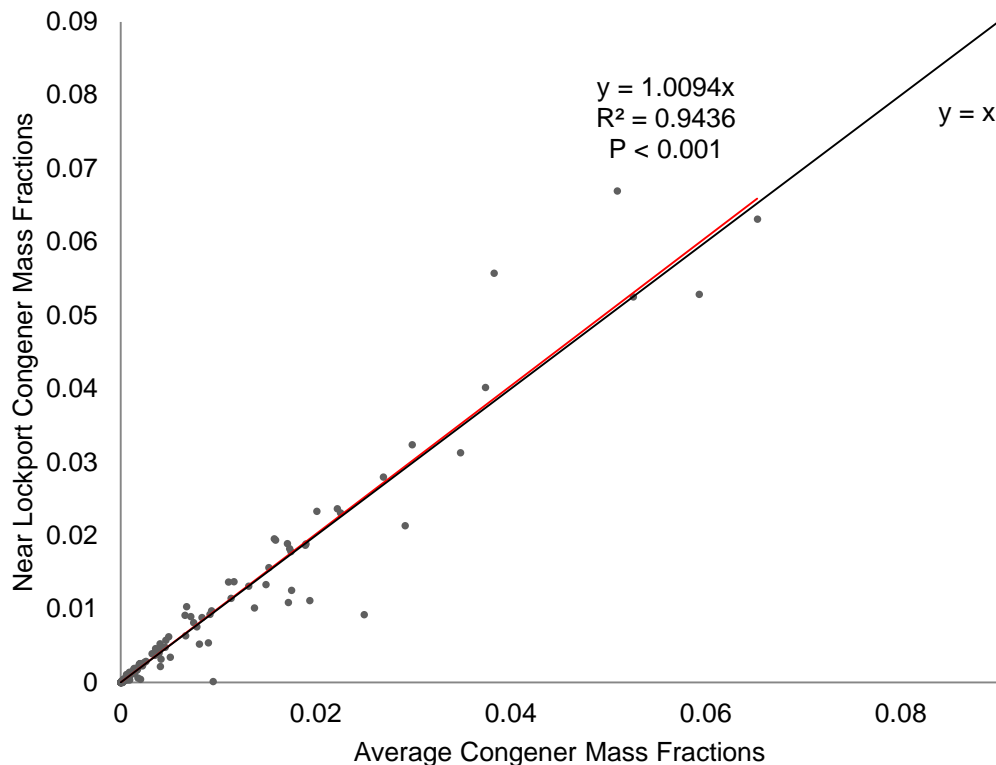
**Figure 3-9. Mass fraction contribution of PCBs by homolog group in bulk sediment samples. The dichlorinated through the hexachlorinated PCBs dominated the mass fractions in the bulk sediment. The trichlorinated and the tetrachlorinated PCBs accounted for 33 % and 35 %, respectively.**

The dominance of the mid homolog groups is likely due to the larger number of isomers in those homolog groups compared to the upper and lower homolog groups.

The congener profile can be used to check the similarity between various sites and their potential sources [41]. Congener profiles are also useful since they provide a method by which matrices (sediment, water, air, animal tissue, ect.) may be compared to one another. In this study congener

profiles have been used to help determine if a sediment samples have a similar congener distribution between one another, have a common source, and/or if they have been contaminated by specific Aroclors.

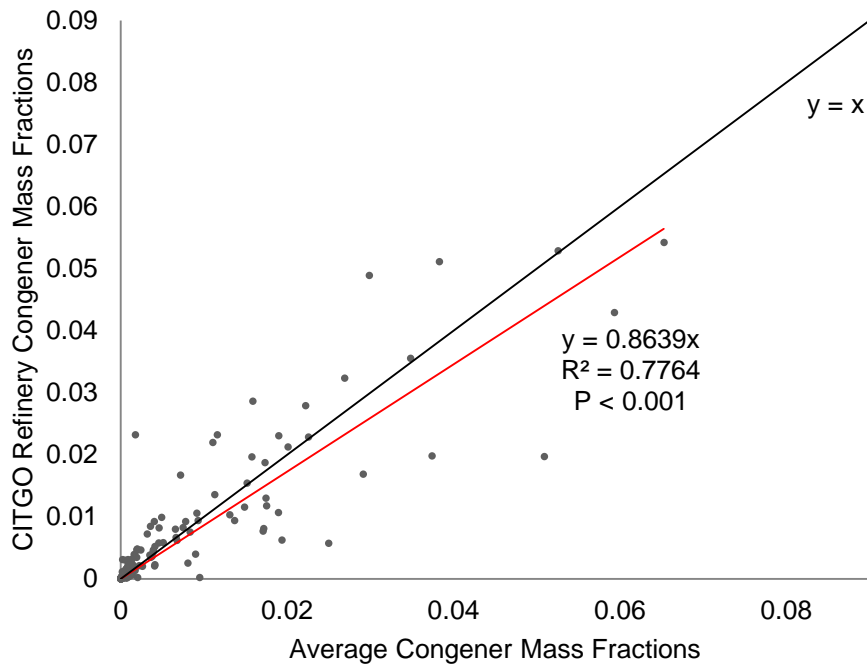
The CSSC sample sites appeared to be similar to one another by visual inspection of the congener profiles, but a more quantitative method was used to determine similarity. The PCB mass fractions were used to determine their similarity by plotting the mass fraction of each PCB congener at a given site to that of the average mass fraction of each PCB congener for the ten CSSC samples. The greatest similarity was found for the *Near Lock Port* site, see Figure 3-10.



**Figure 3-10. Determining the similarity between the congener profile of CSSC Site *Near Lockport* and the average congener profile of CSSC sites. The clustering about the  $x = y$  line suggests a strong similarity.**

The tighter the grouping about the  $y = x$  line the greater the similarity. The greater the scatter the less similar a site's congener profile is to the average. A linear regression was performed forcing

the y-intercept to 0 using Excel. As can be seen in Figure 3-10, the equation of the line had a slope near 1 which further suggests high similarity. Similarity between all sites was observed but not all sites showed as strong of correlation as did the *Near Lockport* site. The weakest similarity was found for CSSC site *CITGO Refinery*, see Figure 3-11.



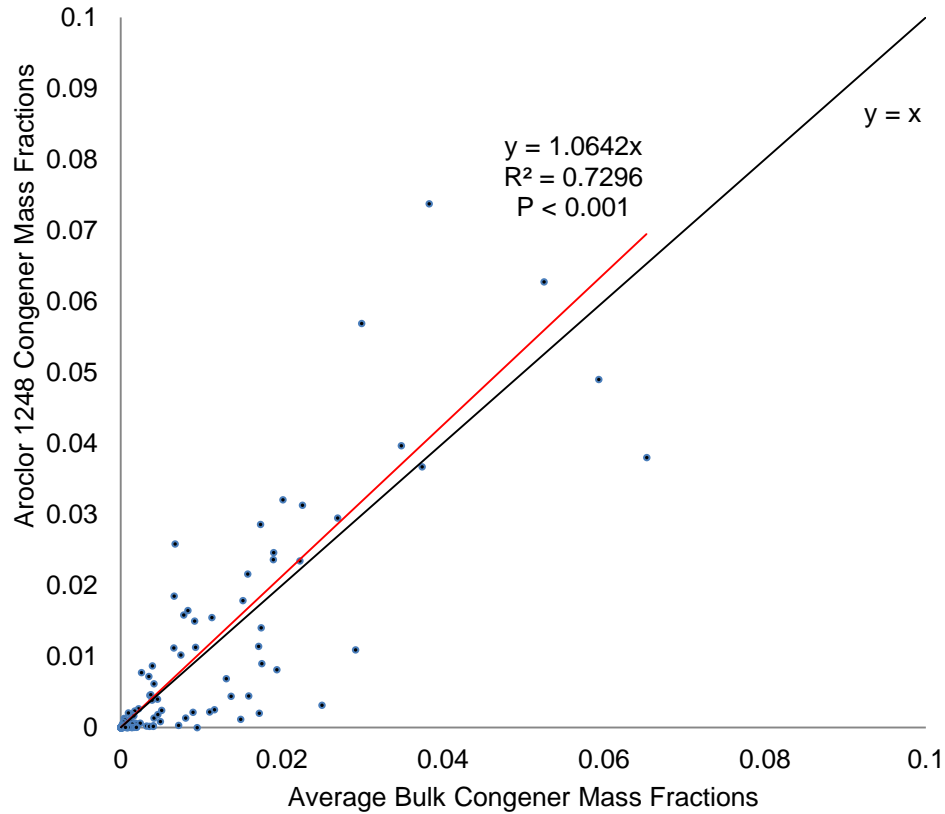
**Figure 3-11. Determining the similarity between the congener profile of CSSC site *CITGO Refinery* and the average congener profile of CSSC sites. When compared to the *Near Lockport* site one can see that the correlation is not as strong for the *CITGO Refinery*, there is greater scattering and there is a greater deviation of the linear regression from  $y = x$  line.**

Though the similarity between the congener profile of the *CITGO Refinery* site and the average was the lowest observed out of all the ten sites the similarity is still good, plots of the other eight CSSC sites can be found in the Appendix, Figures A-39 through A-47. The similarity between the congener profiles of each site suggests that PCB congeners distribution is consistent throughout the CSSC.

One reason for conducting this study was to determine if the Stickney WRP was a potential source of PCBs to the CSSC. It has been shown that effluent from wastewater treatment plants are a source to PCBs to the sediment of receiving waters [42-44] . The Stickney Water Reclamation Plant (WRP) is the largest wastewater treatment plant in the world [12]. But the Stickney WRP is most likely not the primary source of PCBs given that the highest  $\Sigma$ PCBs concentration was found to be at the *Kedzie Ave.* site which is up river from the WRP and the *Cal-Sag Channel* site also has higher  $\Sigma$ PCBs concentration (4920 ng/g dry wt) than the average  $\Sigma$ PCBs concentration (2019 ng/g dry wt) in the CSSC, and the Cal-Sag Channel feeds into the CSSC. The source of PCBs to the CSSC is most likely from Downtown Chicago. The correlation between congener profiles did not provide information as to a specific source-site of PCBs, but it did suggest that the distribution of PCBs were similar throughout the CSSC.

The average congener profile was also compared to five common Aroclor mixtures (Aroclors 1016, 1221, 1242, 1248, and 1254). Aroclor mixtures were analyzed using the same method and GC/MS/MS instrument as was the sediment samples (Wenxin Koh, personal communication), congener profiles can be found in Appendix, Figures A-16 through A-20. The strongest similarity between an Aroclor's PCB congener mass fractions and the mean PCB mass fractions from this study was found to be Aroclor 1248, See Figure 3-12.





**Figure 3-12. Determining the similarity between the congener profile of Aroclor 1248 and the average congener profile for CSSC sites. Mass fractions of individual and coeluting PCB congeners in the Aroclor 1248 were plotted against the average PCB mass fractions, a linear regression was performed forcing the y-intercept to 0.**

By comparing the mass fractions from the CSSC sites and the Aroclor mixtures to the average mass fractions of the ten sampling sites, it was determined that there is similarity between the sites' sediment samples, but only a weak similarity between the Aroclors and the sites' sediment samples, and that there does not appear to be a single source of PCBs to the CSSC instead the PCBs are coming from Downtown Chicago. It was also concluded that the PCBs were uniformly distributed throughout the CSSC.

### 3.4 PCB Concentrations in Sediment-Porewater from the Chicago Sanitary and Ship Canal and Cal-Sag Channel

#### 3.4.1 Uptake Experiment

PCB concentrations in the Porewater were determined by an increasingly popular passive sampling method using solid phase micro extraction (SPME) fibers [20, 29, 45, 46]. Firstly, an uptake experiment was performed in order to determine the time necessary to reach equilibrium between the PCBs in the porewater and the SPME fiber. The uptake experiment was performed using sediment from the *Cicero Ave* site. Sampling was performed for 7 d (triplicate), 14 d, 24 d, 39 d, and 63 d. Equilibrium was reached by 14 d, see Figure 3-13.

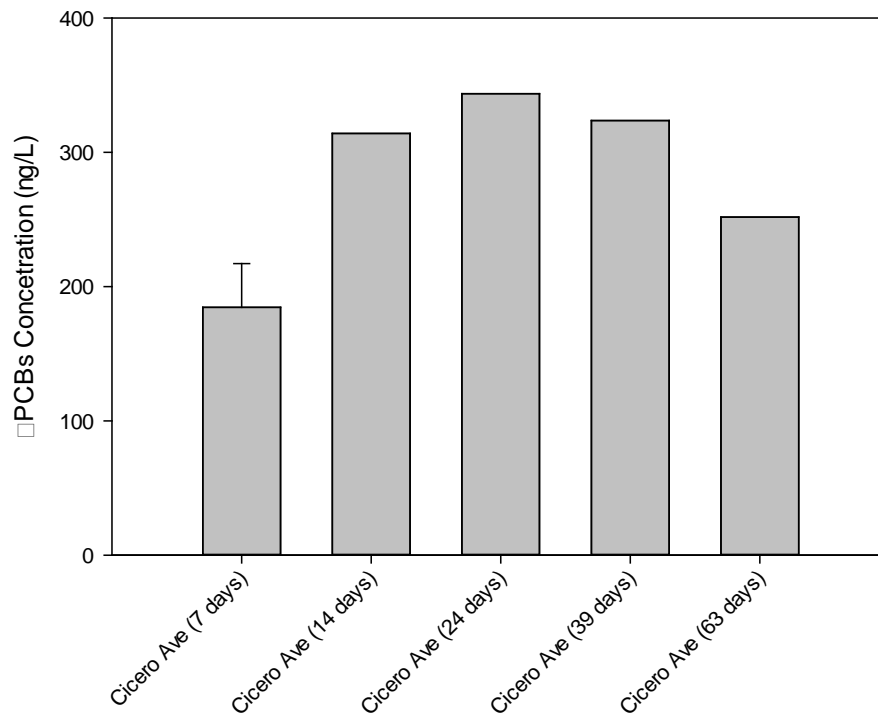


Figure 3-13. Porewater SPME uptake experiment results. Equilibrium was met by 14 days.

The  $\Sigma$ PCBs concentrations were measured for the *Cicero Ave.* site at 7 d ( $185 \pm 33$  ng/L), 14 d (314 ng/L), 24 d (344 ng/L), 39 d (324 ng/L), and 63 d (252 ng/L). Though uptake experiment showed that equilibrium was met by 14 d, the SPME sampling was performed for a conservative 29 days to ensure that equilibrium was truly met. Once the required duration of sampling was determined the PCB concentrations were measured for the ten sampling sites.

### 3.4.2 Total Sum of PCB Concentrations in the Sediment-Porewater

The  $\Sigma$ PCBs concentrations in the sediment porewater were found for the ten sampling sites. Porewater concentrations in the CSSC ranged from 2 to 366 ng/L and 134 ng/L in the Cal-Sag Channel, see Figure 3-14.

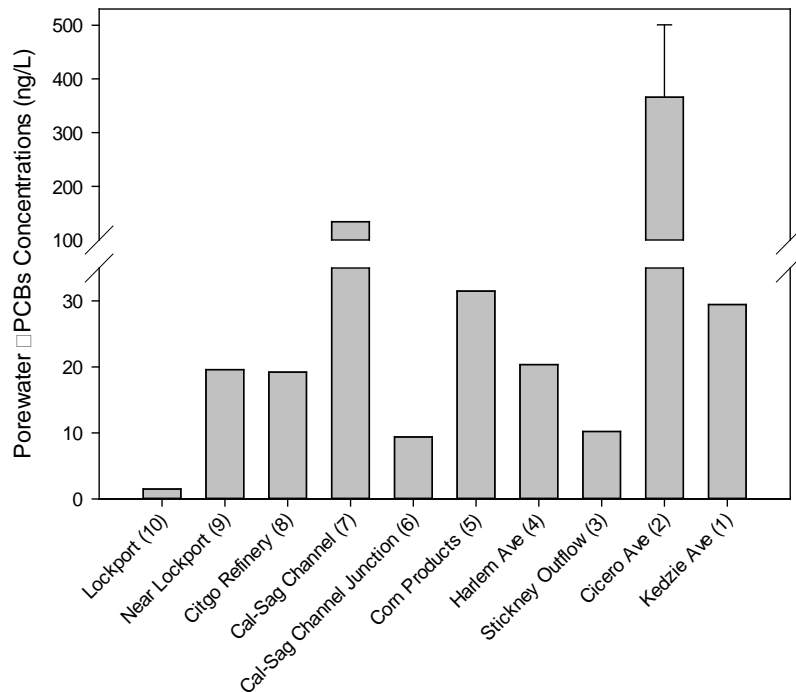
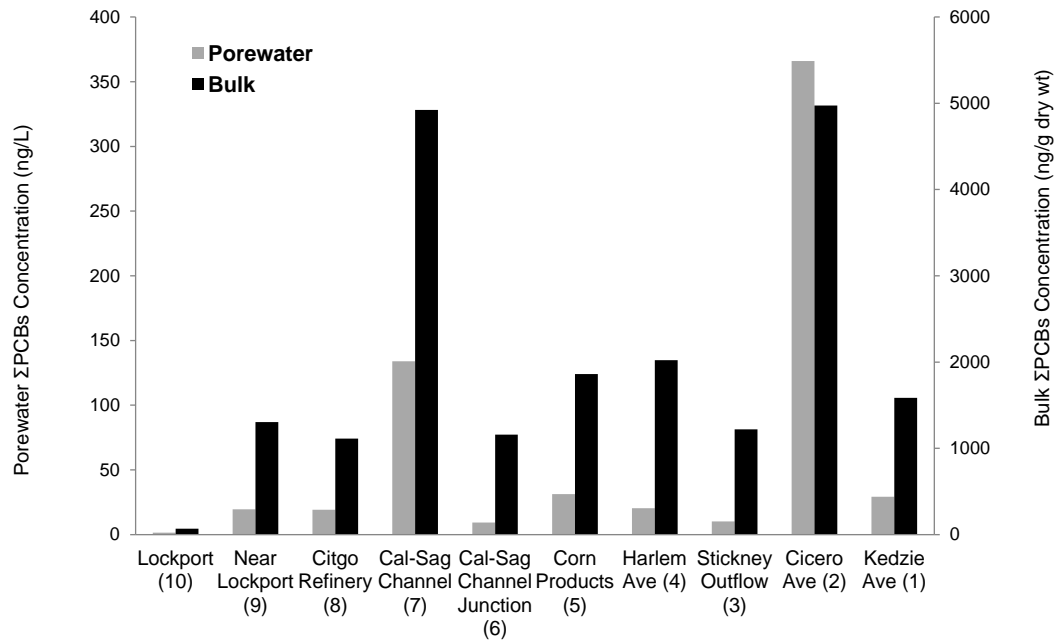


Figure 3-14. Porewater  $\Sigma$ PCBs Concentrations for the CSSC and Cal-Sag Channel.

The measured  $\Sigma$ PCBs Concentrations of PCBs in the sediment porewater were 2 ng/L (*Lockport*), 20 ng/L (*Near Lockport*), 19 ng/L (*CITGO Refinery*), 134 ng/L (*Cal-Sag Channel*), 9 ng/L (*Cal-Sag Channel Junction*), 32 ng/L (*Corn Products*), 20 ng/L (*Harlem Ave.*), 10 ng/L (*Stickney Outflow*),  $366 \pm 126$  ng/L (*Cicero Ave.*), and 30 ng/L (*Kedzie Ave.*). The standard deviation ( $n = 4$ ) for *Cicero Ave.* ( $\pm 126.0$  ng/L) was rather high, suggesting that there can be great variation in the concentration even within a given sample. The measured porewater concentrations were similar to those measured in the Indiana Harbor and Ship Canal (41 to 1500 ng/L) [20]. In a study by Hawthorne et al. 53 sediment samples from rivers including Buffalo River, Hudson River, Fox River, and Grasse River measured the PCBs from the homolog groups Di through Hepta and found sediment-porewater  $\Sigma$ PCB (freely-dissolved  $\Sigma$ PCB) concentrations in the range of 0.5 to 65,200 ng/L [47]. The concentrations measured in this study also fall well within the range reported by the Hawthorne et al. As was the case with the bulk  $\Sigma$ PCBs concentrations, no spatial correlation was found. Though there was a correlation between the relative concentrations between the porewater and bulk, see Figure 3-15.

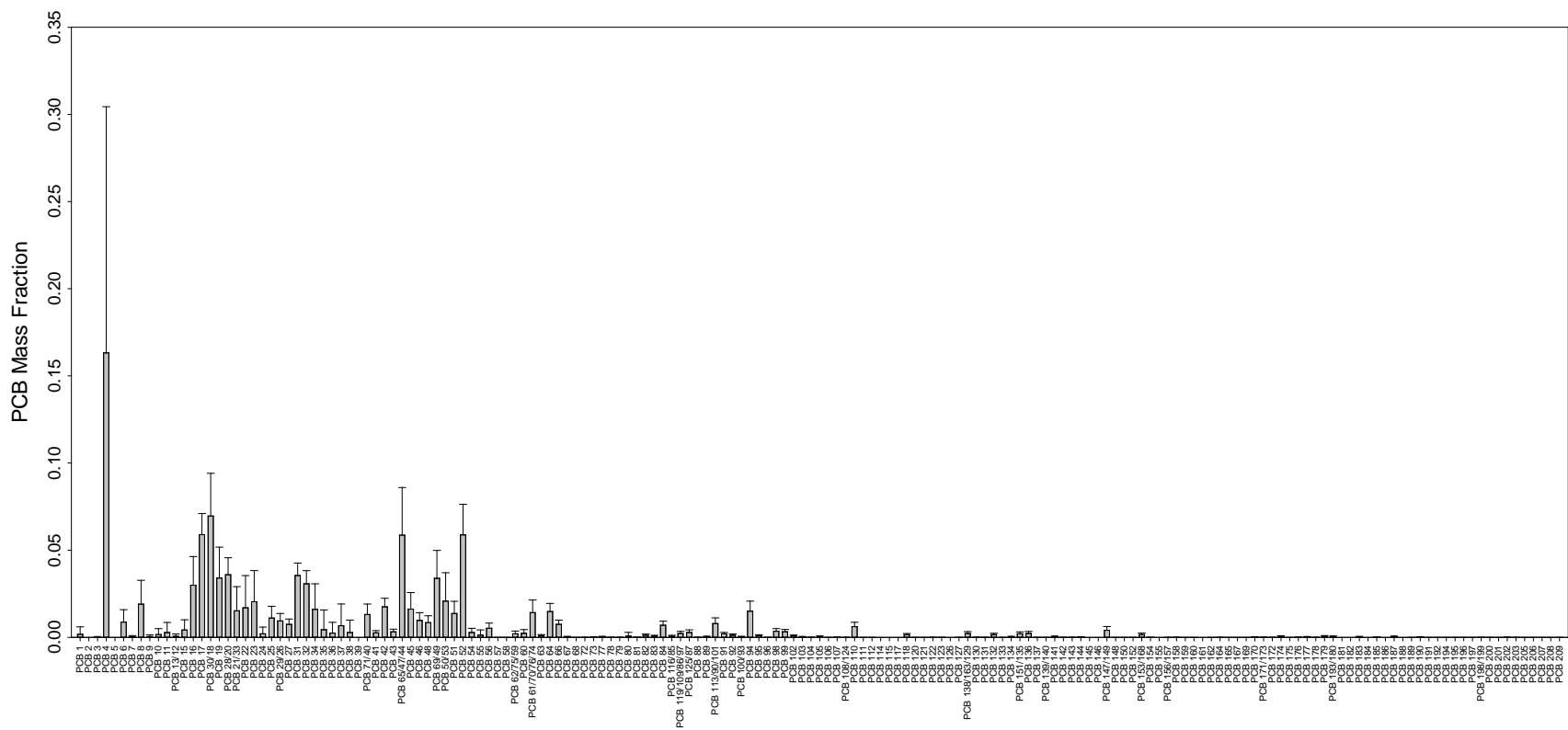


**Figure 3-15. Correlation Between the ΣPCBs Concentrations in the Bulk Sediment and Porewater.**

The relative levels of ΣPCBs concentrations between the bulk sediment and the porewater appear to be similar. For example, *Lockport* has the lowest ΣPCBs concentration while *Cicero Ave.* has the highest ΣPCBs concentration for both the bulk sediment and the porewater. The relative ΣPCBs concentrations of the bulk sediment and the porewater are similar, which provides greater confidence in the results of both.

### **3.5 Porewater PCB Mass Fractions and Congener Profiles of the Samples from the Chicago Sanitary and Ship Canal and Cal-Sag Channel**

Congener profiles for the mass fraction of PCBs in the porewater were constructed for each CSSC and Cal-Sag Channel sample, see Figures A-29 through A-38 in the Appendix. An average congener profile was also constructed, See Figure 3-16.



**Figure 3-16. Average congener profile of PCBs (mass fractions and standard deviations) in the sediment-porewater. The lower chlorinated PCBs dominate the mass in the samples. PCB 4 is especially dominant, accounting for 16 ± 14 mass % in the sample.**

On average the PCBs which contributed the most mass to the sediment-porewater were PCB 4, PCB 16, PCB 17, PCBs 30/18, PCB 19, PCBs 28/20, PCB 31, PCB 32, PCBs 65/47/44, PCBs 69/49, and PCB 52, see Table 3-2.

**Table 3-2.** Primary contributors of mass to porewater samples.

Congener	Percent Mass	Standard Deviation ( $\pm$ )
PCB 4	16.3%	14.1%
PCB 16	3.0%	1.6%
PCB 17	5.9%	1.2%
PCB 30/18	7.0%	2.5%
PCB 19	3.4%	1.8%
PCB 28/20	3.6%	1.0%
PCB 31	3.5%	0.7%
PCB 32	3.1%	0.8%
PCB 65/47/44	5.9%	2.7%
PCB 69/49	3.4%	1.6%
PCB 52	5.9%	1.8%
Sum	60.9%	

PCB 4 has a high standard deviation due to the high mass fraction in the *Cicero Ave.* sample, see Figure 3-17.



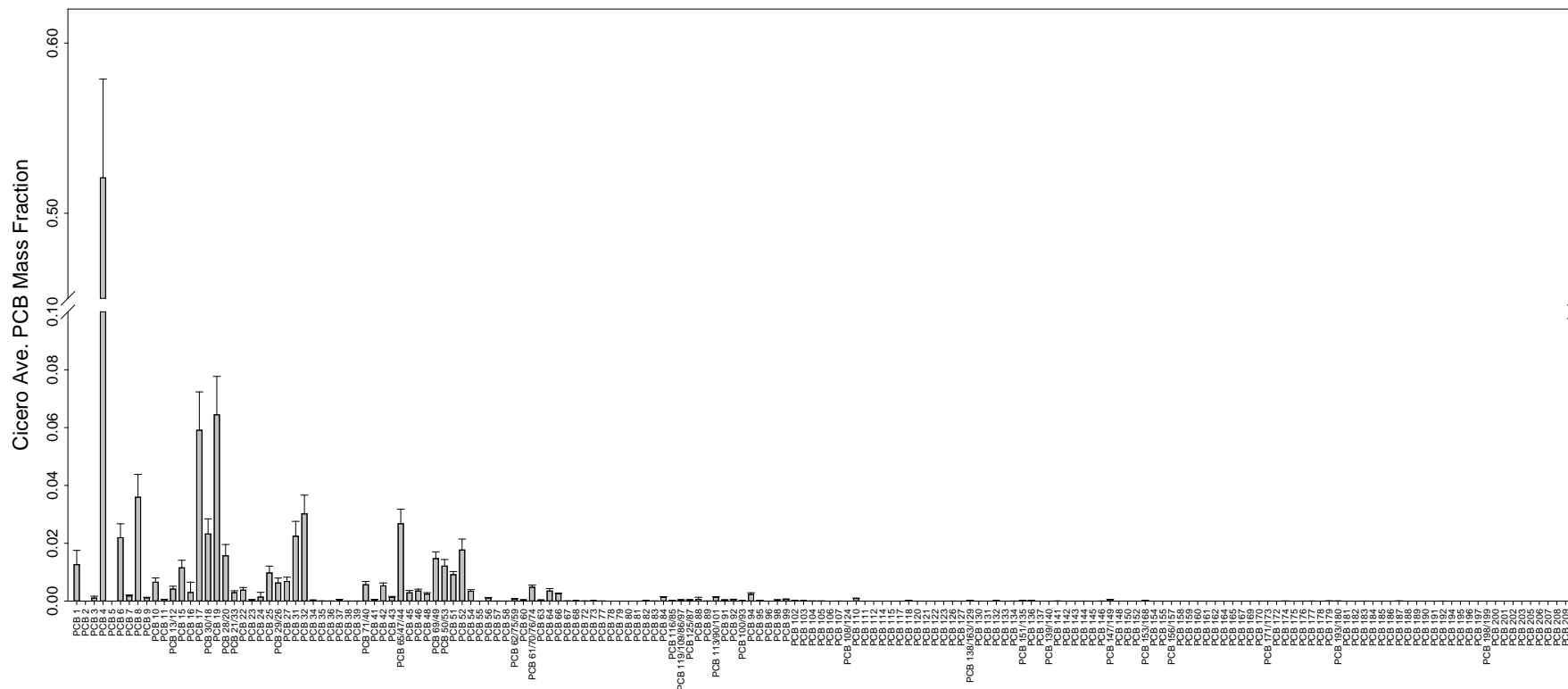
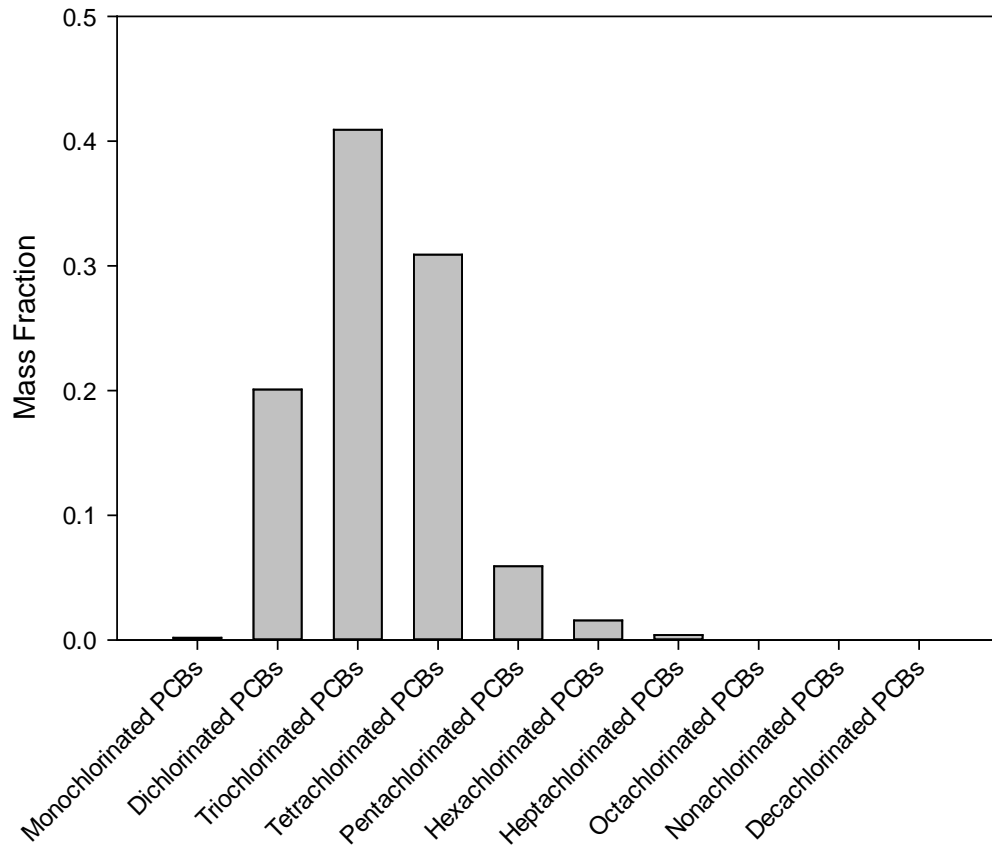


Figure 3-17. Cicero Ave. sediment-porewater congener profile (mass fractions and standard deviations).

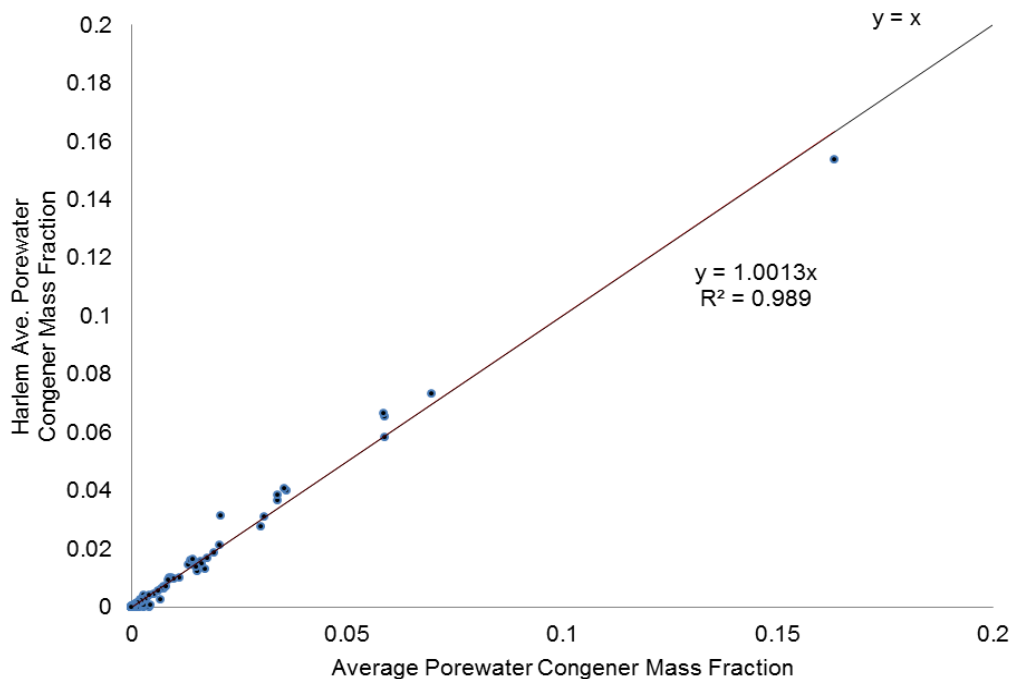
PCB 4 accounts for 52.0 % of the mass in the *Cicero Ave.* sample while PCB 4 only contributes 0.0 to 20.8 % in all other porewater samples. The homolog groups that contribute most to the mass in the samples are the di, tri, and tetrachlorinated PCBs, see Figure 3-18.



**Figure 3-18. Mass fraction contribution by homolog group. The di, tri, and tetrachlorinated PCBs contribute 91.9 % of the mass measured in the sediment-porewater samples.**

The distribution of mass by homolog group for the porewater is similar to that of the bulk sediment except penta and hexachlorinated PCBs were more prevalent in the bulk sediment samples.

Mass fraction comparisons for the porewater were performed as described above for the bulk sediment and results were similar, see Figures A-34 through A-42 in the Appendix. The strongest similarity between the average PCB mass fractions and a sample's PCB mass fractions was found for the site *Harlem Ave.*, see Figure 3-19.



**Figure 3-19. Congener mass fraction comparison: Determining the similarity between the congener profile of CSSC site *Harlem Ave.* and the average congener profile for CSSC sites. This comparison showed a strongest similarity between a CSSC site and the average PCB mass fractions.**

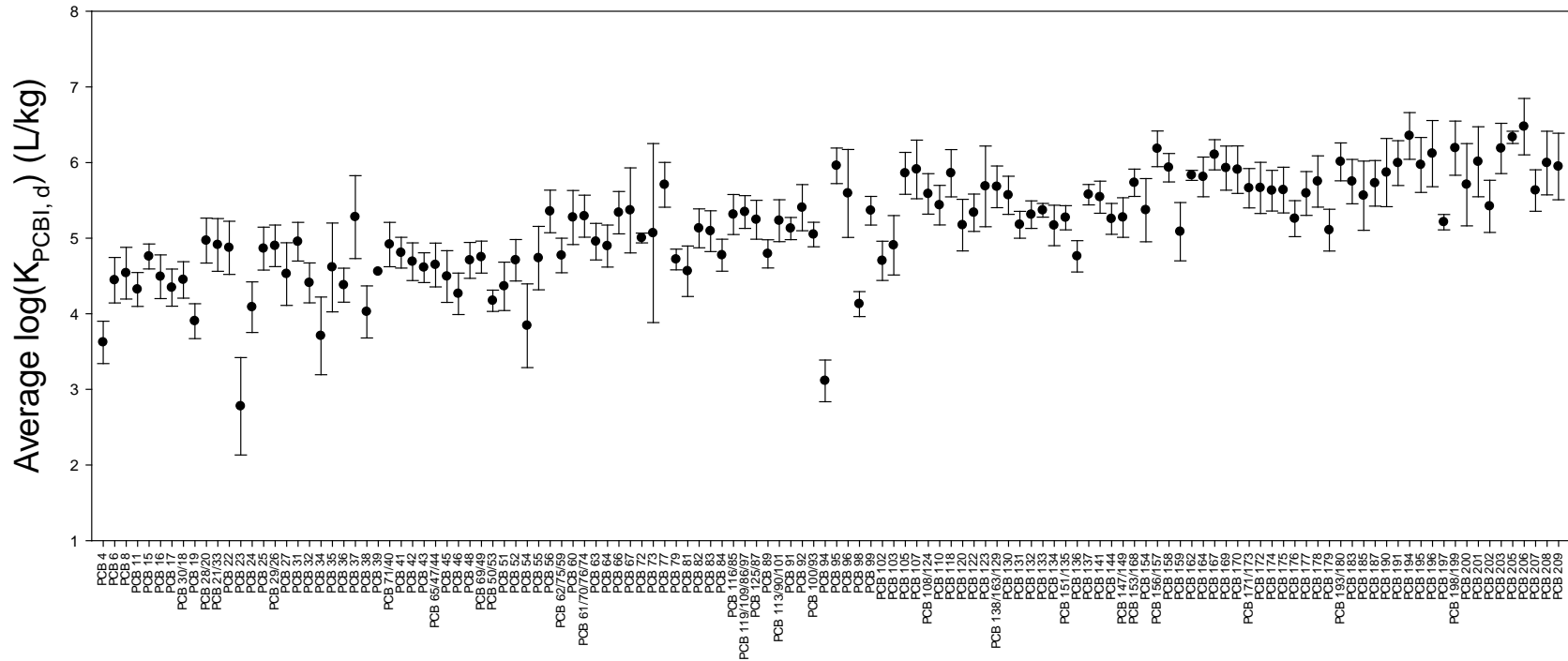
The strong similarity between the sampling sites and the average PCB mass fractions support the hypothesis that the distribution of PCB congeners is consistent throughout the CSSC.

### 3.6 Sediment-Porewater Distribution Coefficients of PCB Congeners in the Surficial Sediment Samples from the Chicago Sanitary and Ship Canal and Cal-Sag Channel

The sediment-porewater distribution coefficient describes the partitioning of PCBs at equilibrium between in the solid phase and the freely dissolved phase. It is difficult to determine if equilibrium has been met in natural systems given its dependence on time, temperature, physical-chemical properties, and the complexity of environmental matrices. This complexity makes the measurement of porewater concentration especially difficult [20]. Porewater concentrations have been used to model the fate and transport of persistent organic pollutants (POPs), to help make remediation decisions about contaminated sites, and to predict the bioavailability in aquatic environments [20]. The PCB<sub>i</sub> sediment-porewater distribution coefficients ( $k_{PCBi,d}$ ) describe the partitioning of PCBs between their solid and dissolved phases and can be calculated by,

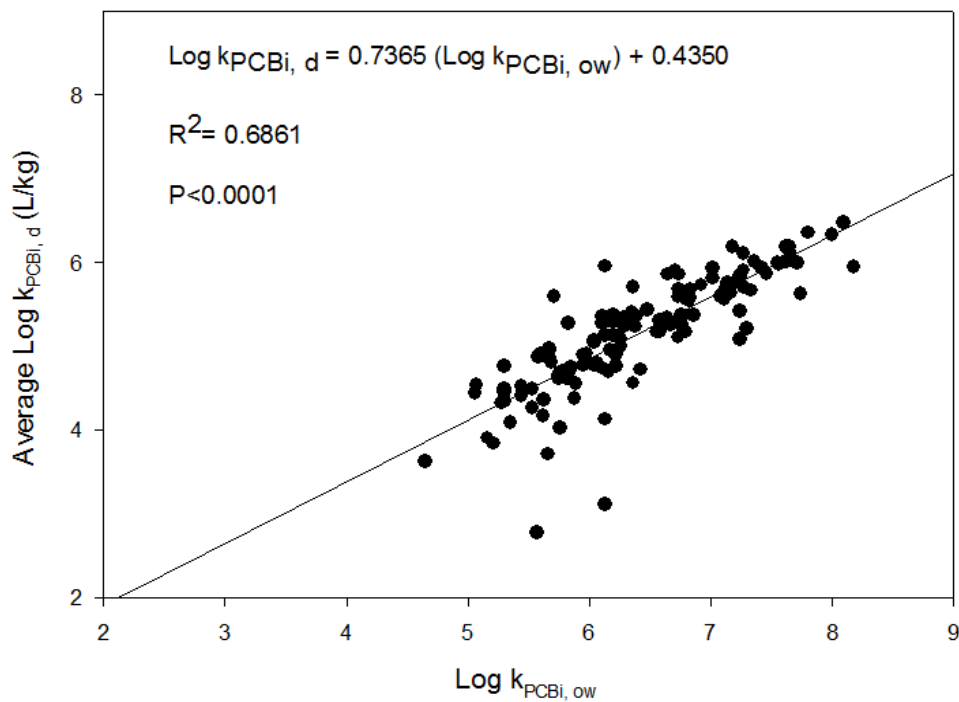
$$k_{PCBi,d} = \frac{C_{PCBi,bulk}}{C_{PCBi,pw}} \quad (12)$$

where  $C_{PCBi,bulk}$  is the concentrations of PCB<sub>i</sub> in the bulk sediment and  $C_{PCBi,pw}$  is the concentrations of PCB<sub>i</sub> in the porewater. The  $k_{PCBi,d}$  was found for only those samples that had three or more corresponding  $C_{PCBi,bulk}/C_{PCBi,pw}$  pairs, resulting in the determination of 128  $k_{PCBi,d}$ . The average log  $k_{PCBi,d}$  values ranged from  $2.78 \pm 0.64$  to  $6.48 \pm 0.37$  kg/L, see Figure 3-20.



**Figure 3-20. Average measured sediment-porewater partition coefficients and standard deviations of PCB congeners in surficial sediment samples from the CSSC. Sediment-Porewater distribution coefficients were determined for 128 individual and coeluting PCB congeners using the measured porewater and bulk sediment concentrations.**

The trend of the  $k_{PCBi,d}$  values shows that the higher the chlorination of a PCB the greater its tendency to partition more to the solid phase than the freely-dissolved phase. Since the  $k_{ow}$  of each PCB congener is known, we hoped to find a correlation between the  $k_{PCBi,d}$  and the  $k_{ow}$  as previously described by Martinez et al. [20]. The plot of the average log  $k_{PCBi,d}$  as a function of log  $k_{ow}$  was plotted, see figure 3-21.



**Figure 3-21. Determining the log  $k_{PCBi,d}$  /log  $k_{ow}$  relationship. A correlation between the log  $k_{PCBi,d}$  and log  $k_{ow}$  was found suggesting that the log  $k_{ow}$  may be used to estimate the log  $k_{PCBi,d}$  for sediment samples in the CSSC by the linear regression.**

A linear regression was performed using Sigma Plot 13.0 resulting in the log  $k_{PCBi,d}$ /log  $k_{ow}$  relationship of,

$$\log k_{PCBi,d} = 0.7365 (\log k_{PCBi,ow}) + 0.4350 \quad (13)$$

which had an  $R^2$  value of 0.6861 and a P value about the slope of less than 0.0001. Once the log  $k_{PCBi,d}$  and the bulk sediment  $PCBi$  concentrations have been determined, the porewater concentrations may be estimated. Though a correlation was observed, it would be best to measure the porewater concentrations rather than estimating from the described relationship.

### 3.7 Estimation the Mass Flow Rate of PCBs through the Chicago Sanitary and Ship Canal

The mass flow rate of PCBs is the sum of PCBs being transported by the CSSC canal. This is important value considering that the CSSC connects Lake Michigan to the Mississippi River, and therefore has a large zone of influence. The determination of  $\Sigma PCB$  mass flow rate requires the monitoring of  $\Sigma PCBs$  concentration in the water of CSSC but currently this information is not available. The Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) has tested for PCBs since 2006, but their reporting limit of 30 ng/L may be too high to detect the PCBs that are present. This study does have porewater concentrations though, and these may be used to estimate the concentrations of PCBs in the water. Only two of the CSSC sites tested in this study had  $\Sigma PCBs$  porewater concentrations greater than the MWRDGS's reporting limit of 30 ng/L. The measured PCB concentration data and congener mass fractions comparison analysis from both the bulk sediment and the porewater suggests that the PCB congeners are evenly distributed throughout the CSSC. An estimate of the flux of the dissolved phase PCBs through the CSSC may be calculated using the relationship,

$$flow_{\Sigma PCBs, aq} = C_{\Sigma PCB, pw} \times Q \quad (14)$$

where  $flow_{\Sigma PCBs, aq}$  is the yearly mass flow rate of PCBs (kg/y) in the dissolved phase,  $C_{\Sigma PCB, pw}$  is the total concentration of the PCBs (kg/L) in the porewater and  $Q$  (L/y) is the yearly volumetric flow rate of the canal. This estimation requires the assumption that the PCBs in surficial sediment (solid phase) obtained in the study is in equilibrium with the PCBs in the water (dissolved phase). The multiple porewater concentration measurements allow for a range of values based on

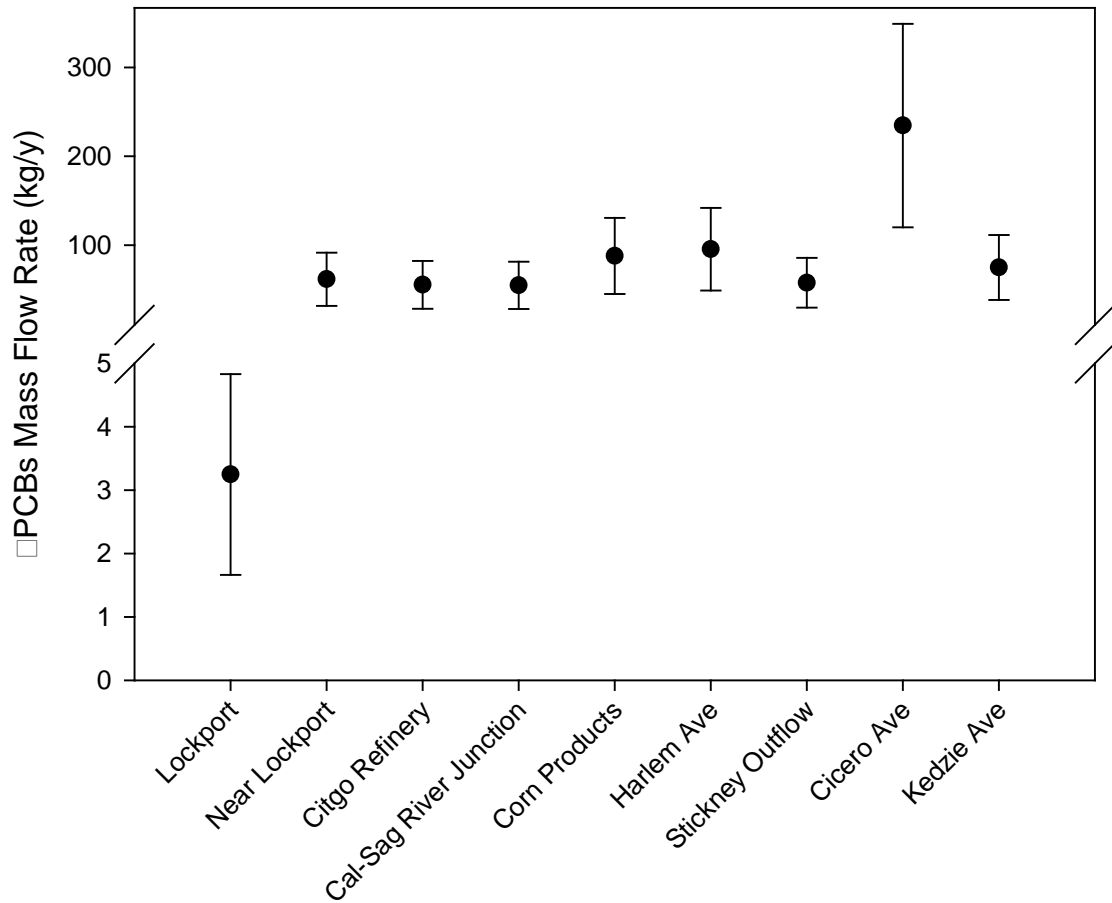
equation 14. The flow rate of the CSSC was estimated to be 160 m<sup>3</sup>/s by averaging the discharge rates measured in the CSSC at Romeoville, IL (near the *Lockport* sampling site) and Lemont, IL (near the *Cal-Sag Channel Junction* sampling site) [14, 15]. The range of estimated flow of PCBs in the dissolved phase was 8 to 1870 kg/y with an average of 290 ± 590 kg/y. The porewater data for the Cal-Sag Channel was not used in these estimations.

The mass flow rate of total PCBs in the solid phase can be estimated similarly using the  $\Sigma$ PCBs concentration in the bulk sediment and the concentration of suspended solids in the water of the CSSC canal,

$$flow_{\Sigma PCBs, solid} = C_{\Sigma PCB, bulk} \times SS \times Q \quad (15)$$

where  $flow_{\Sigma PCBs, solid}$  is the total PCBs mass flow rate in the solid phase (kg/y),  $C_{\Sigma PCB, bulk}$  is the total concentration (kg/g dr wt) of the PCBs in the bulk sediment (PCBs in the solid phase), and SS is the suspended solids concentration (g dry wt/L). For this estimation it was assumed that the suspended solids have the same PCB concentrations as the surficial sediment in the canal. This assumption is valid considering that the CSSC was cut into bedrock and is not a mud or sand bottom canal and therefore the sediment is primarily from the deposition of suspended solids. Also, it is worth noting that the Cal-Sag Channel data is not considered in these mass flow rate estimations. The average yearly SS was calculated from monthly ambient monitoring performed by the MWRDGC downstream from the Stickney WRP [48]. The  $flow_{\Sigma PCBs, solid}$  was found for each site, and the reported standard deviation is a result of varying monthly SS concentrations, see Figure 3-22.





**Figure 3-22.  $\Sigma$ PCBs mass flow rate in the solid phase by Sampling Site in the CSSC.**

The mass flow rate of the solid phase were estimated to be  $3 \pm 2$  kg/y (*Lockport*),  $62 \pm 30$  kg/y (*Near Lockport*),  $55 \pm 27$  kg/y (*CITGO Refinery*),  $55 \pm 27$  kg/y (*Cal-Sag Channel*),  $88 \pm 43$  kg/y (*Corn Products*),  $95 \pm 47$  kg/y (*Harlem Ave.*),  $58 \pm 28$  kg/y (*Stickney Outflow*),  $235 \pm 115$  kg/y (*Cicero Ave.*), and  $75 \pm 37$  kg/y (*Kedzie Ave.*). The estimated average solid phase  $\Sigma$ PCBs mass flow rate was found to be  $81 \pm 64$  kg/y. The combined average mass flow rate of both dissolved and solid phase  $\Sigma$ PCBs were estimated for average total PCB mass flow rate of 370 kg/y in the CSSC. Estimations of mass flow rate of total PCBs suggest that the dissolved phase PCBs account for the majority of PCBs transported by the CSSC. In 2006 the tributary loading of PCBs

to Lake Michigan was determined to 381 kr/y with 29.86 kg/y coming from Calumet River [49].  
The large flow rate of PCBs passing through the CSSC is of great concern for the Mississippi  
River Basin, into which the waters of the CSSC empty.

## Chapter 4 Summary

The CSSC is a 54.6 km channel with an estimated daily discharge of 161.6 m<sup>3</sup>/s, of which roughly 29.6 m<sup>3</sup>/s is from the Stickney WRP [11, 13-15]. Surficial Sediment samples were taken from the CSSC (n = 9) and the Cal-Sag Channel (n = 1) in order to determine if PCBs were present in the bulk sediment and porewater, and if so at what concentrations were they present. If present in the samples, this study identified and quantified all 176 individual and coeluting PCB congeners.

The measured bulk sediment concentrations ranged from 70 to 4975 ng/g dry wt in the CSSC surficial sediment and the one sample taken in the Cal-Sag Channel had a concentration of 4924 ng/g dry wt. The average  $\Sigma$ PCBs concentration in the bulk sediment was determined to be 2020  $\pm$  1600 ng/g dry wt. The measured porewater concentration was 134 ng/L in the Cal-Sag Channel and concentrations ranged from 2 to 366  $\pm$  126 ng/L in the CSSC. The average  $\Sigma$ PCBs concentration in the sediment-porewater was determined to be 64  $\pm$  113 ng/L. In terms of  $\Sigma$ PCBs concentration in the bulk sediment and in the porewater no spatial correlation was observed between the sites. The concentrations data also suggested that Downtown Chicago and the Cal-Sag Channel are more likely the source of PCBs to the CSSC rather than the Stickney WRP.

Congener profiles of each sampling site along with an average congener profile were constructed using the mass fraction of each PCB congener measured in the bulk sediment. Congener profiles were used to determine which PCB congeners contributed most to the mass in the samples, if there was an identifiable source of PCBs in the sediment, and to determine if the PCB distributions from each site correlated to one another. The strong similarity between sites suggested PCB congener distribution is consistent.

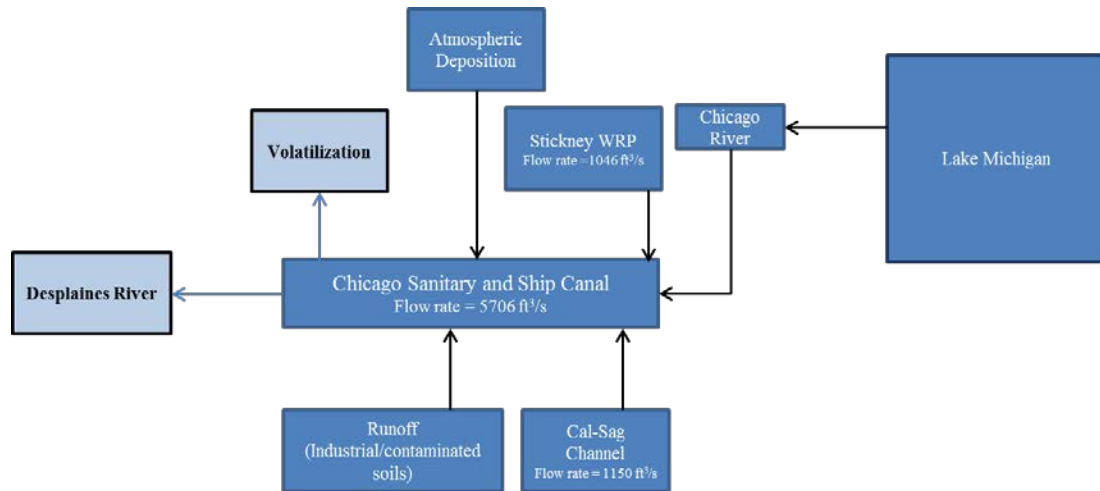
The sediment-porewater distribution coefficients ( $k_{d,PCBi}$ ) describe the partitioning of PCBs between their solid phase and dissolved phase when at equilibrium and were determined using the PCB concentrations in both the bulk sediment and the porewater. Once calculated,  $k_{d, PCB}$  values

may be used in future work to estimate the porewater PCB concentrations when only bulk sediment concentrations are available, or vice versa. Log  $k_{d, PCBi}$  values ranged from  $2.78 \pm 0.64$  to  $6.48 \pm 0.37$  kg/L and suggest that higher chlorinated PCBs tend to partition more to the solid phase than do the lower chlorinated PCBs. There also appears to be a correlation between the  $k_{ow, PCBi}$  and  $k_{d, PCBi}$ , therefore  $k_{d, PCBi}$  may be able to be estimated by  $k_{ow, PCBi}$  using the previously described correlation (equation 13).

Finally mass flow rate of  $\Sigma$ PCBs was estimated for the freely dissolved phase, solid phase, and combined phases. The mass flow rate approximates the amount of PCBs passing through the CSSC in a year. The average mass flow rates were estimated to be  $389 \pm 898$  kg/y for the freely dissolved phase PCBs,  $96 \pm 77$  kg/y for the solid phase PCBs, and combined 485 kg/y for the two phases. Surprisingly, this estimate suggests the freely dissolved phase PCBs attribute more to the total mass in the CSSC than do the solid phase PCBs. The high mass flow rate of PCBs shows that the CSSC appears to be an important contributor to the transport of PCBs into the Mississippi River Basin.

## Chapter 5 Future Work

The bulk sediment and porewater PCB concentrations will be helpful in better understanding the role the CSSC plays in the measured PCB concentrations measured in the ambient air of greater Metropolitan Chicago. The ultimate goal is to understand the factors contributing most to the PCB loading into and out of the CSSC, see Figure 5-1.



**Figure 5-1. Possible Inputs and Outputs of PCBs to and from the CSSC.**

A systems analysis approach will be used to determine the most important factors contributing to the PCB loading.

Another goal is to compare the sediment-porewater distribution coefficients to those calculated from the IHSC data by Andres Martinez [20]. To perform this comparison the concentrations of organic carbon and black carbon must be determined. The total organic carbon results in this study were based on gravimetric analysis. This technique can also include the contribution of black carbon. Therefore a chemo-oxidation technique will be performed so that those two values can be better separated.

The information provided thus far provides a starting point for the story of PCBs in the CSSC. With further experimentation and in the implementation of dynamic systems modeling the hope is to better understand the role the CSSC plays in the fate and transport of PCBs to and from the Greater Chicago Area.

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## Appendix

### A.1 Calculated $K_{ow}$ and $K_{PCB, fiber/w}$ Values

Table A-1 Calculated Log  $K_{OW}$  and Log  $K_{i, fiber/W}$

PCB <sub>i</sub> & PCB <sub>coeluting</sub> Congeners	Log kow (L/Kg)	log KPCB <sub>i fiber/W</sub> (L/Kg)
1	4.46	3.5676
2	4.69	3.8114
3	4.69	3.8114
4	4.65	3.769
10	4.84	3.9704
9	5.06	4.2036
7	5.07	4.2142
6	5.06	4.2036
5	4.97	4.1082
8	5.07	4.2142
11	5.28	4.4368
13*/12	5.29	4.4474
15	5.3	4.458
19	5.16	4.3096
30/18*	5.3	4.458
17	5.3	4.458
27	5.44	4.6064
24	5.35	4.511
16	5.3	4.458
32	5.44	4.6064
34	5.66	4.8396
23	5.57	4.7442
26*/29	5.66	4.8396
25	5.67	4.8502
31	5.67	4.8502
28*/20	5.67	4.8502
21/33*	5.6	4.776

22	5.58	4.7548
36	5.88	5.0728
39	5.89	5.0834
38	5.76	4.9456
35	5.82	5.0092
37	5.83	5.0198
54	5.21	4.3626
53*/50	5.62	4.7972
45	5.53	4.7018
51	5.63	4.8078
46	5.53	4.7018
52	5.84	5.0304
73	6.04	5.2424
43	5.75	4.935
69/49*	5.85	5.041
48	5.78	4.9668
44*/65/47	5.75	4.935
59*/62/75	5.95	5.147
42	5.76	4.9456
41	5.69	4.8714
71*/40	5.98	5.1788
64	5.95	5.147
72	6.26	5.4756
68	6.26	5.4756
57	6.17	5.3802
58	6.17	5.3802
67	6.2	5.412
63	6.17	5.3802
61/70*/76/74	6.2	5.412
66	6.2	5.412
55	6.11	5.3166
56	6.11	5.3166
60	6.11	5.3166
80	6.48	5.7088

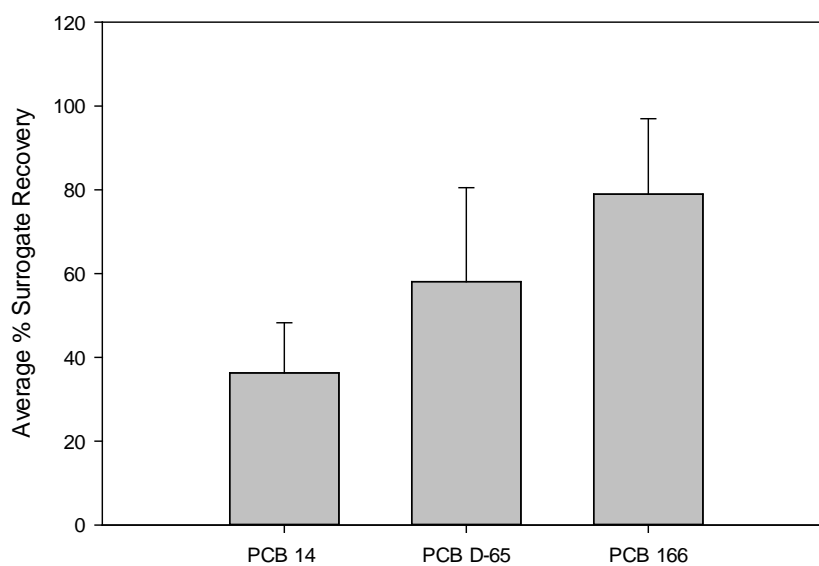
79	6.42	5.6452
78	6.35	5.571
81	6.36	5.5816
77	6.36	5.5816
104	5.81	4.9986
96	5.71	4.8926
103	6.22	5.4332
94	6.13	5.3378
95	6.13	5.3378
100/93*	6.04	5.2424
102	6.16	5.3696
91	6.13	5.3378
88	6.07	5.2742
98	6.13	5.3378
84	6.04	5.2424
89	6.07	5.2742
121	6.64	5.8784
92	6.35	5.571
113/90/101*	6.38	5.6028
83	6.26	5.4756
99	6.39	5.6134
112	6.45	5.677
119/109/86/97*	6.29	5.5074
125/87*	6.29	5.5074
117	6.46	5.6876
116/85*	6.3	5.518
110	6.48	5.7088
115	6.49	5.7194
82	6.2	5.412
111	6.76	6.0056
120	6.79	6.0374
108/124*	6.73	5.9738
107	6.71	5.9526
123	6.74	5.9844

106	6.64	5.8784
118	6.74	5.9844
122	6.64	5.8784
114	6.65	5.889
105	6.65	5.889
127	6.95	6.207
126	6.89	6.1434
155	6.41	5.6346
152	6.22	5.4332
150	6.32	5.5392
136	6.22	5.4332
145	6.25	5.465
148	6.73	5.9738
151*/135	6.64	5.8784
154	6.76	6.0056
144	6.67	5.9102
149*/147	6.67	5.9102
134	6.55	5.783
143	6.6	5.836
139*/140	6.67	5.9102
131	6.58	5.8148
142	6.51	5.7406
132	6.58	5.8148
133	6.86	6.1116
165	7.05	6.313
146	6.89	6.1434
161	7.08	6.3448
153*/168	6.92	6.1752
141	6.82	6.0692
130	6.8	6.048
137	6.83	6.0798
164	7.02	6.2812
138*/163/129	6.83	6.0798
160	6.93	6.1858

158	7.02	6.2812
159	7.24	6.5144
162	7.24	6.5144
167	7.27	6.5462
156*/157	7.18	6.4508
169	7.42	6.7052
188	6.82	6.0692
179	6.73	5.9738
184	6.85	6.101
176	6.76	6.0056
186	6.69	5.9314
178	7.14	6.4084
175	7.17	6.4402
187	7.17	6.4402
182	7.2	6.472
183	7.2	6.472
185	7.11	6.3766
174	7.11	6.3766
177	7.08	6.3448
181	7.11	6.3766
173/171*	7.11	6.3766
172	7.33	6.6098
192	7.52	6.8112
180*/193	7.36	6.6416
191	7.55	6.843
170	7.27	6.5462
190	7.46	6.7476
189	7.71	7.0126
202	7.24	6.5144
201	7.62	6.9172
197	7.3	6.578
200	7.27	6.5462
198/199*	7.62	6.9172
196	7.65	6.949

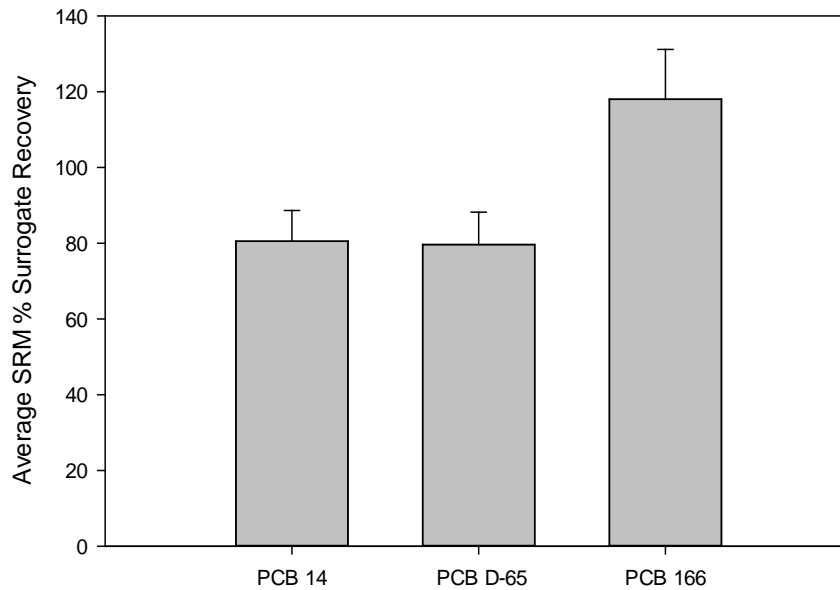
203	7.65	6.949
195	7.56	6.8536
194	7.8	7.108
205	8	7.32
208	7.71	7.0126
207	7.74	7.0444
206	8.09	7.4154
209	8.18	7.5108

## A.2 Surrogate Recoveries

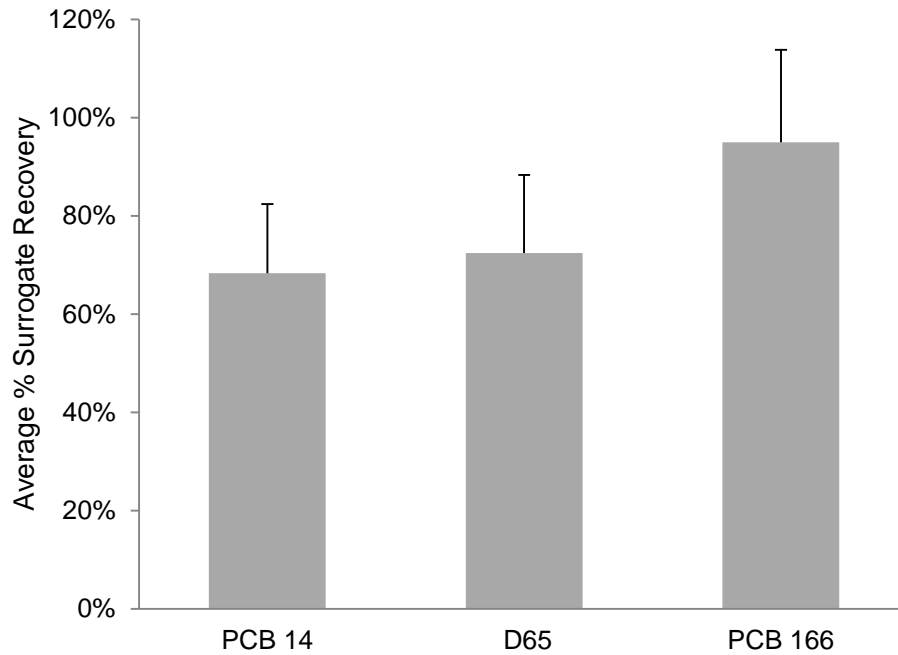


**Figure A-1. The LOQ's Average Percent Surrogate Recovery. The average percent surrogate recoveries for the LOQ are 36.3 ± 12.0% (PCB 14), 58.1 ± 22.4% (PCB D-65), and 79.0 ± 18.0% (PCB 14). These recoveries were less than those for actual sediment samples.**

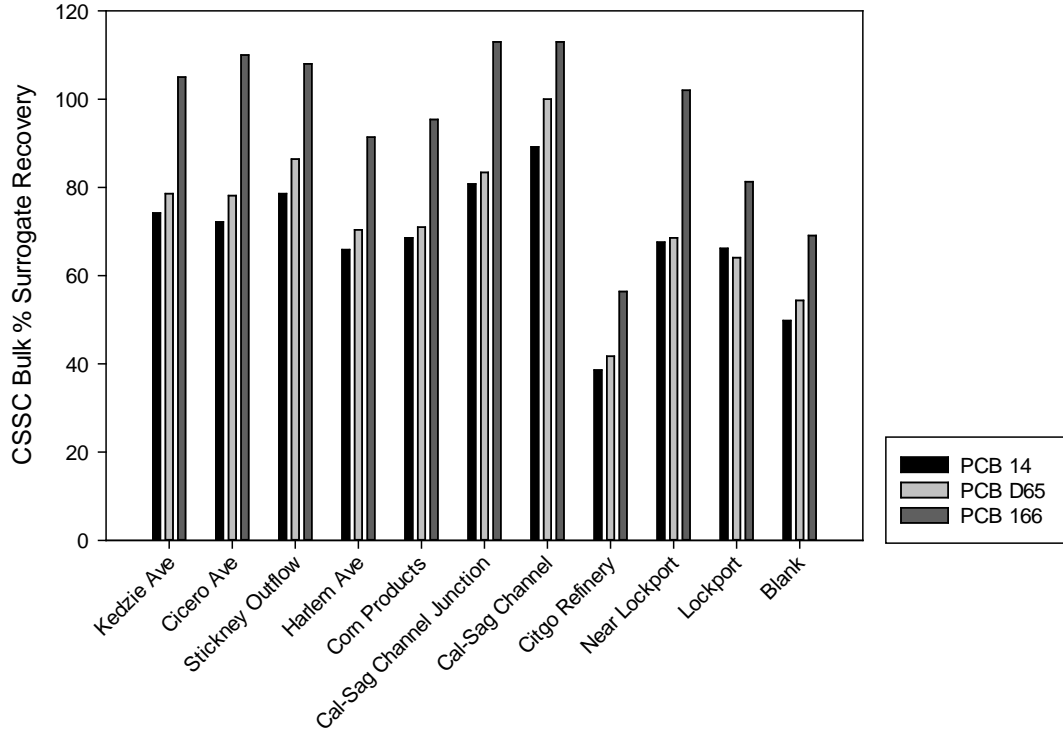




**Figure A-2. Average SRM Percent Surrogate Recoveries. The surrogate recoveries for the SRM samples were much higher than those calculated for the blanks. The average percent surrogate recoveries were  $80.6 \pm 8.1\%$  (PCB 14),  $79.7 \pm 8.5\%$  (PCB D-65), and  $118.0 \pm 13.2\%$  (PCB 166) - the higher the surrogate recovery the less the bias in the corrected mass of a sample.**

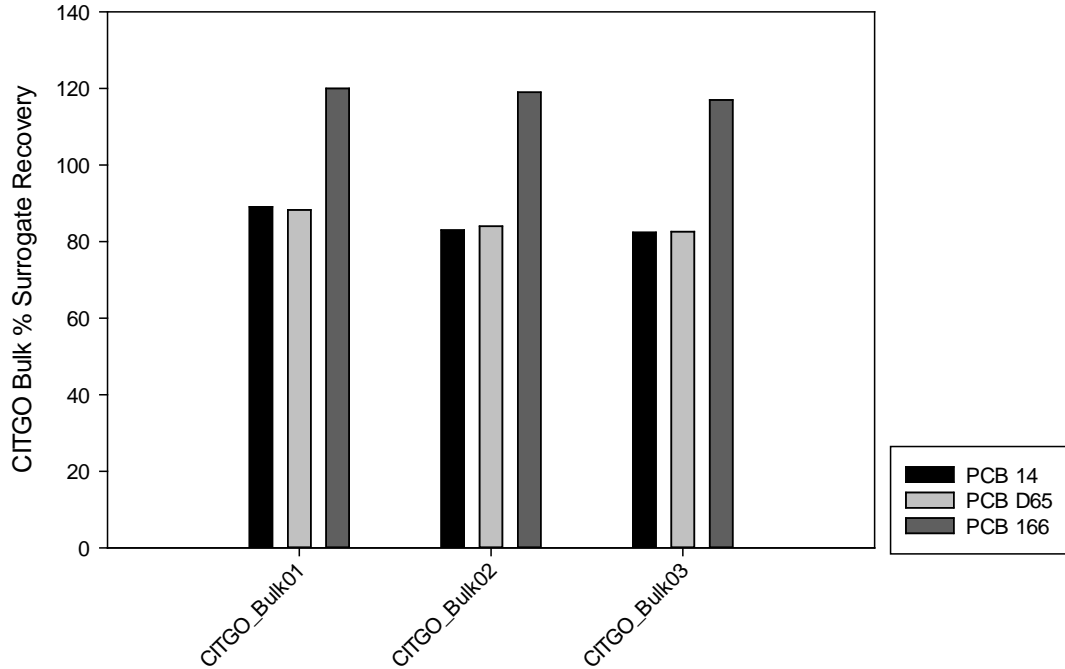


**Figure A-3. Average Percent Surrogate Recoveries in the Bulk Sediment Samples. The surrogate recoveries for the SRM samples were much higher than those calculated for the blanks. The average percent surrogate recoveries were 68 ± 14 % (PCB 14), 72 ± 16 % (PCB D-65), and 95 ± 19 % (PCB 166)**



**Figure A-4. CSSC Bulk Sediment Percent Surrogate Recoveries. The recoveries for the bulk sediment are all greater than those for the blank in the same batch, except for the CITGO Refinery. Sample was loss while transferring the concentrated sample from the TurboVap tube to the silica gel cleanup column**

The low recovery of the CITGO Refinery sample was due to the loss of sample during a transfer from a TurboVap tube to the acidified silica gel column. Since some of the sample was loss, a triplicate study of the CITGO Refinery sample was performed, see Figure A-5.



**Figure A-5. Triplicate: The CITGO Refinery Bulk Sediment Percent Surrogate Recovery. Due to the loss of the original CITGO sample a triplicate study was performed. The Recoveries were much higher and so the recovery and concentration data from the triplicate study were used in place of the original CITGO sample data.**

### A.3 SPSS 22 Statistical Analysis

#### A.3.1 SPSS 22 Code:

```
GET DATA /TYPE=XLSX
  /FILE='C:\Users\Kyleigh\Desktop\Colin_data.xlsx'
  /SHEET=name 'Sheet1'
  /CELLRANGE=full
  /READNAMES=on
  /ASSUMEDSTRWIDTH=32767.
```

EXECUTE.

DATASET NAME DataSet1 WINDOW=FRONT.

BOOTSTRAP

```
/SAMPLING METHOD=SIMPLE /VARIABLES INPUT=PCB1 PCB2 PCB3 PCB4 PCB10  
PCB9 PCB7 PCB6 PCB5 PCB8 PCB14 PCB11 PCB1312 PCB15 PCB19 PCB3018 PCB17  
PCB27 PCB24 PCB16 PCB32 PCB34 PCB23 PCB2926 PCB25 PCB31 PCB2820 PCB2133  
PCB22 PCB36 PCB39 PCB38 PCB35 PCB37 @30D PCB54 PCB5053 PCB45 PCB51 PCB46  
PCB52 PCB73 PCB43 PCB6949 PCB48 PCB654744 PCB627559 PCB42 PCB41 PCB7140  
PCB64 PCB72 PCB68 PCB57 PCB58 PCB67 PCB63 PCB61707674 PCB66 PCB55 PCB56  
PCB60 PCB80 PCB79 PCB78 PCB81 PCB77 @65D PCB104 PCB96 PCB103 PCB94 PCB95  
PCB10093 PCB102 PCB98 PCB88 PCB91 PCB84 PCB89 PCB121 PCB92 PCB11390101  
PCB83 PCB99 PCB112 PCB1191098697 PCB12587 PCB117 PCB11685 PCB110 PCB115  
PCB82 PCB111 PCB120 PCB108124 PCB107 PCB123 PCB106 PCB118 PCB122 PCB114  
PCB105 PCB127 PCB126 PCB155 PCB152 PCB150 PCB136 PCB145 PCB148 PCB151135  
PCB154 PCB144 PCB147149 PCB134 PCB143 PCB139140 PCB131 PCB142 PCB132 PCB133  
PCB165 PCB146 PCB161 PCB153168 PCB141 PCB130 PCB137 PCB164 PCB138163129  
PCB160 PCB158 PCB166128 PCB159 PCB162 PCB167 PCB156157 PCB169 PCB188 PCB179  
PCB184 PCB176 PCB186 PCB178 PCB175 PCB187 PCB182 PCB183 PCB185 PCB174  
PCB177 PCB181 PCB171173 PCB172 PCB192 PCB193180 PCB191 PCB170 PCB190 PCB189  
PCB202 PCB201 PCB204 PCB197 PCB200 PCB198199 PCB196 PCB203 PCB195 PCB194  
PCB205 PCB208 PCB207 PCB206 PCB209/CRITERIA CILEVEL=95 CITYPE=PERCENTILE  
NSAMPLES=1000  
/MISSING USERMISSING=EXCLUDE.
```

### A.3.2 SPSS 22 Output

**Table A-2 Descriptive Statistics**

		Statistic	Bootstrap <sup>a</sup>			
			Bias	Std. Error	95% Confidence Interval	
					Lower	Upper
PCB 1	N	12	0	0	12	12
	Minimum	.000395653 0960597				
	Maximum	.040034336 3787002				
	Mean	.009127400 254929	.0000127949 77759	.0031854570 88947	.0037108908 74586	.0164868603 34142
	Std. Deviation	.011575764 160825	.0010826558 91761	.0036608468 22510	.0026346916 58407	.0164835663 04596
PCB 2	N	12	0	0	12	12
	Minimum	.000381974 0003700				
	Maximum	.008048635 9417719				
	Mean	.003779452 011592	.0000006299 41038	.0005663318 24051	.0027389885 71688	.0049240579 42253
	Std. Deviation	.001959974 878670	.0001461557 14613	.0004799051 31501	.0008098240 32112	.0027063536 35278
PCB 3	N	12	0	0	12	12
	Minimum	.000571144 5420023				
	Maximum	.015259214 9813303				
	Mean	.007443137 445077	.0000069078 17627	.0013048300 67179	.0049259045 92640	.0101527828 97992
	Std. Deviation	.004641139 599372	.0002481872 39448	.0007107909 03902	.0029019456 60183	.0056858942 95420
PCB 4	N	12	0	0	12	12

	Minimum	.005997461 9099715				
	Maximum	.065219398 7633330				
	Mean	.023866254 910275	.0000509625 13761	.0045629091 85760	.0161119399 14331	.0336513723 14487
	Std. Deviation	.015657404 989641	.0015259561 40647	.0048392931 06896	.0062058464 37403	.0229268315 84779
PCB 10	N	12	0	0	12	12
	Minimum	.000175593 9070860				
	Maximum	.004766975 1334086				
	Mean	.001639088 551399	.0000019340 40320	.0003291766 49277	.0011117899 46951	.0023597968 22898
	Std. Deviation	.001145859 812237	.0001231017 58976	.0003873518 82972	.0004003107 10130	.0017138155 68808
PCB 9	N	12	0	0	12	12
	Minimum	.002950667 6817471				
	Maximum	.010049706 3339935				
	Mean	.005246672 689678	.0000090044 82984	.0005584723 10001	.0043201776 20246	.0064240867 07991
	Std. Deviation	.001930757 056431	.0001621278 60794	.0005306774 51422	.0008099670 11236	.0026818934 19213
PCB 7	N	12	0	0	12	12
	Minimum	.003248715 1309092				
	Maximum	.009276682 4444525				
	Mean	.005626804 332777	.0000041422 71376	.0005670757 40343	.0045890656 26533	.0067589658 49627

	Std. Deviation	.001960058 461279	.0001126123 24602	.0003362816 59299	.0011394186 39409	.0024343235 99803
PCB 6	N	12	0	0	12	12
	Minimum	.008430586 4337432				
	Maximum	.027477997 8955073				
	Mean	.015263003 510727	.0000117550 00145	.0014800446 52766	.0127990577 80600	.0183030752 49815
	Std. Deviation	.005128560 262192	.0004044470 68390	.0013144746 63356	.0022319711 21270	.0070074346 92762
PCB 5	N	12	0	0	12	12
	Minimum	.001741808 6962186				
	Maximum	.005466922 0445551				
	Mean	.003191523 177402	.0000009149 47975	.0002807962 10547	.0026998799 71684	.0037876911 64009
	Std. Deviation	.000992008 598207	.0000692301 37719	.0002328075 30917	.0004946137 68415	.0013394459 17029
PCB 8	N	12	0	0	12	12
	Minimum	.031797269 5540480				
	Maximum	.100037989 7315250				
	Mean	.067700952 676529	.0000604209 50536	.0067516566 38824	.0543653633 16559	.0806164631 46795
	Std. Deviation	.024159846 905063	.0012049188 92158	.0032079547 86802	.0159736452 99037	.0284912894 23896
PCB 14	N	12	0	0	12	12
	Minimum	18.5105076 93825776				
	Maximum	47.7419749 03777450				



	Mean	34.0858148 28147030	.0348240607 36931	3.243099719 201260	27.80255102 7301340	40.23858776 2366560
	Std. Deviation	11.6658092 40623668	.6065973625 76405	1.631749633 115838	6.953970748 152957	13.07725686 4077318
PCB 11	N	12	0	0	12	12
	Minimum	.028327240 3887270				
	Maximum	.487206573 4037495				
	Mean	.251009393 172959	.0001645907 34763	.0447913238 31425	.1642441512 30091	.3366419333 39433
	Std. Deviation	.161300206 987672	.0079332146 09973	.0217934047 75274	.1012484565 30109	.1883245941 97634
PCB 13/12	N	12	0	0	12	12
	Minimum	.005164739 9371055				
	Maximum	.054673410 8389980				
	Mean	.020676516 338176	.0000621359 64663	.0041195140 94065	.0132700504 21134	.0291854702 76717
	Std. Deviation	.014631852 919859	.0011308913 47609	.0034999168 26858	.0072350754 76500	.0196872172 02466
PCB 15	N	12	0	0	12	12
	Minimum	.010216726 1885462				
	Maximum	.070985213 8826103				
	Mean	.045135485 733339	.0000042314 46200	.0055268474 51198	.0343699657 68901	.0560014485 65781
	Std. Deviation	.020014792 017563	.0010966224 64920	.0031502355 50713	.0118541772 96525	.0242662091 91067
PCB 19	N	12	0	0	12	12
	Minimum	.006561138 5645806				

	Maximum	.022147242 4471950				
	Mean	.011482244 459507	.0000162194 83282	.0014066077 25651	.0089554987 74808	.0143174078 86188
	Std. Deviation	.004970090 649851	.0003467691 02710	.0011055883 50880	.0018848090 85705	.0063767101 98162
PCB 30/18	N	12	0	0	12	12
	Minimum	.046117373 5227921				
	Maximum	.159753071 2579659				
	Mean	.099390761 210431	.0000513986 96968	.0115577095 44959	.0775303206 34380	.1222371853 34883
	Std. Deviation	.041770403 838458	.0019710885 42021	.0054687136 85234	.0271178496 57545	.0493750851 56639
PCB 17	N	12	0	0	12	12
	Minimum	.021376479 0135938				
	Maximum	.080135926 2646445				
	Mean	.049538616 631916	.0000310762 90137	.0058188200 50468	.0383546664 82734	.0606613764 62448
	Std. Deviation	.020897467 157659	.0010035256 28929	.0027562215 50066	.0139704884 74430	.0247447047 25217
PCB 27	N	12	0	0	12	12
	Minimum	.002002905 0807533				
	Maximum	.014685882 5753333				
	Mean	.006651905 646484	.0000019256 24976	.0011164568 17281	.0045587064 92512	.0089139531 19864
	Std. Deviation	.004002717 547611	.0002060133 29699	.0006979013 45972	.0024016106 20922	.0050811862 04530
PCB 24	N	12	0	0	12	12

	Minimum	.000079638 1948260				
	Maximum	.005618280 0929681				
	Mean	.002378441 361942	.0000001907 32985	.0004981415 01747	.0014250082 46307	.0034024914 31746
	Std. Deviation	.001839845 834107	.0000918221 80138	.0002773086 32002	.0011298255 79958	.0022576465 23566
PCB 16	N	12	0	0	12	12
	Minimum	.014276174 6146904				
	Maximum	.079049623 1030902				
	Mean	.049058660 202095	.0000116335 25416	.0051201334 20951	.0383806511 06456	.0585233220 74590
	Std. Deviation	.018650371 516227	.0009477258 47670	.0030913370 04745	.0107709898 11361	.0237077024 47680
PCB 32	N	12	0	0	12	12
	Minimum	.022537192 1978587				
	Maximum	.141057382 7221547				
	Mean	.062786821 068701	.0002067573 62089	.0116001961 32022	.0408718661 56550	.0859167717 83074
	Std. Deviation	.041596601 450807	.0027852321 10079	.0092585620 14590	.0123387604 24007	.0514134010 65376
PCB 34	N	12	0	0	12	12
	Minimum	.000303049 4322891				
	Maximum	.004494851 0590101				
	Mean	.001819057 161544	.0000005966 90166	.0003532066 71588	.0011828690 49931	.0025368498 20325
	Std. Deviation	.001251604 295909	.0000708193 73725	.0002398958 15040	.0007591567 08633	.0016579179 62207
PCB 23	N	12	0	0	12	12

	Minimum	.000290804 4156369				
	Maximum	.002909242 4489988				
	Mean	.001336592 381848	.0000089608 79339	.0002430028 76605	.0008780988 05033	.0018198640 19681
	Std. Deviation	.000859433 289415	.0000566656 40543	.0001354454 40446	.0005149007 67332	.0010380352 21587
PCB 29/26	N	12	0	0	12	12
	Minimum	.007898684 4094815				
	Maximum	.058019032 1124256				
	Mean	.026330774 007351	.0000114657 68881	.0037483183 83383	.0194967086 23440	.0340482057 00466
	Std. Deviation	.013397391 490882	.0008494443 64092	.0032766123 73873	.0067625629 00782	.0186376365 80801
PCB 25	N	12	0	0	12	12
	Minimum	.005538689 1066841				
	Maximum	.033136214 6083900				
	Mean	.016439434 286859	.0000056357 91693	.0021303992 77848	.0126321701 51257	.0208980071 91905
	Std. Deviation	.007624578 871771	.0004714613 57002	.0016919807 76173	.0039227121 08810	.0103689437 29309
PCB 31	N	12	0	0	12	12
	Minimum	.038793041 6419331				
	Maximum	.320131422 2284424				
	Mean	.144335199 308523	.0000692321 49867	.0232648019 57052	.1018654460 37229	.1919381433 58765
	Std. Deviation	.083780750 374600	.0045346797 99677	.0161427489 43000	.0499489591 46566	.1103088274 14122

PCB 28/20	N	12	0	0	12	12
	Minimum	.046675897 8230395				
	Maximum	.344686453 4941547				
	Mean	.152247526 793321	.0001528585 45556	.0244276568 91640	.1078184395 80071	.2032689600 86526
	Std. Deviation	.087674403 794747	.0050137108 95291	.0180787419 88372	.0503077025 49466	.1171387372 93275
PCB 21/33	N	12	0	0	12	12
	Minimum	.020808872 6259855				
	Maximum	.237946447 7916938				
	Mean	.094511998 743279	.0001231182 84667	.0176671752 08615	.0627801009 78609	.1308605587 51472
	Std. Deviation	.062988475 286160	.0039398416 01064	.0140618792 09473	.0349757983 08283	.0848276639 47350
PCB 22	N	12	0	0	12	12
	Minimum	.017891405 9197055				
	Maximum	.145442837 4477599				
	Mean	.059714743 272398	.0000499160 24721	.0102037152 97235	.0414312455 98802	.0807015156 94951
	Std. Deviation	.036250054 886732	.0023507338 83736	.0086938427 40358	.0189667299 19043	.0502633905 82323
PCB 36	N	12	0	0	12	12
	Minimum	.000454585 6906079				
	Maximum	.008072328 4331024				
	Mean	.003336011 552194	.0000153729 09751	.0007774867 90949	.0017791001 12943	.0048747466 82134
	Std. Deviation	.002768853 821821	.0001433341 11721	.0003602254 32205	.0018546066 82624	.0032977920 74916

PCB 39	N	12	0	0	12	12
	Minimum	.000737723 9582522				
	Maximum	.003977853 0103558				
	Mean	.002065083 302965	.0000079089 63587	.0003262012 63750	.0014664495 58933	.0026993613 45922
	Std. Deviation	.001176160 451836	.0000631459 06277	.0001671198 63913	.0007150117 84692	.0013871568 41375
PCB 38	N	12	0	0	12	12
	Minimum	.000347409 4068869				
	Maximum	.005751207 6910544				
	Mean	.002015299 183264	.0000132873 79385	.0004436806 91621	.0012456926 79203	.0029765840 39791
	Std. Deviation	.001584343 230265	.0001112826 24048	.0003929840 21753	.0006919570 72488	.0021683290 89981
PCB 35	N	12	0	0	12	12
	Minimum	.000184846 3629136				
	Maximum	.019073492 7183018				
	Mean	.005746343 979219	.0000100866 25811	.0015389384 77533	.0030477116 88100	.0090068864 53481
	Std. Deviation	.005439461 714532	.0003842624 26808	.0013898201 81573	.0029000206 55315	.0076364204 52327
PCB 37	N	12	0	0	12	12
	Minimum	.006600915 1182223				
	Maximum	.152510787 9873071				
	Mean	.051960459 437046	.0000530784 17708	.0121530606 26127	.0315626832 34167	.0777518187 54829
	Std. Deviation	.042926058 183094	.0029136331 44572	.0102466973 33259	.0222001929 51416	.0584754764 30836

30D	N	12	0	0	12	12
	Minimum	49.9999999 9999999				
	Maximum	100.000000 0000000				
	Mean	66.6666666 66666670	.0791666666 66652	6.807507482 945034	54.16666666 6666664	79.16666666 6666670
	Std. Deviation	24.6182981 95866547	1.300818374 261091	3.646514527 718012	14.43375672 9740644	26.11164839 3354677
PCB 54	N	12	0	0	12	12
	Minimum	.000217179 3493992				
	Maximum	.001968111 6746910				
	Mean	.000974751 068463	.0000050784 19017	.0001538296 90952	.0006915757 43461	.0012755858 10614
	Std. Deviation	.000565824 106283	.0000351747 93834	.0001060205 43498	.0002921102 01531	.0007086656 38531
PCB 50/53	N	12	0	0	12	12
	Minimum	.076030655 8673273				
	Maximum	.365074214 2816216				
	Mean	.173117247 066691	.0002178020 76570	.0323836725 15469	.1128044922 56306	.2387181729 60830
	Std. Deviation	.117707059 915056	.0063968355 61207	.0176341957 38587	.0704116929 47070	.1331660434 71477
PCB 45	N	12	0	0	12	12
	Minimum	.003710591 9737513				
	Maximum	.018913703 5016282				
	Mean	.011235490 766324	.0000529960 31502	.0010833896 97152	.0091328170 31827	.0132339996 61031

	Std. Deviation	.004029216 664457	.0002363311 08393	.0008503203 51271	.0018792031 15050	.0053550846 96164
PCB 51	N	12	0	0	12	12
	Minimum	.000106194 2009196				
	Maximum	.018559847 7219988				
	Mean	.005656068 110554	.0000081044 85480	.0013422443 01586	.0035080954 79149	.0085582377 37995
	Std. Deviation	.004685174 398168	.0005171772 35858	.0016054803 65419	.0016127987 17666	.0069754707 22067
PCB 46	N	12	0	0	12	12
	Minimum	.000751415 5030658				
	Maximum	.016136626 2318622				
	Mean	.005311308 341715	.0000144616 98476	.0011972989 35539	.0032887889 87294	.0078828978 76859
	Std. Deviation	.004205050 195094	.0003853613 03686	.0012214229 94011	.0019039378 16247	.0060456268 08602
PCB 52	N	12	0	0	12	12
	Minimum	.198214127 3646892				
	Maximum	.707931581 5171080				
	Mean	.516166613 580753	.0006702026 05610	.0533628165 45330	.4089527730 49423	.6223005003 00091
	Std. Deviation	.196954991 250472	.0088659275 61453	.0275314640 49885	.1215383067 97991	.2314999546 61910
PCB 73	N	12	0	0	12	12
	Minimum	.001963598 4520943				
	Maximum	.013514952 0450399				



	Mean	.007466199 378510	.0000116506 67472	.0010842674 17047	.0054235509 88719	.0097142406 66438
	Std. Deviation	.003823819 475319	.0002345603 45268	.0005688885 74256	.0023920666 26379	.0046606187 22747
PCB 43	N	12	0	0	12	12
	Minimum	.001812432 4802076				
	Maximum	.015931031 5483011				
	Mean	.006273333 087843	.0000447334 14541	.0012006187 61378	.0041510994 10519	.0086999101 73203
	Std. Deviation	.004371019 326918	.0003742679 08158	.0010401051 68119	.0016313812 05382	.0056857033 83721
PCB 69/49	N	12	0	0	12	12
	Minimum	.129126091 1972043				
	Maximum	.192558554 5320624				
	Mean	.160403816 095377	.0001013387 73674	.0053807870 72007	.1501910395 76299	.1713491954 61341
	Std. Deviation	.019797275 201462	.0009617796 96367	.0027179649 88986	.0135386961 02862	.0242679170 70880
PCB 48	N	12	0	0	12	12
	Minimum	.001677611 8240270				
	Maximum	.033222446 2731753				
	Mean	.018447410 585853	.0000233775 28997	.0031572791 12527	.0121072008 59741	.0245560746 47326
	Std. Deviation	.011419510 665519	.0006198811 66894	.0015687331 72184	.0071714310 98391	.0133893581 89501
PCB 65/47/44	N	12	0	0	12	12
	Minimum	.145582959 5848183				

	Maximum	.661749035 9745661				
	Mean	.329618752 232806	.0010740670 72800	.0440799834 43943	.2524246197 55158	.4177664856 59876
	Std. Deviation	.162260985 069892	.0146808204 08832	.0460694219 63802	.0364334864 03045	.2103867582 42518
PCB 62/75/59	N	12	0	0	12	12
	Minimum	.006511919 6618974				
	Maximum	.026024934 1869559				
	Mean	.016855340 366882	.0000356796 16237	.0015353518 47498	.0140028695 09685	.0198462857 20702
	Std. Deviation	.005500460 310247	.0003718312 26677	.0010543451 87792	.0029858300 64466	.0070542721 28117
PCB 42	N	12	0	0	12	12
	Minimum	.005609345 0966436				
	Maximum	.050809738 3570145				
	Mean	.029585360 103307	.0000517313 84959	.0036477861 59471	.0223874039 07981	.0366872758 36049
	Std. Deviation	.013701960 296318	.0007362066 09546	.0023694496 68625	.0076344878 95920	.0168718612 59265
PCB 41	N	12	0	0	12	12
	Minimum	.000979528 4152908				
	Maximum	.013807800 4864593				
	Mean	.007405015 495605	.0000158261 17532	.0011448021 11209	.0051468585 90992	.0096291385 72977
	Std. Deviation	.004166269 708713	.0002212020 43112	.0006117676 08556	.0026431870 53222	.0050314197 87789
PCB 71/40	N	12	0	0	12	12

	Minimum	.013194996 2698730				
	Maximum	.077800709 8458016				
	Mean	.045556471 774423	.0000535730 48459	.0055602840 50211	.0341955407 41968	.0564058182 55926
	Std. Deviation	.020497726 858356	.0010548391 80931	.0030835384 56790	.0127278751 81574	.0250850040 47924
PCB 64	N	12	0	0	12	12
	Minimum	.016266779 6908722				
	Maximum	.116396607 0577490				
	Mean	.076866581 019292	.0000966895 01692	.0079372040 79579	.0604278687 27319	.0919422750 29130
	Std. Deviation	.029660020 466462	.0015604692 99759	.0055181500 13029	.0157125898 86820	.0380191389 23077
PCB 72	N	12	0	0	12	12
	Minimum	.000261768 1946950				
	Maximum	.001935938 1579429				
	Mean	.001130606 938749	.0000000192 77214	.0001526167 07085	.0008224790 61234	.0014457309 44692
	Std. Deviation	.000546553 677349	.0000289773 30104	.0000765329 46702	.0003528881 07729	.0006549270 06642
PCB 68	N	12	0	0	12	12
	Minimum	.020929543 6021076				
	Maximum	.051236341 8695843				
	Mean	.039087444 618563	.0000414664 74174	.0032878316 03942	.0327767343 83713	.0452580607 05275

	Std. Deviation	.011775668 985130	.0005984666 49802	.0016664974 24978	.0069756133 09831	.0132600457 97800
PCB 57	N	12	0	0	12	12
	Minimum	.000470380 5211137				
	Maximum	.006939755 9338942				
	Mean	.001732666 105622	.0000022275 54595	.0005122365 67307	.0009868530 17166	.0028695297 37651
	Std. Deviation	.001787987 852747	.0002360670 58454	.0007077674 92240	.0004658336 93486	.0027301036 18742
PCB 58	N	12	0	0	12	12
	Minimum	.000203451 7437276				
	Maximum	.003224142 5882195				
	Mean	.001346140 683228	.0000003473 99530	.0002691867 09984	.0008392253 21658	.0019103634 82586
	Std. Deviation	.000941050 599400	.0000612421 21390	.0001687463 49108	.0005446614 88137	.0011915964 56158
PCB 67	N	12	0	0	12	12
	Minimum	.000245344 4149001				
	Maximum	.004983470 4295522				
	Mean	.002384751 663555	.0000032459 92999	.0004461224 43329	.0014931329 94145	.0032824421 83740
	Std. Deviation	.001614328 177748	.0000933385 64648	.0002480640 59254	.0010277598 43172	.0019812888 12223
PCB 63	N	12	0	0	12	12
	Minimum	.000632362 0086846				
	Maximum	.006593519 6555104				

	Mean	.004032092 944710	.0000026950 03152	.0006021387 14723	.0028014023 93438	.0051775067 68775
	Std. Deviation	.002162580 348891	.0001209196 58443	.0003179698 50961	.0012597620 42701	.0025568511 14124
PCB 61/70/76/74	N	12	0	0	12	12
	Minimum	.151237731 2212934				
	Maximum	.495804523 7399686				
	Mean	.354893591 578724	.0002794499 13936	.0327494548 83423	.2920780905 47021	.4195320368 06516
	Std. Deviation	.120039858 897194	.0053898618 01106	.0172330537 90540	.0734252782 45393	.1433267973 74245
PCB 66	N	12	0	0	12	12
	Minimum	.042837127 7085547				
	Maximum	.130474988 1929351				
	Mean	.088912020 520598	.0000738231 66211	.0081183424 07411	.0726003832 75522	.1048661610 05569
	Std. Deviation	.029930181 802322	.0014066825 34202	.0041834115 25754	.0184979277 02699	.0355561124 97093
PCB 55	N	12	0	0	12	12
	Minimum	.001962410 7141696				
	Maximum	.015186811 3388467				
	Mean	.006358819 153691	.0000110836 97246	.0010502964 36184	.0045835809 25411	.0085371567 96157
	Std. Deviation	.003677683 877598	.0002717169 81513	.0009056675 63998	.0018107239 86835	.0051012306 28147
PCB 56	N	12	0	0	12	12
	Minimum	.014320996 9526844				

	Maximum	.063088403 5228060				
	Mean	.041191323 369741	.0000576089 23333	.0045247215 10903	.0323580880 84451	.0498484164 63593
	Std. Deviation	.016631444 059655	.0007741797 68940	.0024254785 42051	.0104138776 38163	.0198926219 05218
PCB 60	N	12	0	0	12	12
	Minimum	.008088173 5617307				
	Maximum	.045427669 5503389				
	Mean	.021956209 387869	.0000369083 75403	.0031201265 92438	.0162671506 04904	.0284098469 53884
	Std. Deviation	.011245366 012690	.0006972513 65746	.0022418301 04559	.0062431847 70267	.0146284082 45163
PCB 80	N	12	0	0	12	12
	Minimum	.000258451 6538695				
	Maximum	.006135948 8350625				
	Mean	.001467391 347977	.0000049878 63231	.0004735843 69823	.0007243670 65554	.0025097947 57757
	Std. Deviation	.001637175 666194	.0002029736 34881	.0006086692 64927	.0005420969 54349	.0024837402 88062
PCB 79	N	12	0	0	12	12
	Minimum	.000285904 1417186				
	Maximum	.005928994 8695075				
	Mean	.002641353 332668	.0000043091 96533	.0004850503 20669	.0017686526 72145	.0036283256 55816
	Std. Deviation	.001736245 207666	.0000961583 16430	.0003002043 91014	.0010222334 44639	.0021878872 64789
PCB 78	N	12	0	0	12	12

	Minimum	.000517017 4018668				
	Maximum	.008278554 3081222				
	Mean	.003044280 765918	.0000003392 08499	.0006839294 36680	.0018300675 15946	.0044590625 57174
	Std. Deviation	.002422604 057193	.0001548633 14331	.0004618922 64700	.0015256140 30999	.0031332974 09255
PCB 81	N	12	0	0	12	12
	Minimum	.000140433 2176708				
	Maximum	.011037566 4000257				
	Mean	.002388677 766529	.0000061199 73743	.0008698079 11082	.0010709767 87874	.0043058382 60441
	Std. Deviation	.003023802 896911	.0003678332 48216	.0011233009 84661	.0010937780 32744	.0046266825 49264
PCB 77	N	12	0	0	12	12
	Minimum	.000555979 3324271				
	Maximum	.027496403 7901390				
	Mean	.008079404 867635	.0000011825 21204	.0021820368 11322	.0043456367 45194	.0127438520 61273
	Std. Deviation	.007705580 301494	.0006506067 44259	.0020834471 02386	.0037477542 27019	.0108770577 65931
65D	N	12	0	0	12	12
	Minimum	21.2999598 91609436				
	Maximum	49.5699409 09618445				
	Mean	37.3238069 97596500	.0335163403 23011	3.311046029 163863	30.88533419 1415870	43.57053501 6982790

	Std. Deviation	11.9418792 25850977	.6160118783 43597	1.672385270 205766	7.056193048 947763	13.12825922 9617314
PCB 104	N	12	0	0	12	12
	Minimum	.001012038 3859898				
	Maximum	.005619159 9467702				
	Mean	.002864733 819336	.0000037689 23763	.0004693160 28344	.0020184218 57470	.0038176591 58920
	Std. Deviation	.001687160 682565	.0001053553 25678	.0002910490 06504	.0007975256 38408	.0019935701 42611
PCB 96	N	12	0	0	12	12
	Minimum	.000491540 6536398				
	Maximum	.005368624 7357129				
	Mean	.002928338 516395	.0000063014 92896	.0003721020 12585	.0021836945 42969	.0036803207 23272
	Std. Deviation	.001403056 475079	.0000743039 81619	.0002369909 70480	.0008581338 33241	.0017800991 92206
PCB 103	N	12	0	0	12	12
	Minimum	.000862256 8647530				
	Maximum	.009331246 2362917				
	Mean	.005387724 519005	.0000018854 21884	.0006532746 06257	.0040339251 46927	.0065965493 50287
	Std. Deviation	.002365191 363313	.0001355388 65919	.0004305558 98140	.0014009928 00228	.0030704515 95348
PCB 94	N	12	0	0	12	12
	Minimum	.000175157 1751238				
	Maximum	.007004258 2103879				



	Mean	.002111366 500656	.0000080994 31783	.0005373365 98569	.0011976502 39237	.0032618655 68307
	Std. Deviation	.001869257 391011	.0001776708 52822	.0005586796 94354	.0008301978 00023	.0026983103 52496
PCB 95	N	12	0	0	12	12
	Minimum	.219498343 2278121				
	Maximum	.803588867 3819902				
	Mean	.541269501 924907	.0003988344 27330	.0596712910 83150	.4271254057 10444	.6609340988 85054
	Std. Deviation	.216309995 741073	.0094020160 57517	.0247154568 79041	.1520172655 73331	.2454241111 22673
PCB 100/93	N	12	0	0	12	12
	Minimum	.000532660 3337920				
	Maximum	.009732806 5820795				
	Mean	.003981899 596255	.0000139539 67026	.0006868285 42783	.0027861360 81504	.0054380976 19967
	Std. Deviation	.002425521 601846	.0002029912 87492	.0006260703 35461	.0010922867 11832	.0033393960 51525
PCB 102	N	12	0	0	12	12
	Minimum	.001128622 1531742				
	Maximum	.021893588 2022198				
	Mean	.010697821 262449	.0000026447 63214	.0021138872 44856	.0067505440 78880	.0150048712 24403
	Std. Deviation	.007777803 056991	.0003506781 41659	.0008711901 22544	.0054627857 79365	.0088765353 37415
PCB 98	N	12	0	0	12	12
	Minimum	.000645276 8953396				

	Maximum	.050286855 0195284				
	Mean	.006558672 686425	.0000566801 41949	.0038094981 83439	.0018198675 98261	.0148424499 24019
	Std. Deviation	.013927207 172586	.0025521328 58356	.0071948141 05295	.0013041340 47576	.0219334555 33071
PCB 88	N	12	0	0	12	12
	Minimum	.000992211 2428650				
	Maximum	.054200473 3129204				
	Mean	.021547734 265655	.0001949743 89971	.0044280293 71644	.0128288517 62449	.0297300022 68735
	Std. Deviation	.015830297 397423	.0008754871 60062	.0030062176 42940	.0092533930 55982	.0203370611 02415
PCB 91	N	12	0	0	12	12
	Minimum	.013985950 1147587				
	Maximum	.166288213 1022023				
	Mean	.057748391 443551	.0003016695 42361	.0117987864 27859	.0368317208 57396	.0861671934 04723
	Std. Deviation	.042861531 167761	.0032303117 00972	.0118350985 75184	.0178301886 98629	.0593492700 51612
PCB 84	N	12	0	0	12	12
	Minimum	.003800547 6423409				
	Maximum	.233995818 4450965				
	Mean	.139790014 637214	.0004198981 03483	.0194434606 75302	.1009786096 83703	.1764339229 71393
	Std. Deviation	.070039670 102368	.0035816128 41018	.0114377133 44050	.0447291858 56829	.0887905634 37202
PCB 89	N	12	0	0	12	12

	Minimum	.000083703 4062621				
	Maximum	.010869668 2232627				
	Mean	.003058896 456084	.0000049230 82526	.0008944723 62298	.0015838432 15811	.0048975192 91885
	Std. Deviation	.003108134 201729	.0002599532 46911	.0008281325 61094	.0016050598 81297	.0043738772 95598
PCB 121	N	12	0	0	12	12
	Minimum	.000076929 4405543				
	Maximum	.090280277 2382612				
	Mean	.008321486 724390	.0001265928 24433	.0070987139 23539	.0004246177 82357	.0236066413 37352
	Std. Deviation	.025839988 429325	.0055878462 99381	.0145988136 38303	.0002842346 29499	.0405821668 57998
PCB 92	N	12	0	0	12	12
	Minimum	.034184985 9265860				
	Maximum	.943299665 8969609				
	Mean	.161677114 963999	.0010645917 21912	.0682736413 17471	.0749963322 60328	.3146681764 66027
	Std. Deviation	.248703244 369176	.0458678541 59379	.1289263194 84876	.0272872434 52913	.3912407940 41553
PCB 113/90/101	N	12	0	0	12	12
	Minimum	.006491474 8170559				
	Maximum	.777909708 2162889				
	Mean	.460462532 815701	.0015996053 62199	.0668602672 94053	.3287275110 54369	.5874922431 14126
	Std. Deviation	.241299377 508712	.0119990837 64774	.0371380305 57920	.1554303144 61672	.3002839170 04558

PCB 83	N	12	0	0	12	12
	Minimum	.007377765 2304181				
	Maximum	.428213782 8122538				
	Mean	.071031941 481237	.0004881877 28143	.0362038921 90809	.0157530870 30093	.1546899089 50370
	Std. Deviation	.131608947 504464	.0153072229 85065	.0505710717 43562	.0052345037 07790	.1869705114 76407
PCB 99	N	12	0	0	12	12
	Minimum	.002230868 4357978				
	Maximum	.216774601 6492065				
	Mean	.133903420 945032	.0004604577 96652	.0216694247 36652	.0912892595 50423	.1759377258 65145
	Std. Deviation	.078579412 308226	.0039734724 99458	.0113428899 68307	.0497973507 27794	.0941328879 56579
PCB 112	N	12	0	0	12	12
	Minimum	.000836486 9911018				
	Maximum	.143698722 3728913				
	Mean	.016257555 782260	.0002365805 23120	.0111403096 77114	.0026388215 53309	.0415185316 37212
	Std. Deviation	.040564511 689746	.0076497595 78528	.0212607470 99610	.0011862809 55151	.0636746132 57953
PCB 119/109/86/97	N	12	0	0	12	12
	Minimum	.052396838 6676497				
	Maximum	.232399920 1091414				
	Mean	.104974952 917535	.0002042156 46946	.0129024970 29474	.0837470786 83569	.1363125276 11592
	Std. Deviation	.046924552 601664	.0042389728 25593	.0153204727 22512	.0167041337 97867	.0683704584 48766

PCB 125/87	N	12	0	0	12	12
	Minimum	.080214117 1355386				
	Maximum	.449700580 5708799				
	Mean	.225300616 450828	.0001438895 96341	.0281299933 01326	.1749526779 34107	.2879008770 14306
	Std. Deviation	.102014629 557813	.0058507596 60905	.0211547825 66855	.0588370964 30013	.1353397276 54040
PCB 117	N	12	0	0	12	12
	Minimum	.045934938 1603813				
	Maximum	.399935196 0966289				
	Mean	.251088387 728664	.0003205582 14462	.0310792488 56440	.1915814969 89900	.3138134136 13930
	Std. Deviation	.112431754 161856	.0055430491 39740	.0161744610 39251	.0744594547 64422	.1386741593 57166
PCB 116/85	N	12	0	0	12	12
	Minimum	.032937520 9023849				
	Maximum	.607620750 2026626				
	Mean	.137351885 655965	.0003492244 49986	.0463340724 47676	.0640882395 58222	.2409249237 36767
	Std. Deviation	.170151465 394186	.0168239039 68274	.0589008379 25523	.0518160636 19017	.2485089965 77406
PCB 110	N	12	0	0	12	12
	Minimum	.047427533 2302553				
	Maximum	.589042388 9131634				
	Mean	.335678465 276076	.0009321312 34279	.0512606544 48823	.2341621386 36396	.4355579435 22245

	Std. Deviation	.182704822 313370	.0091416118 83011	.0250214596 23438	.1203009859 50276	.2184173953 63728
PCB 115	N	12	0	0	12	12
	Minimum	.012996936 7801030				
	Maximum	.075358437 9278755				
	Mean	.039648831 843086	.0000714136 14843	.0047481641 22112	.0305795834 63117	.0490464118 76546
	Std. Deviation	.017528107 021157	.0011174538 78926	.0032860057 35746	.0100432015 58228	.0225141645 54414
PCB 82	N	12	0	0	12	12
	Minimum	.000629312 5561602				
	Maximum	.062594772 3740791				
	Mean	.032855594 545772	.0001037973 22974	.0050638954 29487	.0232089511 57674	.0427990789 89226
	Std. Deviation	.018062572 944018	.0009833255 01499	.0028469476 48370	.0116604602 65136	.0229032693 48245
PCB 111	N	12	0	0	12	12
	Minimum	.000182781 0997207				
	Maximum	.006488707 5888533				
	Mean	.001115760 546245	.0000034929 37852	.0004964886 39510	.0004953704 85458	.0021846280 67558
	Std. Deviation	.001716183 682558	.0003436319 91638	.0008867930 63814	.0001993232 01398	.0027121363 03255
PCB 120	N	12	0	0	12	12
	Minimum	.000055124 1078283				
	Maximum	.009213495 7101926				

	Mean	.001852996 026012	.0000070092 71278	.0008730517 85965	.0004609901 99121	.0038234446 65244
	Std. Deviation	.003106306 144786	.0003185261 27049	.0010413706 95390	.0003076084 14304	.0042048918 52372
PCB 108/124	N	12	0	0	12	12
	Minimum	.002443637 8910550				
	Maximum	.025548951 2888165				
	Mean	.008844646 853768	.0000216745 51168	.0017144792 97878	.0062070077 14356	.0126462700 59400
	Std. Deviation	.005945887 148517	.0006750376 12498	.0021206034 52323	.0021105783 00425	.0089584587 46027
PCB 107	N	12	0	0	12	12
	Minimum	.000535060 5539391				
	Maximum	.016821780 3935011				
	Mean	.009416676 565014	.0000212612 31491	.0016035889 91532	.0063262681 76844	.0125434094 46671
	Std. Deviation	.005671419 996611	.0002773181 84671	.0006686142 94205	.0039748577 23052	.0065541584 08235
PCB 123	N	12	0	0	12	12
	Minimum	.000517471 3273096				
	Maximum	.021587254 5938920				
	Mean	.004785977 760326	.0000043189 22758	.0015956265 12832	.0025919248 90485	.0084145474 06146
	Std. Deviation	.005519132 615914	.0009091286 35476	.0025220873 25789	.0011585451 73995	.0086865820 85619
PCB 106	N	12	0	0	12	12
	Minimum	.000074272 2526463				

	Maximum	.133702990 2273875				
	Mean	.011798231 616594	.0000317955 72043	.0110572696 13800	.0004551301 11972	.0341215826 54946
	Std. Deviation	.038395405 583334	.0096428421 79251	.0225989086 17693	.0004004002 66890	.0602799016 03768
PCB 118	N	12	0	0	12	12
	Minimum	.015481712 9112838				
	Maximum	.240508668 0059044				
	Mean	.158784678 352382	.0001448735 52455	.0201190003 65465	.1187800511 75732	.1970142457 83626
	Std. Deviation	.071360677 101552	.0040536647 19748	.0125565053 38792	.0424525220 52462	.0897483218 17998
PCB 122	N	12	0	0	12	12
	Minimum	.000725943 0299347				
	Maximum	.030565065 8721497				
	Mean	.004266980 689831	.0000127905 36254	.0024017318 50186	.0015876286 18383	.0092575877 80841
	Std. Deviation	.008313329 617349	.0018821055 56923	.0046186027 43677	.0005307268 42824	.0131434042 95299
PCB 114	N	12	0	0	12	12
	Minimum	.004940934 9786143				
	Maximum	.022312151 2109296				
	Mean	.010681613 577705	.0000171817 34131	.0013261489 45160	.0083751691 06767	.0134982384 42125
	Std. Deviation	.004669909 463257	.0003865170 00651	.0012585267 42800	.0022660462 36288	.0065517742 75066
PCB 105	N	12	0	0	12	12



	Minimum	.018306002 5893933				
	Maximum	.095013355 7139451				
	Mean	.046851876 403933	.0000770991 67674	.0055109998 87346	.0372464654 61640	.0583333843 10890
	Std. Deviation	.019567664 471616	.0015429628 38164	.0052472813 75284	.0090307606 38844	.0273050984 89225
PCB 127	N	12	0	0	12	12
	Minimum	.000071749 8027539				
	Maximum	.032153358 5401457				
	Mean	.003172916 486664	.0000044272 88522	.0026300045 29742	.0004070150 14791	.0085370917 61502
	Std. Deviation	.009133148 041175	.0022219394 35275	.0052813201 16204	.0002541252 40513	.0143750619 95684
PCB 126	N	12	0	0	12	12
	Minimum	.000654675 8051412				
	Maximum	.381696046 8450352				
	Mean	.316133979 768386	.0006000352 92742	.0279624534 52652	.2541726418 77444	.3536892498 16636
	Std. Deviation	.101370332 788542	.0171314570 91132	.0498542704 04212	.0127247236 86152	.1598256262 03182
PCB 155	N	12	0	0	12	12
	Minimum	.000321537 0432580				
	Maximum	.004662883 3410327				
	Mean	.001139062 806036	.0000021099 06244	.0003298977 62230	.0006882925 52248	.0018408765 98546
	Std. Deviation	.001149892 501846	.0001960269 88987	.0005384892 01941	.0002246562 28373	.0018208509 62932

PCB 152	N	12	0	0	12	12
	Minimum	.000071339 4263839				
	Maximum	.004728935 5439762				
	Mean	.000846275 260765	.0000004787 44287	.0003683238 40946	.0003377893 39990	.0016689953 89067
	Std. Deviation	.001275698 302104	.0002076566 57170	.0005793296 43045	.0002821993 54958	.0019967806 32489
PCB 150	N	12	0	0	12	12
	Minimum	.000026313 6493677				
	Maximum	.006444922 6740930				
	Mean	.000961710 095460	.0000005058 37405	.0005121526 01654	.0003054879 61328	.0020892199 02073
	Std. Deviation	.001770062 130847	.0003293988 70040	.0008751881 88325	.0002060551 15618	.0027948334 86902
PCB 136	N	12	0	0	12	12
	Minimum	.015782638 4268707				
	Maximum	.060379410 6891305				
	Mean	.042732909 530374	.0000468518 25081	.0049105019 20609	.0332227841 62328	.0522738067 78420
	Std. Deviation	.017948486 742789	.0008332595 66419	.0023202408 30444	.0112802937 64199	.0202026305 79696
PCB 145	N	12	0	0	12	12
	Minimum	.000166540 9460206				
	Maximum	.004420100 1387019				
	Mean	.000726513 173318	.0000005570 11097	.0003385355 98818	.0003013031 78561	.0014542175 30558

	Std. Deviation	.001182773 233412	.0002309374 41414	.0006031108 67695	.0001209079 59823	.0018733944 50672
PCB 148	N	12	0	0	12	12
	Minimum	.000000000 0000000				
	Maximum	.007913295 2032585				
	Mean	.000818064 621670	.0000046719 36721	.0006478405 90508	.0000946664 51659	.0021682853 19831
	Std. Deviation	.002242102 138876	.0005114041 64878	.0012511969 66857	.0001379711 24507	.0035440268 55498
PCB 151/135	N	12	0	0	12	12
	Minimum	.022250285 4599196				
	Maximum	.109764857 1416830				
	Mean	.071997605 875536	.0001534190 71922	.0096079318 43680	.0536239565 18096	.0905605525 56824
	Std. Deviation	.034798463 353687	.0016011980 93200	.0038593923 48963	.0238076721 76090	.0391901605 73039
PCB 154	N	12	0	0	12	12
	Minimum	.000202405 0804333				
	Maximum	.003286678 4591778				
	Mean	.001565011 226542	.0000095763 19071	.0002747059 37132	.0010601046 58785	.0021205733 58144
	Std. Deviation	.000982290 850534	.0000556592 43049	.0001482823 07859	.0006415763 87193	.0011980579 25707
PCB 144	N	12	0	0	12	12
	Minimum	.002726712 7592721				
	Maximum	.016903745 9367205				

	Mean	.009808959 069571	.0000286384 72720	.0016162558 74042	.0067397919 55114	.0130594197 98282
	Std. Deviation	.005818976 637137	.0002848720 84276	.0005730188 44365	.0041722590 67561	.0064233146 97118
PCB 147/149	N	12	0	0	12	12
	Minimum	.053916110 2416343				
	Maximum	.242812081 9462324				
	Mean	.166963564 331822	.0002028859 96953	.0215740090 50394	.1254077842 44669	.2080208002 23597
	Std. Deviation	.078485986 037447	.0037407578 13472	.0099536653 37973	.0486062160 41509	.0871228518 19811
PCB 134	N	12	0	0	12	12
	Minimum	.001182006 8236647				
	Maximum	.024480029 3804462				
	Mean	.011117172 050339	.0000318582 35886	.0025262918 19881	.0065175744 19717	.0163983220 96350
	Std. Deviation	.009065071 475090	.0004681566 58525	.0010665635 13575	.0062297118 22313	.0104742527 80959
PCB 143	N	12	0	0	12	12
	Minimum	.000318394 0078190				
	Maximum	.010765999 8231424				
	Mean	.002632145 985811	.0000113983 06333	.0009474254 99417	.0010124418 66614	.0048129838 94420
	Std. Deviation	.003309109 193135	.0002901263 85729	.0008939621 63861	.0012296054 09472	.0045584007 94003
PCB 139/140	N	12	0	0	12	12
	Minimum	.000600074 8639181				

	Maximum	.008085555 9030896				
	Mean	.003937351 825868	.0000013890 79391	.0007391064 63563	.0025471500 14781	.0054447248 19361
	Std. Deviation	.002621670 525969	.0001344428 51704	.0003196442 24982	.0018676586 12890	.0030695856 32150
PCB 131	N	12	0	0	12	12
	Minimum	.000046782 7503230				
	Maximum	.010645159 3767671				
	Mean	.003553068 488552	.0000128093 54234	.0008922475 83791	.0020397538 38430	.0053402273 59164
	Std. Deviation	.003118745 513480	.0002128548 98633	.0006734094 98002	.0017293929 74156	.0041703201 46940
PCB 142	N	12	0	0	12	12
	Minimum	.000026867 0052652				
	Maximum	.005789014 4664484				
	Mean	.000717518 444035	.0000009458 17682	.0004663435 22182	.0001757785 87121	.0017061804 22783
	Std. Deviation	.001608773 366830	.0003491280 29430	.0008696030 09223	.0001134458 43495	.0025363420 34297
PCB 132	N	12	0	0	12	12
	Minimum	.018794147 5366371				
	Maximum	.080108099 0832561				
	Mean	.058516894 621061	.0000850518 45112	.0073929714 84616	.0443620136 20396	.0723587175 74168
	Std. Deviation	.026755657 321336	.0013580611 17863	.0039068850 47823	.0153255772 80780	.0291278730 42782
PCB 133	N	12	0	0	12	12

	Minimum	.000349531 3583780				
	Maximum	.024321592 2773663				
	Mean	.003026504 079611	.0000068854 09357	.0019442325 94812	.0008465796 06165	.0071060731 18960
	Std. Deviation	.006733018 798265	.0015192122 74164	.0037318555 93473	.0004802126 50965	.0106366372 07233
PCB 165	N	12	0	0	12	12
	Minimum	.000014506 5860639				
	Maximum	.017328609 2619527				
	Mean	.001608676 431628	.0000048454 88738	.0014281262 42793	.0001268967 36333	.0045064603 26905
	Std. Deviation	.004952403 787844	.0012262904 05250	.0028918118 63587	.0000865830 50626	.0077747212 59837
PCB 146	N	12	0	0	12	12
	Minimum	.001811389 5865272				
	Maximum	.034764406 2099345				
	Mean	.016753338 773030	.0000464082 32996	.0029590333 62551	.0111453697 86848	.0226880023 56402
	Std. Deviation	.010481213 141771	.0005681670 75293	.0015562279 06971	.0067101896 44719	.0127157803 98305
PCB 161	N	12	0	0	12	12
	Minimum	.000015521 4873099				
	Maximum	.013470617 4794674				
	Mean	.001511103 799616	.0000063475 17991	.0010942924 56673	.0002124631 28494	.0039087850 99450
	Std. Deviation	.003802656 845844	.0008096219 40381	.0020366731 80888	.0001720754 63140	.0060094398 40254

PCB 153/168	N	12	0	0	12	12
	Minimum	.033334325 1670382				
	Maximum	.144360586 9797531				
	Mean	.100692328 616734	.0000883468 93952	.0130456968 06890	.0755604329 83826	.1246518610 27348
	Std. Deviation	.047143662 892454	.0023676264 93179	.0066599512 15836	.0273617394 12094	.0522648209 56449
PCB 141	N	12	0	0	12	12
	Minimum	.003031532 1519133				
	Maximum	.054144918 5596025				
	Mean	.024612575 743973	.0000612829 08675	.0042447487 31886	.0167184989 66767	.0329890846 14925
	Std. Deviation	.015097866 888334	.0008744691 24400	.0025992563 05112	.0095191193 69661	.0190680627 35223
PCB 130	N	12	0	0	12	12
	Minimum	.000924052 4105735				
	Maximum	.023356895 4512023				
	Mean	.006169728 202106	.0000203870 91785	.0017902113 58342	.0033825686 48862	.0100593721 75865
	Std. Deviation	.006226501 419675	.0006771494 02159	.0021105998 10178	.0026119467 90861	.0093354562 40076
PCB 137	N	12	0	0	12	12
	Minimum	.000153219 7590257				
	Maximum	.029733275 7944316				
	Mean	.007737056 647257	.0000526925 41943	.0023313452 91664	.0040369779 98927	.0128926204 17463

	Std. Deviation	.008109318 905278	.0008424037 04148	.0026424370 64875	.0033975931 55925	.0120225223 15678
PCB 164	N	12	0	0	12	12
	Minimum	.000144328 9777482				
	Maximum	.024228470 6314038				
	Mean	.006034876 360895	.0000113249 09660	.0018623600 87139	.0031856602 54265	.0100796185 19893
	Std. Deviation	.006517358 602076	.0007281885 72721	.0022714722 91355	.0025613886 13029	.0098191700 32072
PCB 138/163/129 N	N	12	0	0	12	12
	Minimum	.036650571 6414910				
	Maximum	.152434701 4545162				
	Mean	.108568974 336586	.0001114306 85240	.0136544338 06020	.0822919057 12391	.1340345897 98286
	Std. Deviation	.049621684 219918	.0024466789 23504	.0069839052 74981	.0289405537 19587	.0543533197 02151
PCB 160	N	12	0	0	12	12
	Minimum	.000000000 0000000				
	Maximum	.008897678 2746218				
	Mean	.002665173 742367	.0000320960 61627	.0008995155 01982	.0010814679 37279	.0045949988 70441
	Std. Deviation	.003230089 271339	.0002314909 45439	.0006371088 35795	.0013320123 26065	.0039626903 45032
PCB 158	N	12	0	0	12	12
	Minimum	.000399353 5179810				
	Maximum	.031969780 0783825				



	Mean	.011175868 560366	.0000179339 01956	.0023932693 72286	.0070916615 68120	.0161211796 16868
	Std. Deviation	.008422515 324493	.0006868905 61562	.0022197917 57830	.0041648562 84008	.0118384249 36731
PCB 166/128	N	12	0	0	12	12
	Minimum	22.8730365 20126185				
	Maximum	51.8459607 80875130				
	Mean	40.1705034 07185410	.0472047910 69753	3.569526234 655537	33.41574459 2145120	46.92526222 2225680
	Std. Deviation	12.8537411 42568900	.6737093223 39704	1.808305935 014404	7.607249869 123161	13.88125057 9774019
PCB 159	N	12	0	0	12	12
	Minimum	.000410943 3757245				
	Maximum	.009278420 8306598				
	Mean	.003499512 660355	.0000132066 46789	.0009213856 77563	.0018689269 76403	.0054397008 92461
	Std. Deviation	.003196782 113935	.0001889240 17360	.0005952660 26921	.0014089325 38897	.0039446938 84131
PCB 162	N	12	0	0	12	12
	Minimum	.000486456 6232225				
	Maximum	.009291618 0215115				
	Mean	.003204816 777484	.0000060799 39208	.0008031871 41433	.0017924280 18624	.0048896723 99144
	Std. Deviation	.002802424 187220	.0001906359 09352	.0005746727 44306	.0015109527 16255	.0036402477 36741
PCB 167	N	12	0	0	12	12
	Minimum	.000238671 5852953				

	Maximum	.003881468 4895401				
	Mean	.001767355 411229	.0000046802 83396	.0003785686 66343	.0010708508 22615	.0025515426 11790
	Std. Deviation	.001356083 256266	.0000618947 13091	.0001640534 65453	.0009469338 34257	.0015877702 44002
PCB 156/157	N	12	0	0	12	12
	Minimum	.000340926 1721916				
	Maximum	.008126650 7439824				
	Mean	.004256231 374306	.0000057679 41443	.0008714024 88206	.0025882667 17850	.0059312020 35701
	Std. Deviation	.003146882 017499	.0001330121 47467	.0003235919 80508	.0022656479 66236	.0035360179 20077
PCB 169	N	12	0	0	12	12
	Minimum	.000152421 0793310				
	Maximum	.007707816 0029869				
	Mean	.001293896 694734	.0000016628 69350	.0005982880 67954	.0005241627 68040	.0025973152 32057
	Std. Deviation	.002074940 082437	.0003761954 12881	.0010109087 49695	.0003228111 27701	.0032670251 68881
PCB 188	N	12	0	0	12	12
	Minimum	.000273170 9240725				
	Maximum	.010853280 9612135				
	Mean	.002237835 812993	.0000034800 35168	.0008157945 70707	.0010978377 06299	.0040182971 95076
	Std. Deviation	.002834001 138328	.0004645017 36398	.0012961909 95383	.0005079538 05708	.0044572392 50127
PCB 179	N	12	0	0	12	12

	Minimum	.005402252 3582294				
	Maximum	.023008147 2681569				
	Mean	.015808837 913025	.0000232578 64776	.0018497335 20565	.0121364649 19105	.0193789066 88936
	Std. Deviation	.006678380 642176	.0003293581 57762	.0009457804 17713	.0039587957 30396	.0076227699 31396
PCB 184	N	12	0	0	12	12
	Minimum	.000401782 8530798				
	Maximum	.021499404 2017991				
	Mean	.009425827 091316	.0000009081 27049	.0018790649 42146	.0057535620 09938	.0131015742 94967
	Std. Deviation	.006750930 154005	.0003690684 14915	.0009626424 84800	.0044046902 28305	.0081447763 41454
PCB 176	N	12	0	0	12	12
	Minimum	.000810467 3577254				
	Maximum	.014260771 7527715				
	Mean	.004017198 634799	.0000165427 44734	.0010321239 96811	.0024751637 87718	.0062782627 82048
	Std. Deviation	.003580134 261141	.0004370415 25843	.0013377928 22880	.0013281541 61005	.0054681753 64323
PCB 186	N	12	0	0	12	12
	Minimum	.000020194 7000888				
	Maximum	.012687662 5189193				
	Mean	.001420435 958777	.0000007683 74721	.0010242653 10400	.0002740447 28610	.0035430948 03658
	Std. Deviation	.003558780 299907	.0008194698 36544	.0019949862 21088	.0002096671 27081	.0056204764 51312

PCB 178	N	12	0	0	12	12
	Minimum	.000317740 0572700				
	Maximum	.015233618 2096746				
	Mean	.003836306 883705	.0000070412 39299	.0011599461 89852	.0020856630 93695	.0063941701 21345
	Std. Deviation	.003983935 345025	.0004981748 09486	.0014873642 95008	.0013439147 70203	.0060249851 09775
PCB 175	N	12	0	0	12	12
	Minimum	.000246994 1340094				
	Maximum	.011519628 2009450				
	Mean	.001459512 832593	.0000003067 31337	.0009134652 03519	.0004393730 59261	.0033871169 10350
	Std. Deviation	.003179217 320898	.0007224843 52424	.0017700061 40847	.0001797751 55679	.0050248380 43297
PCB 187	N	12	0	0	12	12
	Minimum	.009016239 4875660				
	Maximum	.046387098 2573108				
	Mean	.030730483 438788	.0000669983 59701	.0040380113 26453	.0228130444 86562	.0384265354 50684
	Std. Deviation	.014550821 890752	.0007576394 00811	.0019921513 90731	.0086546542 57341	.0162816270 93864
PCB 182	N	12	0	0	12	12
	Minimum	.000605527 4425801				
	Maximum	.017422915 3528990				
	Mean	.006766155 600968	.0000084619 11103	.0013377840 58856	.0042672431 12651	.0093365285 81287

	Std. Deviation	.004783810 363732	.0003159839 21374	.0010133667 06835	.0026898328 95958	.0064080239 28314
PCB 183	N	12	0	0	12	12
	Minimum	.004594961 4868609				
	Maximum	.019022457 1043381				
	Mean	.012199434 741332	.0000288326 76041	.0014630650 88502	.0093568122 43864	.0149129521 74471
	Std. Deviation	.005261903 510043	.0002703105 26680	.0007097105 25949	.0032444123 41077	.0060952902 23984
PCB 185	N	12	0	0	12	12
	Minimum	.000663981 2227081				
	Maximum	.011593084 7338031				
	Mean	.003422104 760771	.0000084032 85958	.0008721684 00336	.0020057214 70278	.0053169990 18497
	Std. Deviation	.003036066 214326	.0003090063 59980	.0009706135 90926	.0012273854 25102	.0044339617 26012
PCB 174	N	12	0	0	12	12
	Minimum	.008199376 1823479				
	Maximum	.027518081 5215904				
	Mean	.018531944 528129	.0000252625 89235	.0021755870 44613	.0142117352 08732	.0225928311 66205
	Std. Deviation	.007778763 787540	.0003877277 01916	.0009607055 41177	.0048849373 24107	.0087138871 95677
PCB 177	N	12	0	0	12	12
	Minimum	.002984375 7834878				
	Maximum	.014330804 2698634				

	Mean	.008299840 299804	.0000174053 48676	.0011672079 90285	.0060668118 94421	.0105205489 66120
	Std. Deviation	.004186118 762669	.0002006767 40174	.0004698341 04111	.0029310756 77887	.0047966511 96297
PCB 181	N	12	0	0	12	12
	Minimum	.000124896 1748651				
	Maximum	.010745772 3064196				
	Mean	.002305208 778804	.0000115038 38545	.0007891354 90190	.0012437136 03191	.0040354695 23724
	Std. Deviation	.002723718 415072	.0004995896 61902	.0013394843 07791	.0003662910 50121	.0043307376 66552
PCB 171/173	N	12	0	0	12	12
	Minimum	.002037034 5181410				
	Maximum	.017795376 4547958				
	Mean	.006015634 168735	.0000083823 48226	.0012550945 80037	.0040193713 21317	.0087666886 61440
	Std. Deviation	.004351983 980117	.0004452326 28604	.0013928674 72671	.0019878655 34203	.0063937569 44278
PCB 172	N	12	0	0	12	12
	Minimum	.000492141 8028187				
	Maximum	.013124736 2786399				
	Mean	.005095495 296613	.0000076079 46567	.0009289391 23074	.0034866702 48045	.0069845318 06350
	Std. Deviation	.003256526 579470	.0002674759 73875	.0008635678 69045	.0015238238 28429	.0045858395 81836
PCB 192	N	12	0	0	12	12
	Minimum	.000193618 2868431				

	Maximum	.009643602 1258180				
	Mean	.002196637 594301	.0000014823 42974	.0007012525 84787	.0012581356 80671	.0037455340 77067
	Std. Deviation	.002432660 625260	.0004121842 40004	.0011341440 85348	.0004354785 57074	.0038471315 17182
PCB 193/180	N	12	0	0	12	12
	Minimum	.005611543 1104835				
	Maximum	.035369774 7745725				
	Mean	.021092959 533510	.0000175196 62733	.0029230870 30894	.0156964338 99834	.0267206690 69484
	Std. Deviation	.010513184 236190	.0005180446 92453	.0011836139 37235	.0074113076 50860	.0120898536 62063
PCB 191	N	12	0	0	12	12
	Minimum	.000469244 4828272				
	Maximum	.008646309 6003852				
	Mean	.002912087 270281	.0000043388 83861	.0005797034 16114	.0020188725 34700	.0041625001 62245
	Std. Deviation	.002011583 550417	.0002454679 03323	.0007530970 20555	.0006310595 31163	.0030480950 25397
PCB 170	N	12	0	0	12	12
	Minimum	.000969344 2323367				
	Maximum	.011732837 8426950				
	Mean	.007071362 706400	.0000120065 38014	.0010343714 57177	.0051277740 57324	.0090490523 93714
	Std. Deviation	.003758675 132853	.0001713425 90961	.0005113955 57303	.0025051883 11903	.0044857902 45081
PCB 190	N	12	0	0	12	12

	Minimum	.001000709 5132092				
	Maximum	.020707196 6886861				
	Mean	.010754155 973843	.0000169385 41951	.0019510006 90546	.0071442001 58637	.0146174078 95450
	Std. Deviation	.007045280 187970	.0003681774 37033	.0010245613 76485	.0040410179 71879	.0082096795 37773
PCB 189	N	12	0	0	12	12
	Minimum	.000463798 2225242				
	Maximum	.023147731 2514178				
	Mean	.003988864 528267	.0000068350 30280	.0017675379 02261	.0017528823 79352	.0077702530 88861
	Std. Deviation	.006151194 616652	.0011666962 46785	.0030875627 99519	.0008739700 59918	.0097786161 63447
PCB 202	N	12	0	0	12	12
	Minimum	.007880060 6131017				
	Maximum	.039356204 1756328				
	Mean	.020037483 799114	.0000239532 06717	.0026023271 19325	.0151834855 18559	.0251680539 04011
	Std. Deviation	.009203394 398287	.0005926199 84003	.0018005607 97664	.0054071901 06709	.0119754026 82710
PCB 201	N	12	0	0	12	12
	Minimum	.000413255 5977913				
	Maximum	.016825470 6464417				
	Mean	.003429910 882879	.0000096724 00194	.0012814771 38352	.0016202917 34507	.0062513431 56010
	Std. Deviation	.004441176 204943	.0006897513 38261	.0019553185 70609	.0011915603 31134	.0069688720 56377



PCB 204	N	12	0	0	12	12
	Minimum	50				
	Maximum	100				
	Mean	66.67	.08	6.81	54.17	79.17
	Std. Deviation	24.618	-1.301	3.647	14.434	26.112
PCB 197	N	12	0	0	12	12
	Minimum	.002219958 8936928				
	Maximum	.032229221 3055045				
	Mean	.012699333 001076	.0000986548 31504	.0030681555 78156	.0070906621 61530	.0187063457 20115
	Std. Deviation	.011338072 524103	.0006274244 71017	.0022338042 66533	.0030508049 02786	.0136084723 02487
PCB 200	N	12	0	0	12	12
	Minimum	.001924183 0811123				
	Maximum	.016947522 2861076				
	Mean	.006030971 209102	.0000448345 39377	.0013758967 49036	.0035168227 65384	.0089678294 31661
	Std. Deviation	.005130184 286793	.0003029243 35213	.0012259814 06232	.0011796219 82599	.0064946710 58313
PCB 198/199	N	12	0	0	12	12
	Minimum	.009659579 5709345				
	Maximum	.038413320 4121007				
	Mean	.016268475 646627	.0000466932 11929	.0021581226 27320	.0130994811 70706	.0212231069 16197
	Std. Deviation	.007552497 607383	.0010119331 98302	.0030454053 37989	.0023015587 69416	.0115083184 94636
PCB 196	N	12	0	0	12	12
	Minimum	.002036589 8538106				

	Maximum	.017158141 8455381				
	Mean	.006676170 978379	.0000039036 20695	.0012636053 78989	.0045839472 25572	.0092833990 12050
	Std. Deviation	.004394738 668010	.0003497643 87296	.0010860618 98683	.0022287041 07799	.0060604705 98432
PCB 203	N	12	0	0	12	12
	Minimum	.005930609 4565610				
	Maximum	.015326394 5356011				
	Mean	.012437497 318040	.0000184106 94415	.0008038910 50573	.0106649716 44396	.0138056047 42906
	Std. Deviation	.002935082 540763	.0002015158 26097	.0007130456 28300	.0011145696 25823	.0038794138 34669
PCB 195	N	12	0	0	12	12
	Minimum	.004543267 8272753				
	Maximum	.037592246 6405957				
	Mean	.010987758 332214	.0000708233 57645	.0033892645 04391	.0057719448 68834	.0186102392 56864
	Std. Deviation	.011629898 727679	.0012403249 60972	.0040325644 01912	.0011627527 31338	.0154149287 03110
PCB 194	N	12	0	0	12	12
	Minimum	.003182037 0806163				
	Maximum	.029887103 5348949				
	Mean	.009329287 314285	.0000056312 00132	.0020329152 13264	.0062185392 42651	.0138408542 59757
	Std. Deviation	.007058590 287989	.0009367180 94119	.0027787143 32399	.0019411919 46601	.0108466676 92372
PCB 205	N	12	0	0	12	12
	Minimum	.001378173 0012837				

	Maximum	.025989178 9043465				
	Mean	.004812212 521787	.0000205589 70652	.0019794925 68286	.0022972202 99434	.0091504466 35649
	Std. Deviation	.006837073 544642	.0012689981 94358	.0033779723 44175	.0008199027 11779	.0107745781 16544
PCB 208	N	12	0	0	12	12
	Minimum	.001851135 7141045				
	Maximum	.038493181 8831624				
	Mean	.007490384 209064	.0000129800 60449	.0029468471 85740	.0036152359 51291	.0140562356 13797
	Std. Deviation	.010175229 662471	.0017481687 89313	.0047830188 20150	.0010488440 35137	.0158560893 00183
PCB 207	N	12	0	0	12	12
	Minimum	.001019573 5572742				
	Maximum	.018821664 7834617				
	Mean	.005574515 233687	.0000043982 98667	.0012474925 64044	.0037954295 10826	.0082787044 25756
	Std. Deviation	.004393900 937047	.0006831135 03064	.0019531478 46326	.0008164276 36015	.0069636424 30680
PCB 206	N	12	0	0	12	12
	Minimum	.004991814 5010040				
	Maximum	.062297313 9536153				
	Mean	.023921115 380525	.0000074945 91475	.0040682937 52713	.0174768587 73523	.0327540573 58319
	Std. Deviation	.014442049 178230	.0013943324 46960	.0045580656 15690	.0051739269 42129	.0210754294 21299
PCB 209	N	12	0	0	12	12

Minimum	.093442154 9665538				
Maximum	.341314104 7138136				
Mean	.183679689 382441	.0002384408 28241	.0296937959 32160	.1281313905 83543	.2403527738 40765
Std. Deviation	.107804706 286348	.0056332138 03840	.0146773783 05626	.0641289203 45994	.1202742960 49801
Valid N (listwise) N	12	0	0	12	12
Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples					

## A.4 Bulk Sediment Congener Profiles for CSSC, Cal-Sag Channel, and Aroclor Mixtures

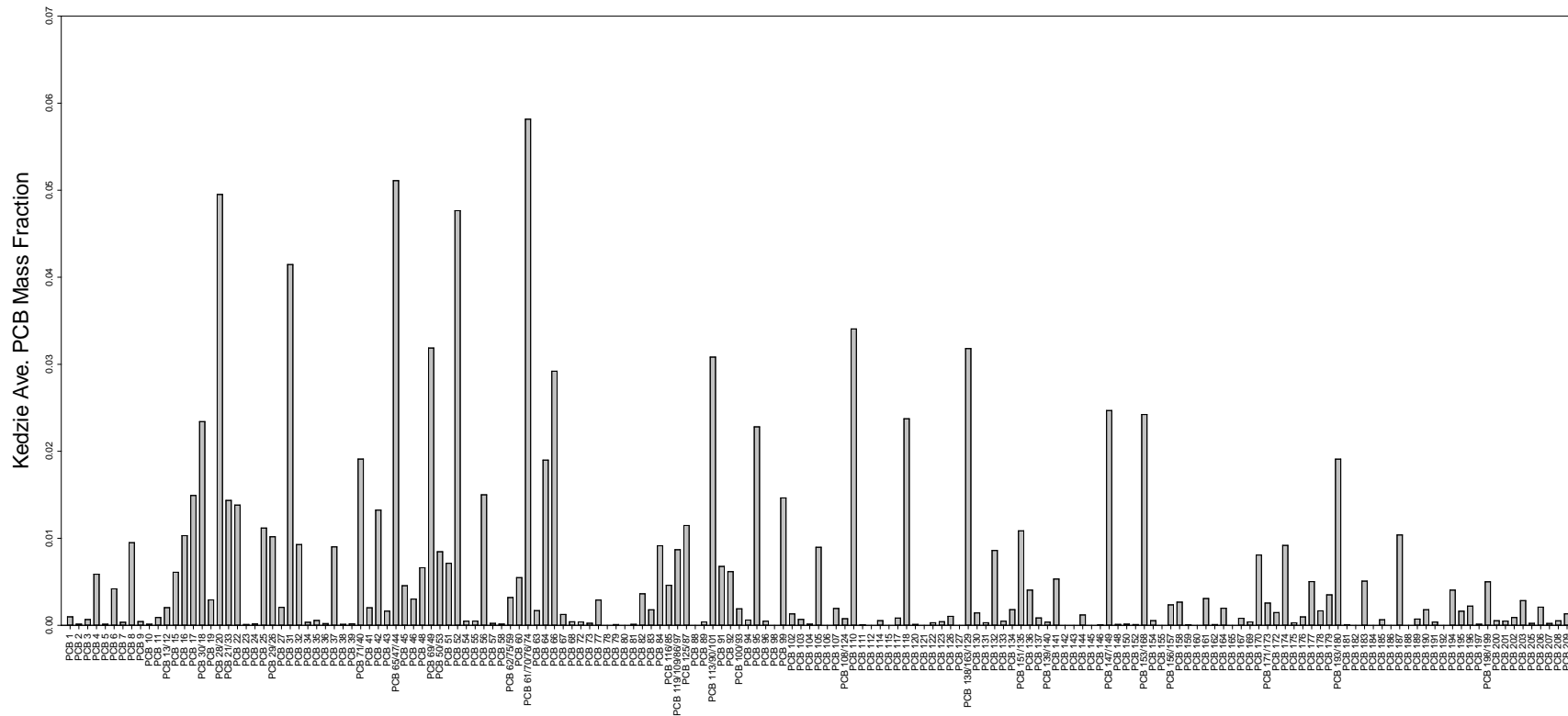


Figure A-6. Bulk Sediment: *Kedzie Ave.* Congener Profile

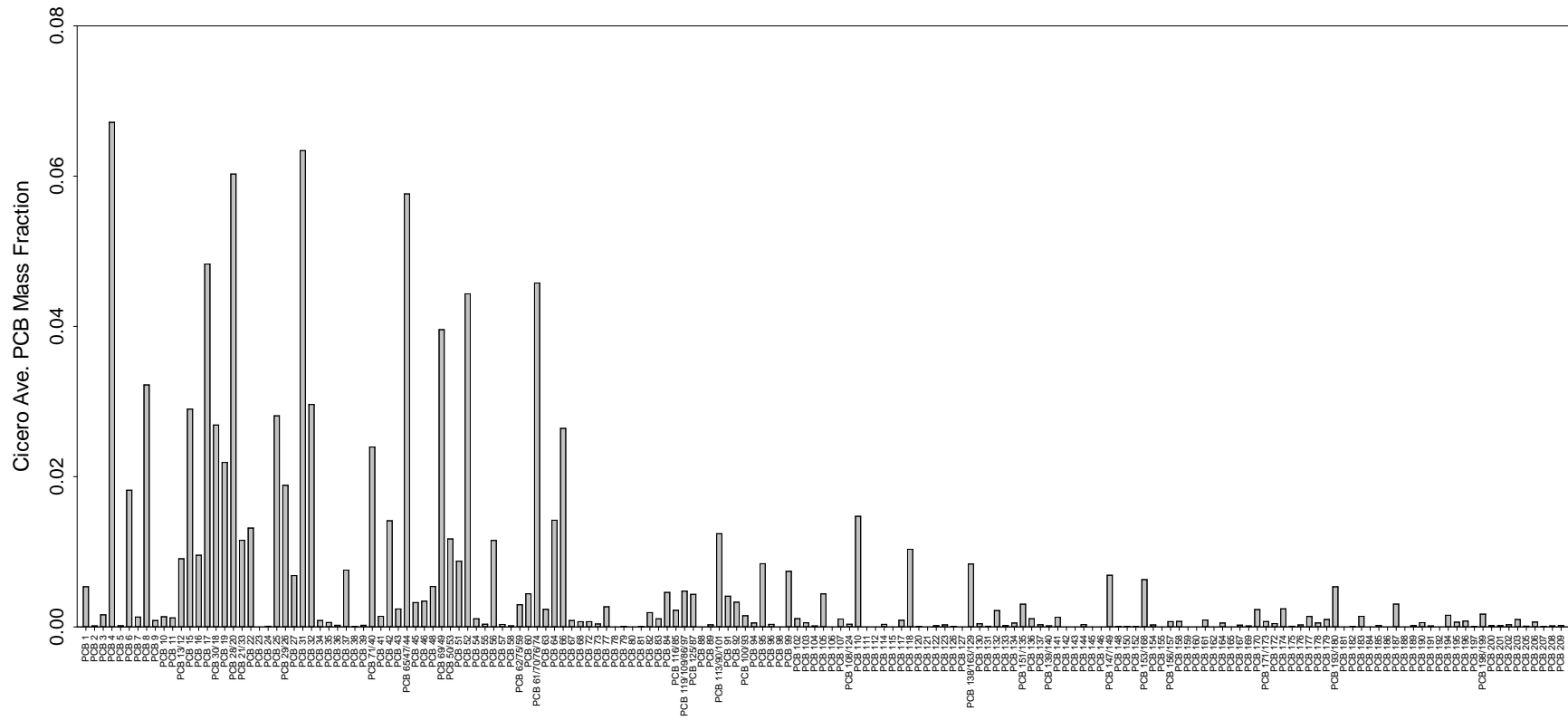


Figure A-7. Bulk Sediment: *Cicero Ave.* Congener Profile

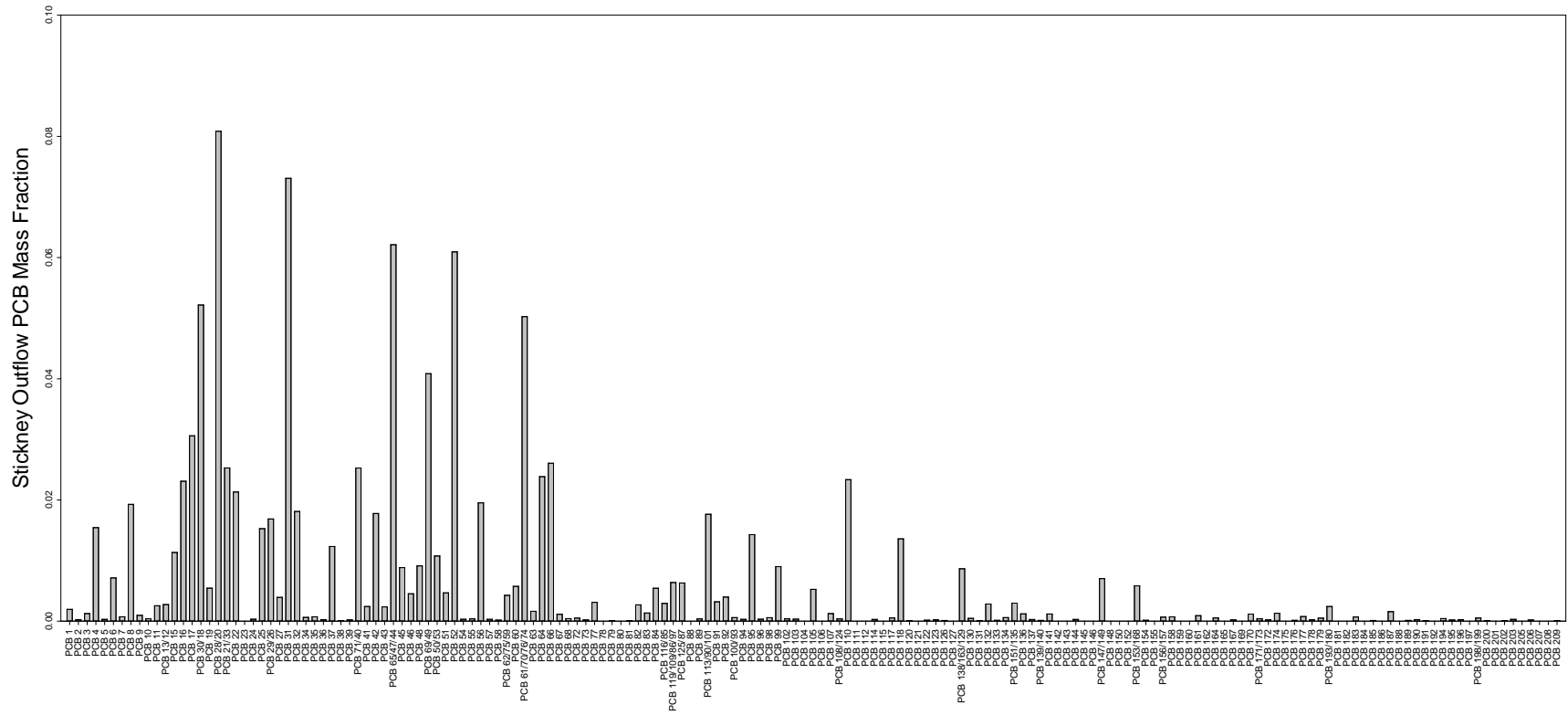


Figure A-8. Bulk Sediment: *Stickney Outflow* Congener Profile

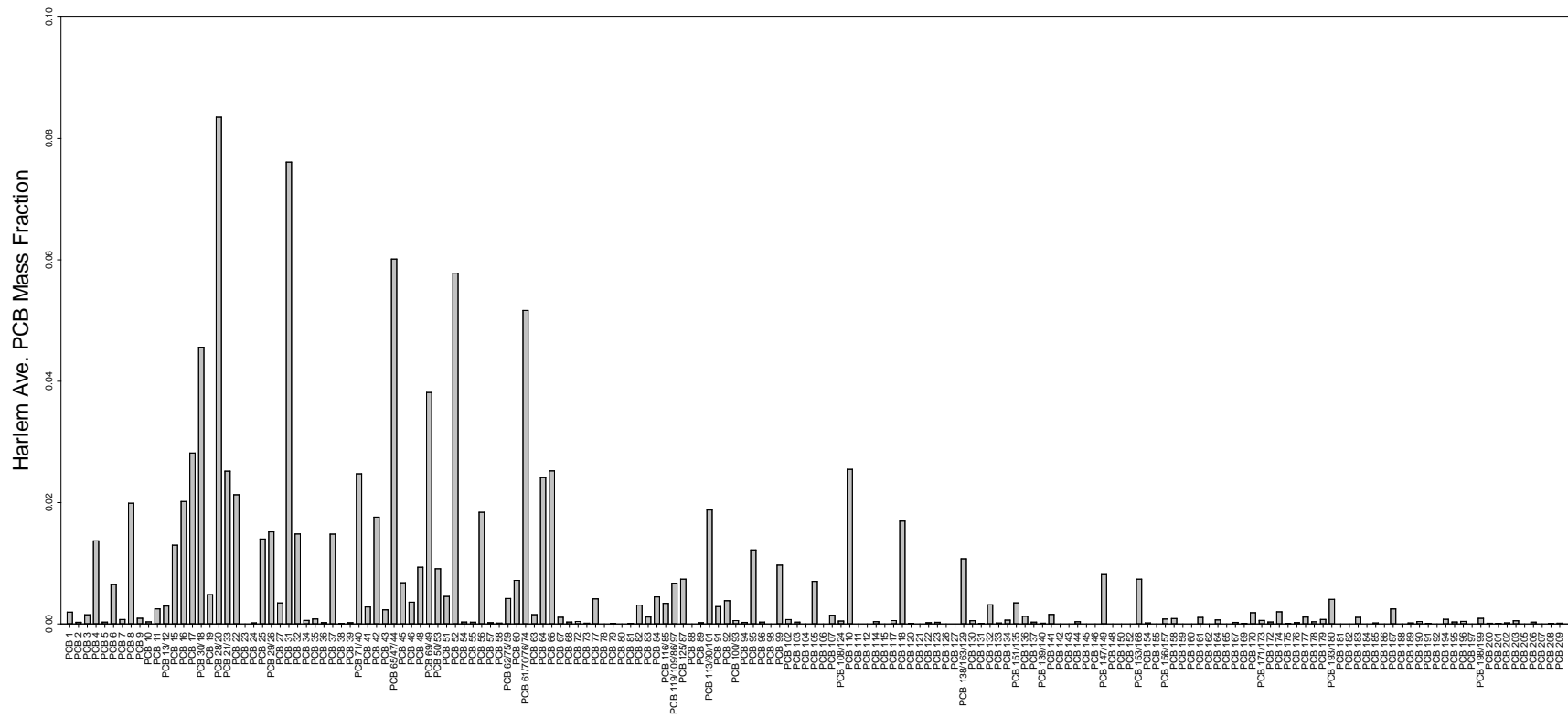


Figure A-9. Bulk Sediment: *Harlem Ave.* Congener Profile



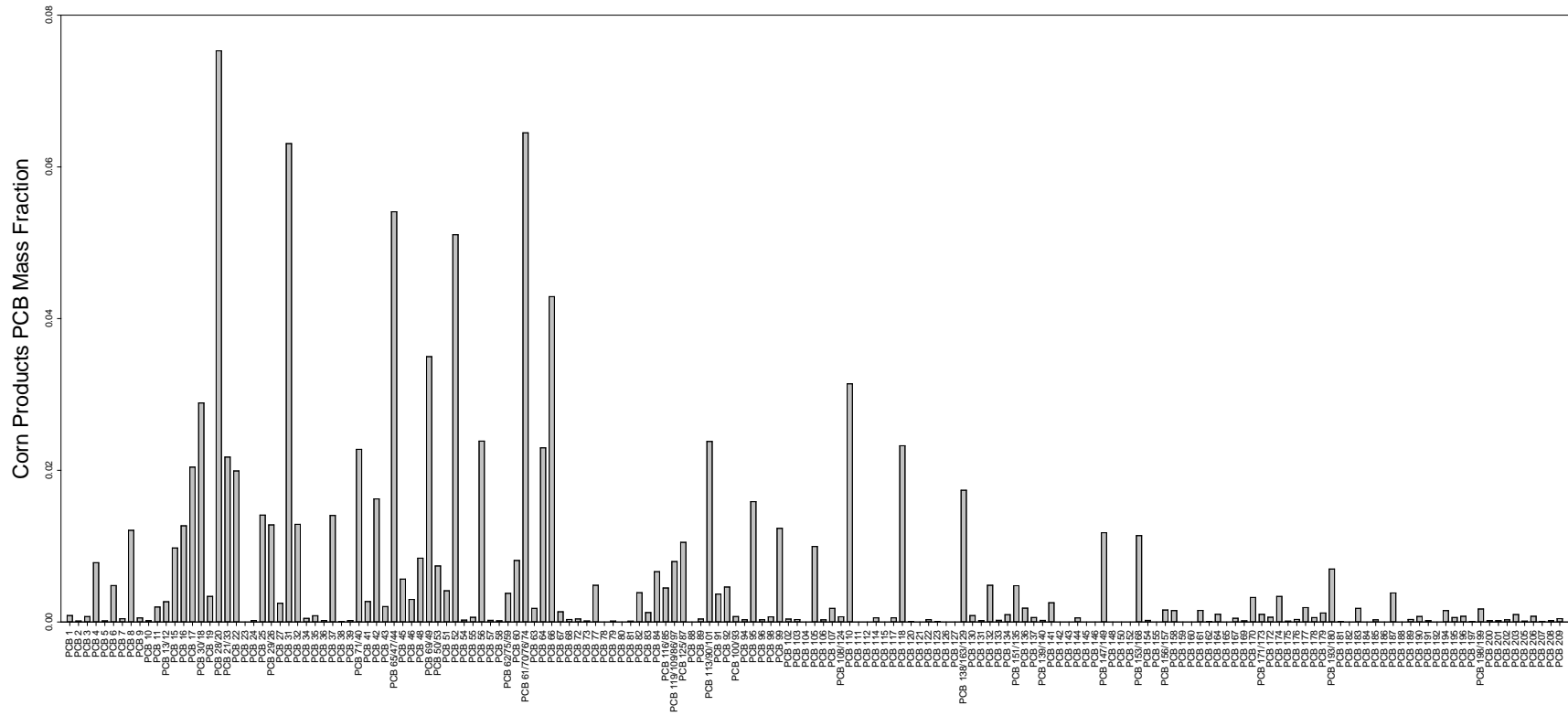


Figure A-10. Bulk Sediment: *Corn Products* Congener Profile

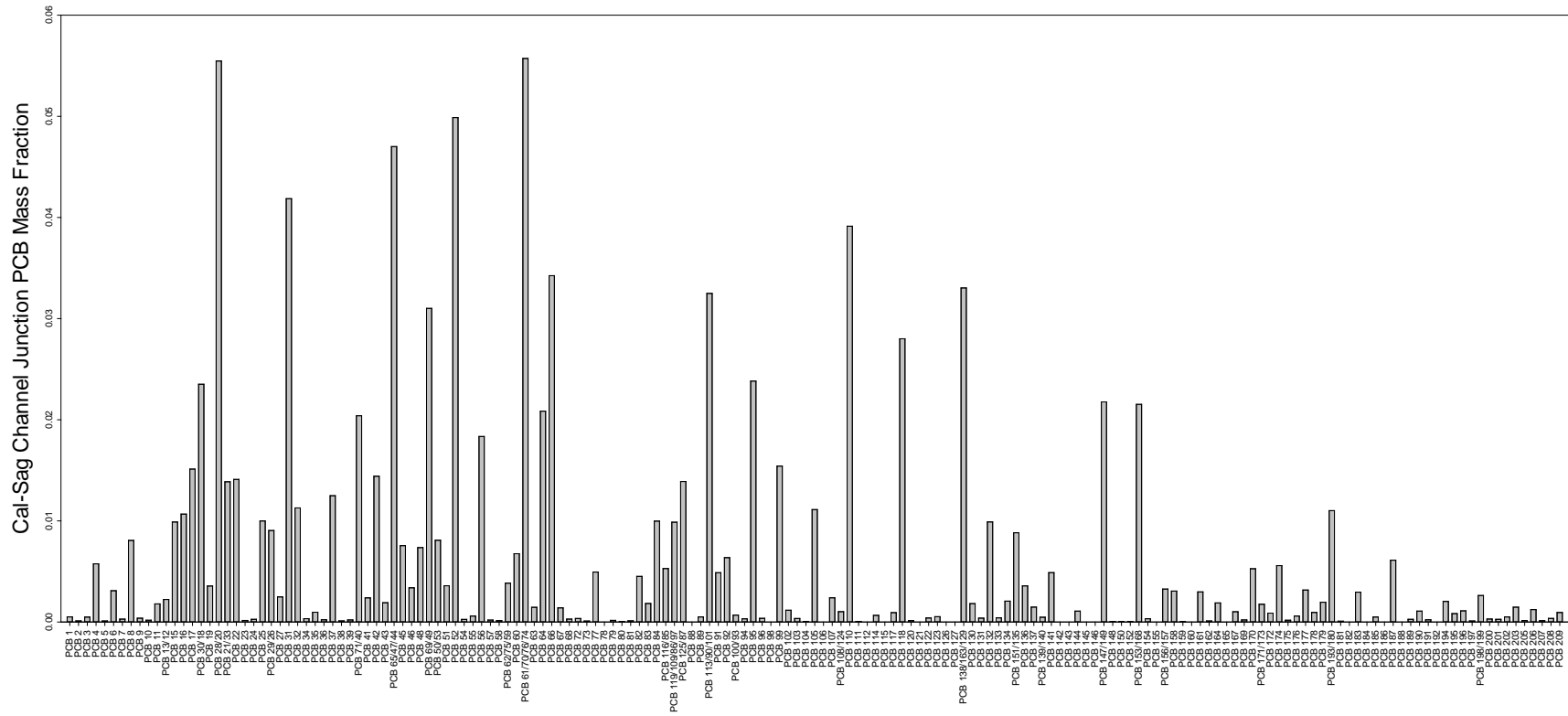


Figure A-11. Bulk Sediment: Cal-Sag Channel *Junction* Congener Profile

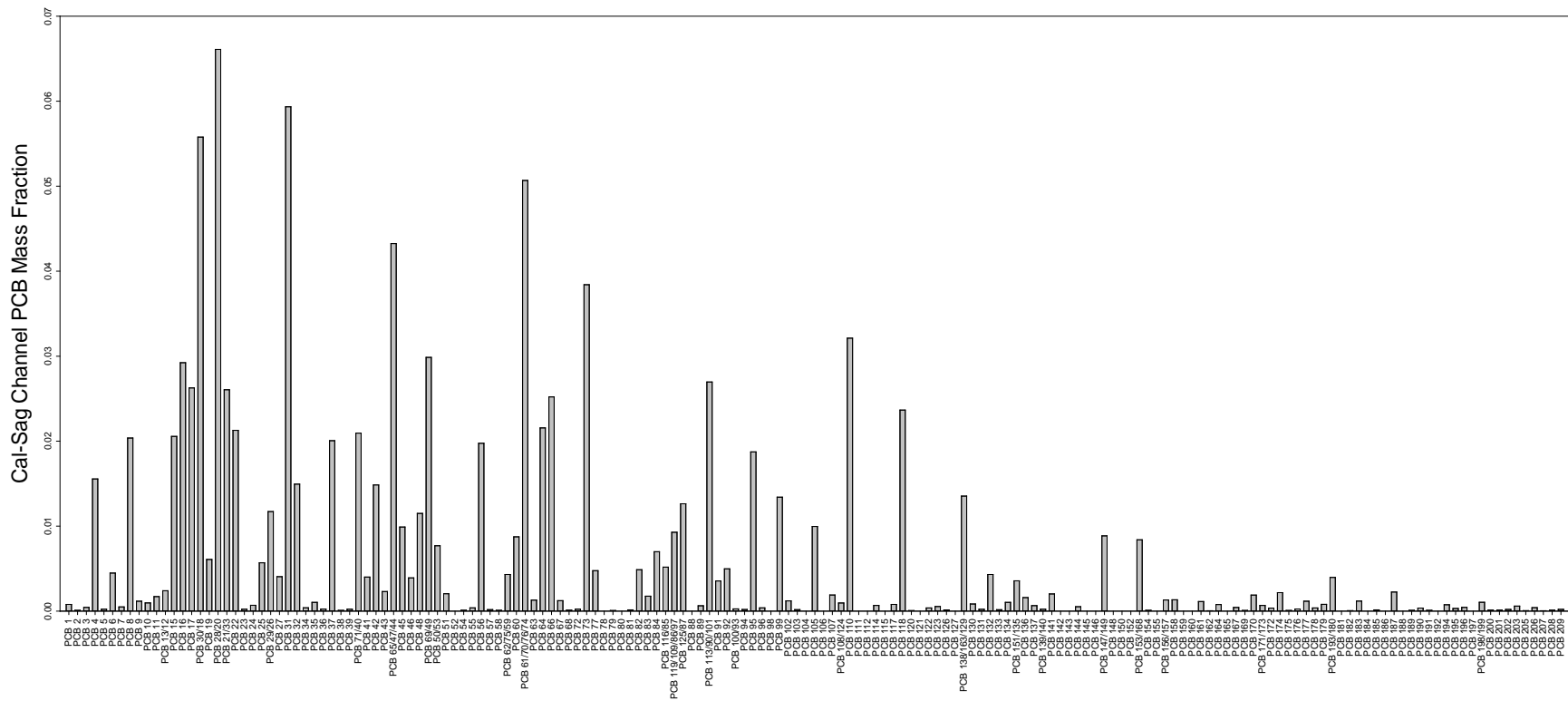


Figure A-12. Bulk Sediment: Cal-Sag Channel Congener Profile

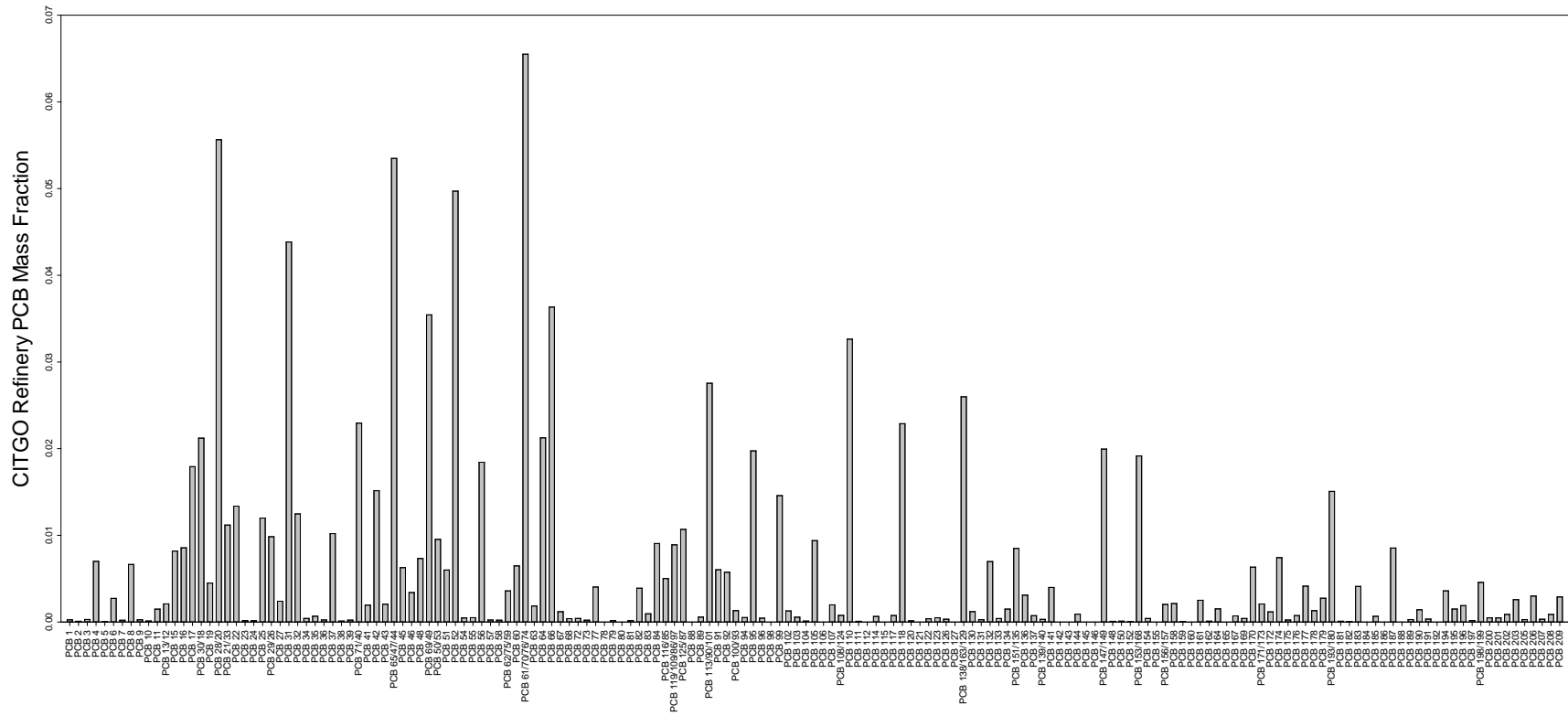


Figure A-13. Bulk Sediment: *Citgo Refinery* Congener Profile

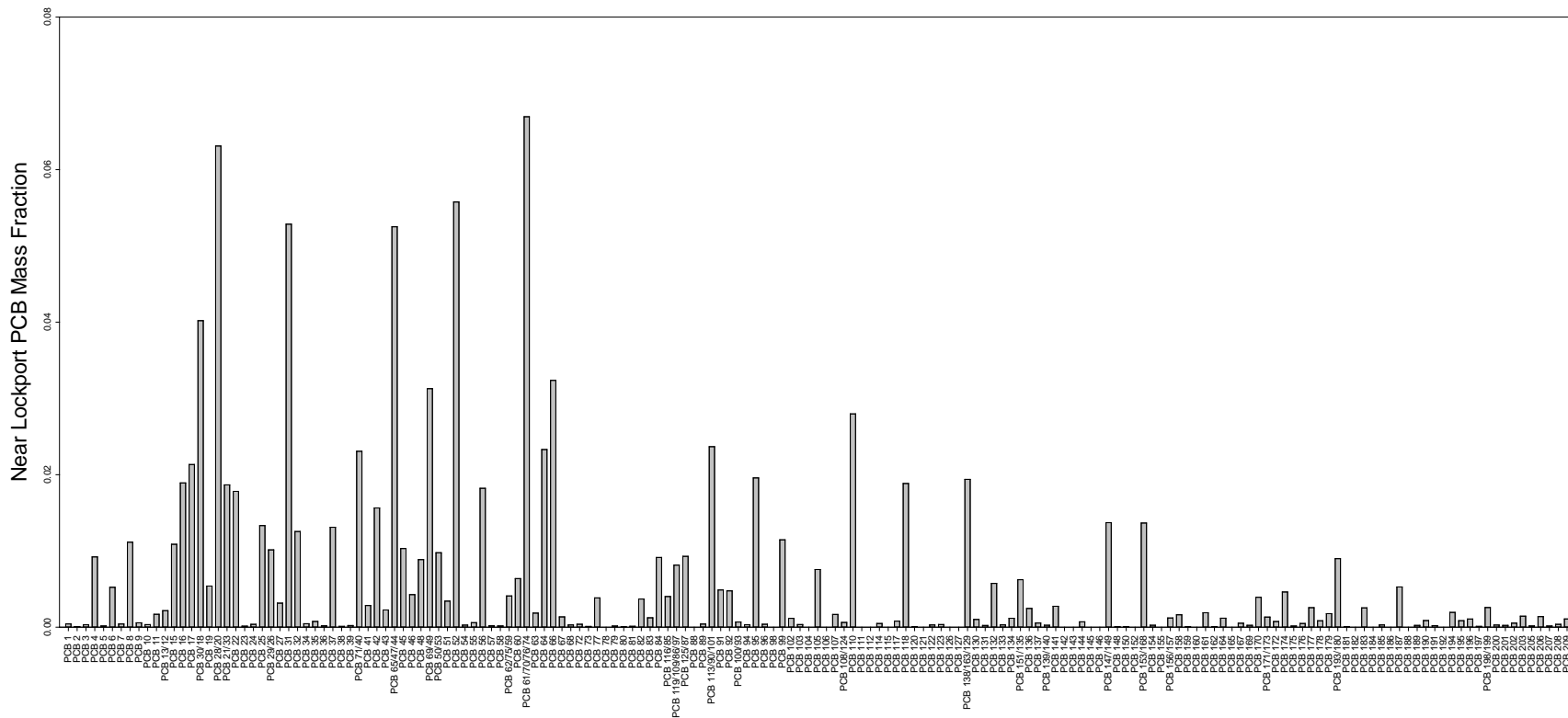


Figure A-14. Bulk Sediment: *Near Lockport* Congener Profile

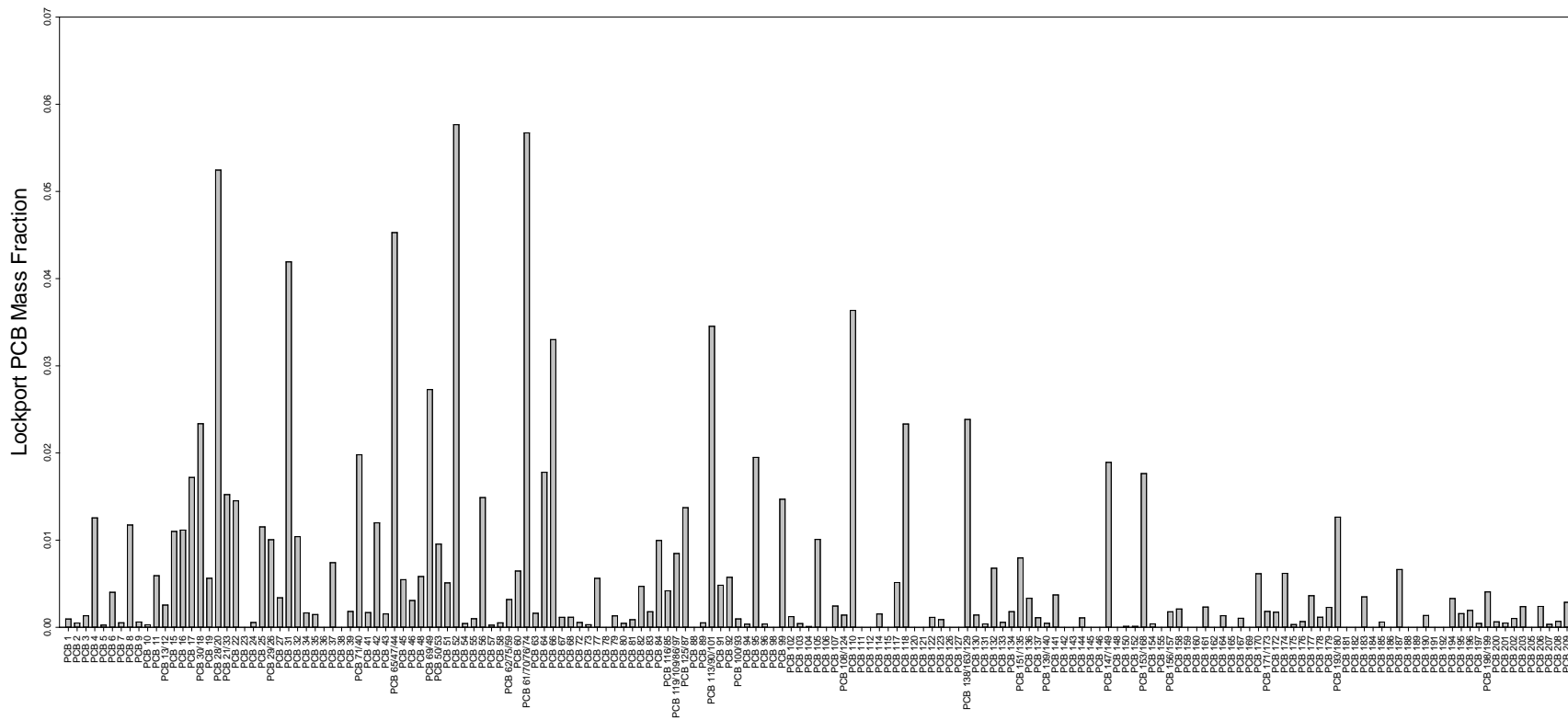


Figure A-15. Bulk Sediment: Lockport Congener Profile

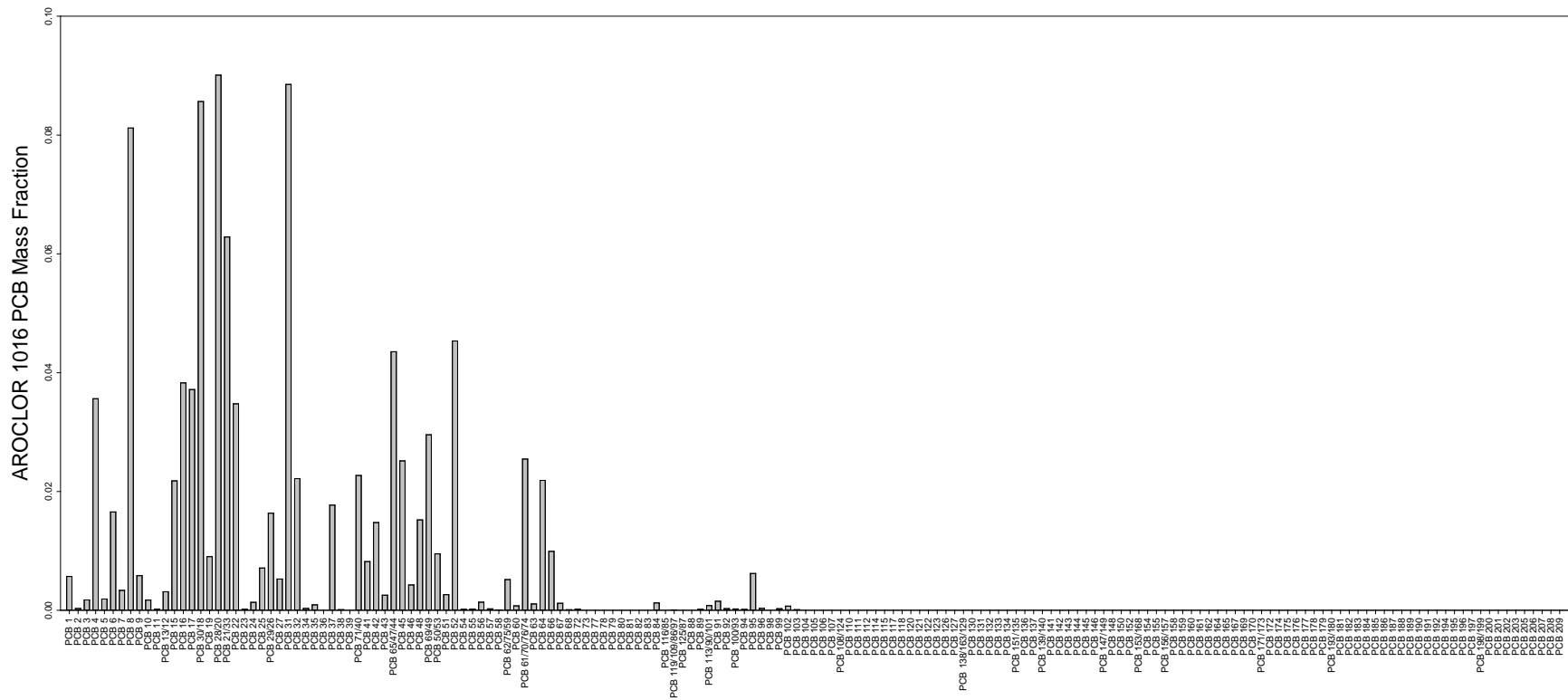


Figure A-16. Aroclor 1016 Congener Profile

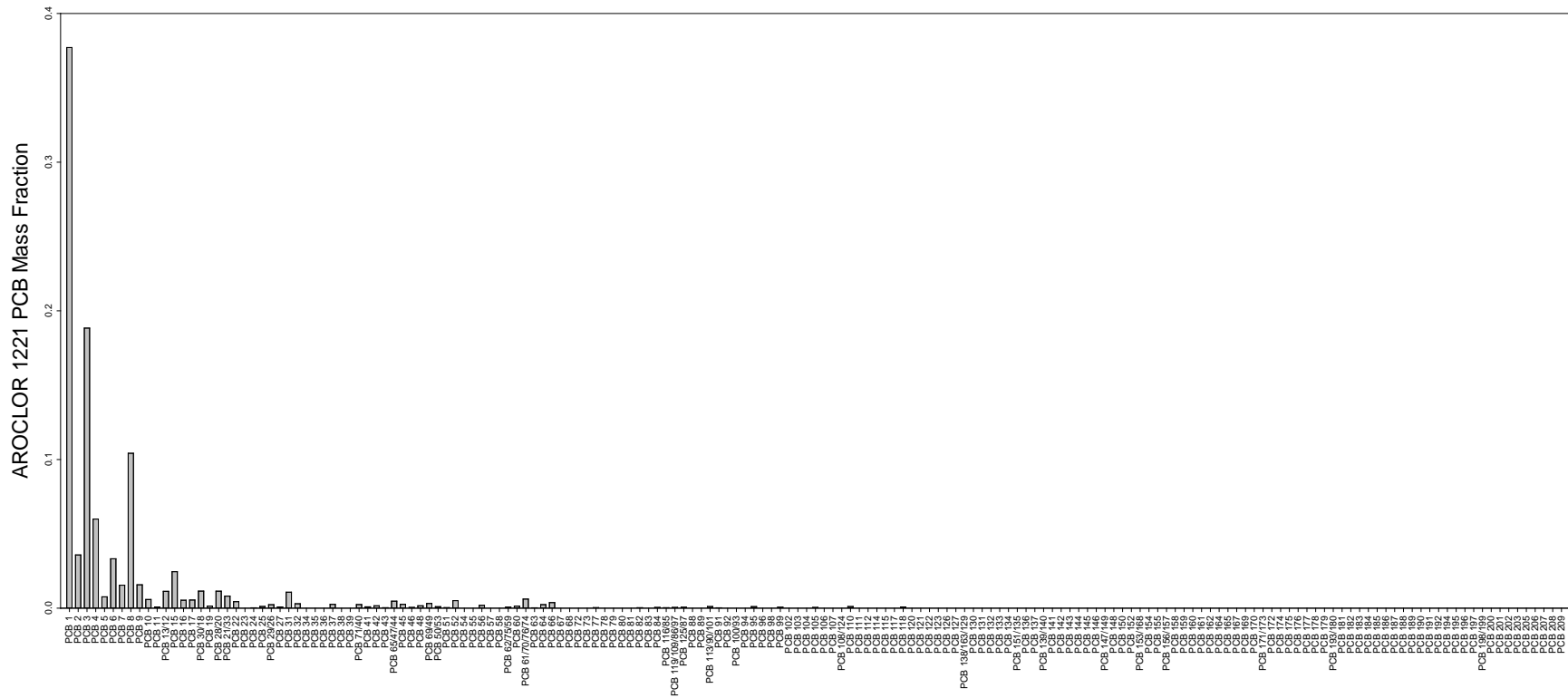


Figure A-17. Aroclor 1221 Congener Profile



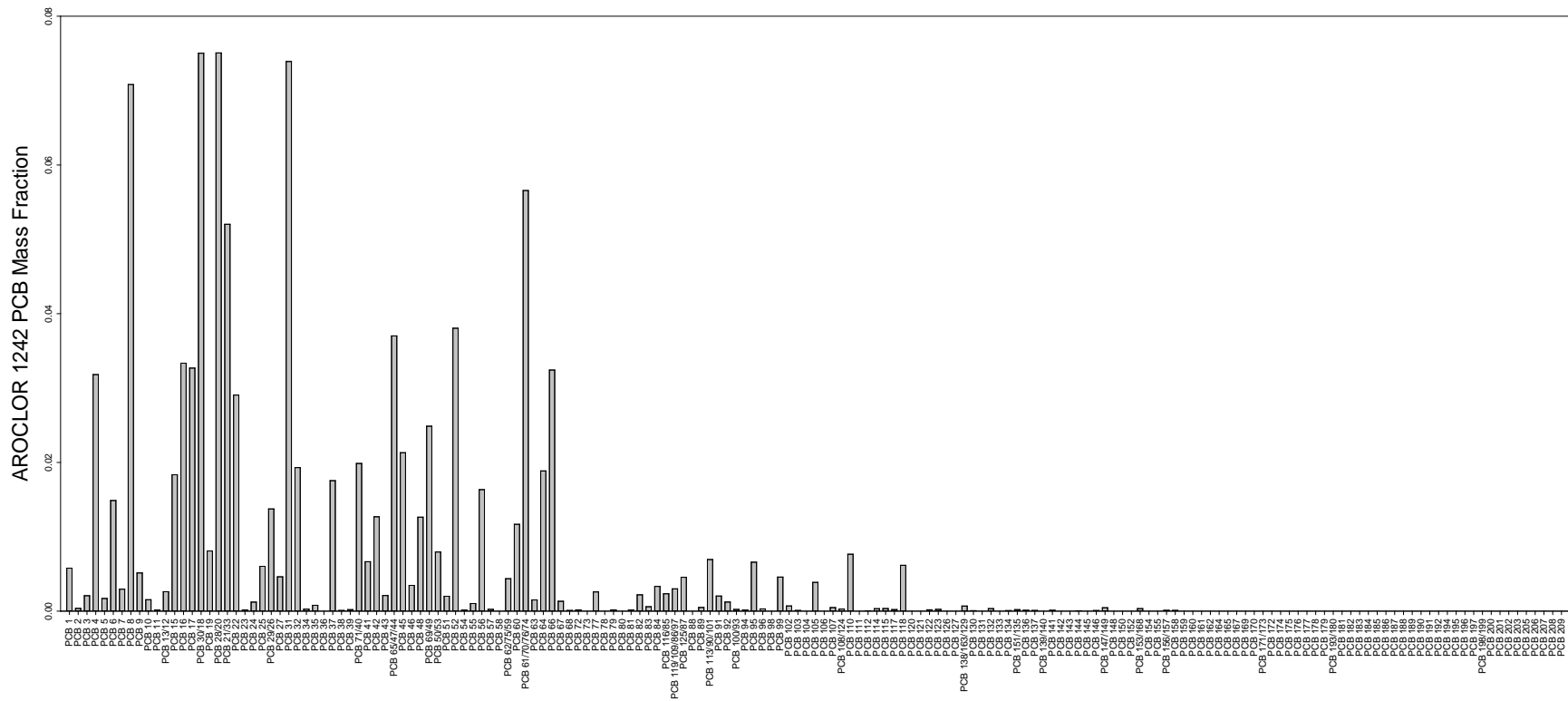


Figure A-18. Aroclor 1242 Congener Profile

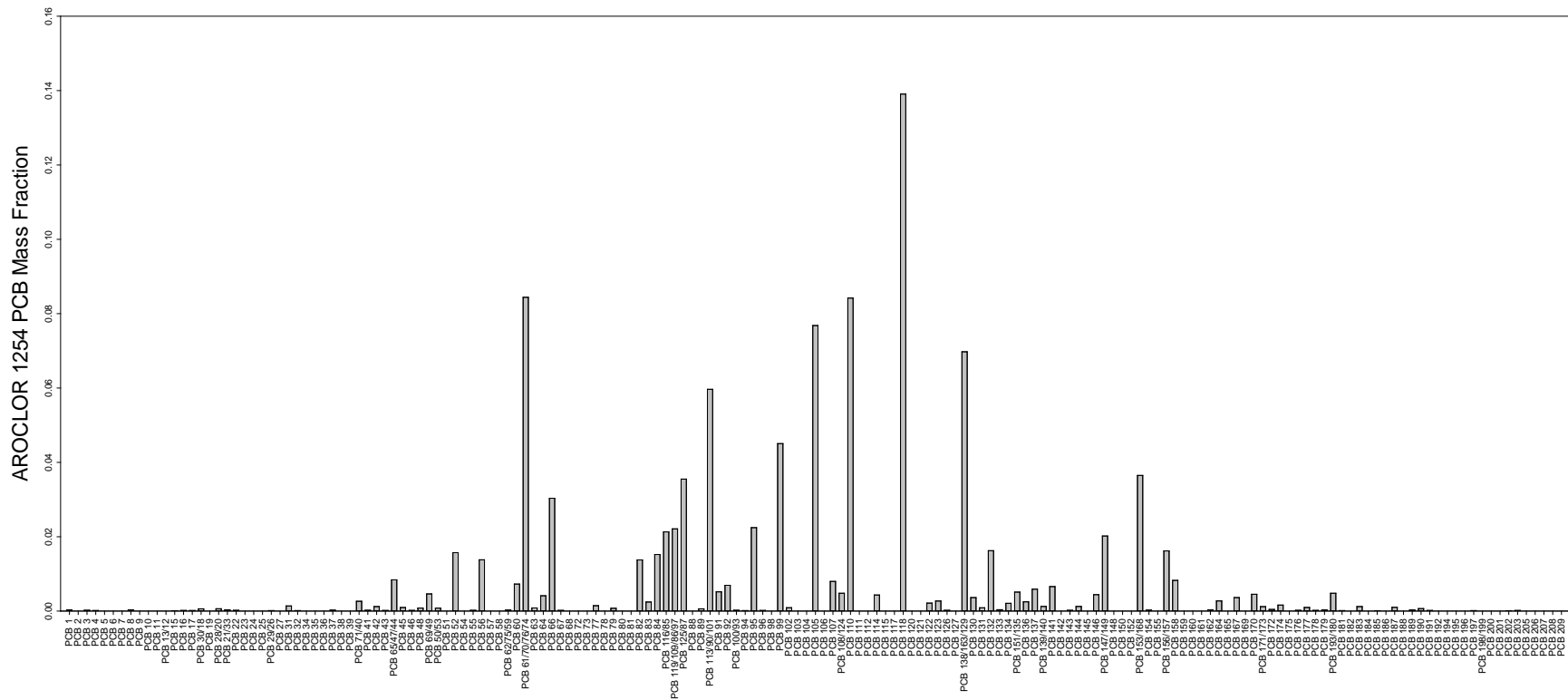


Figure A-19. Aroclor 1254 Congener Profile

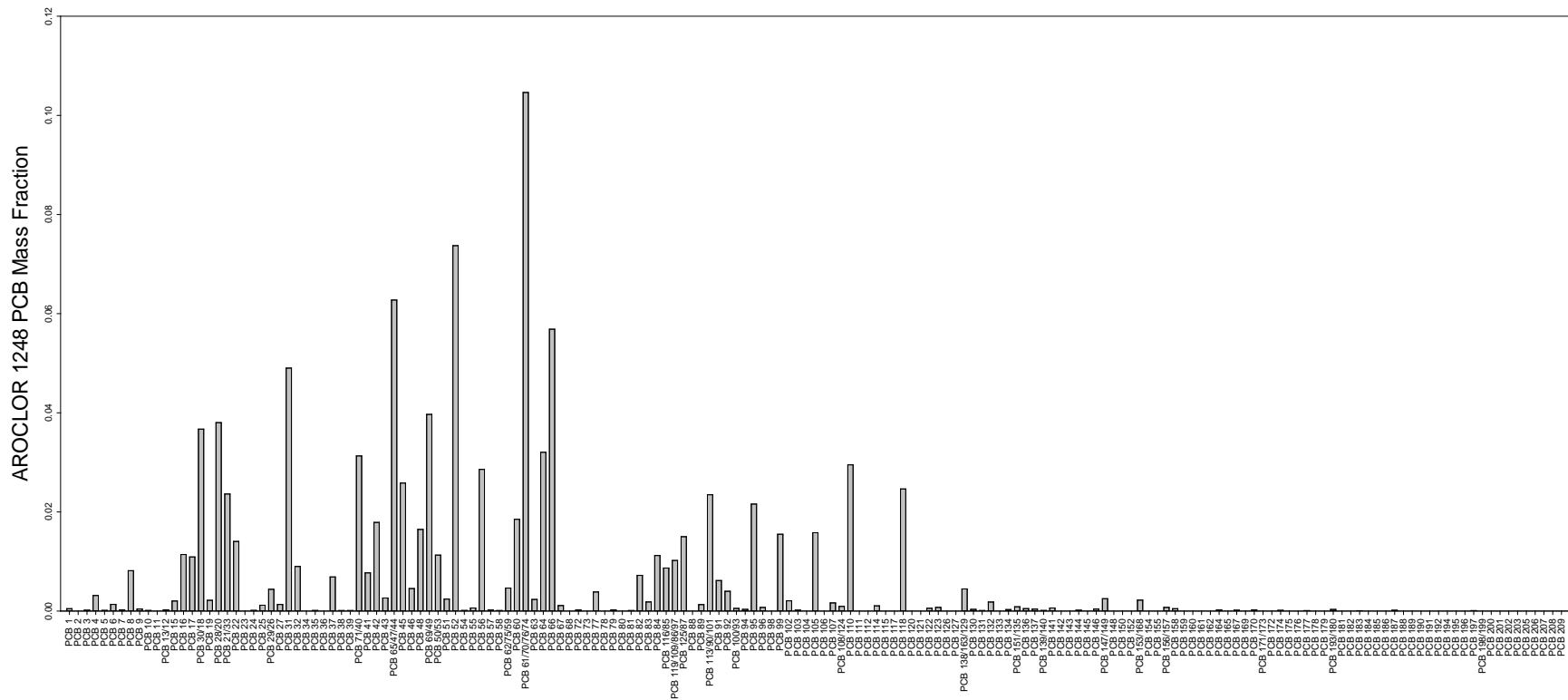
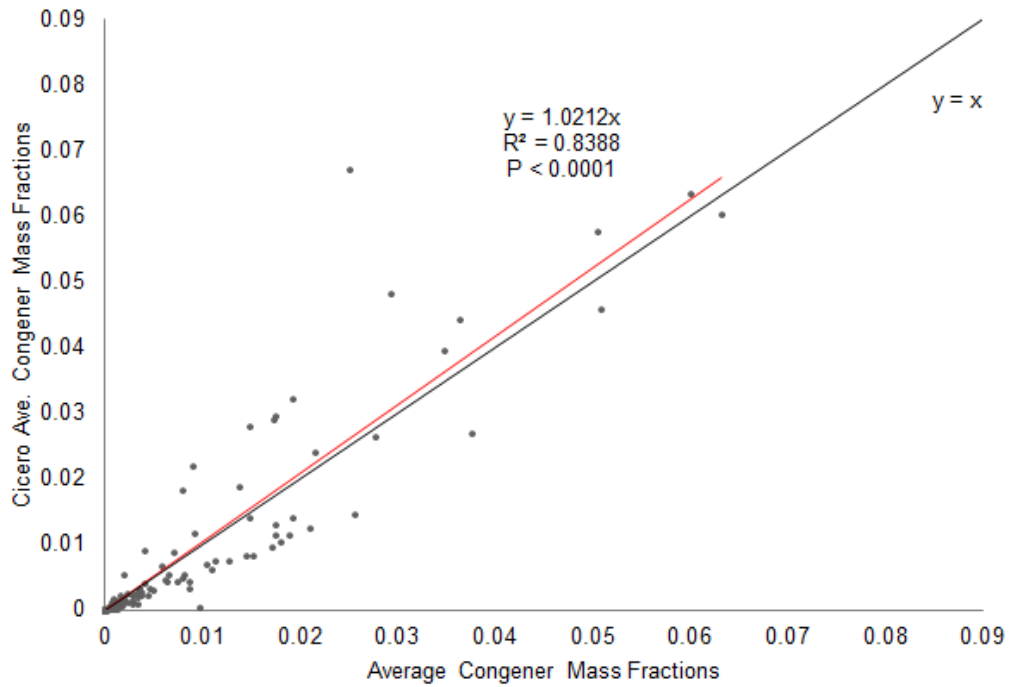
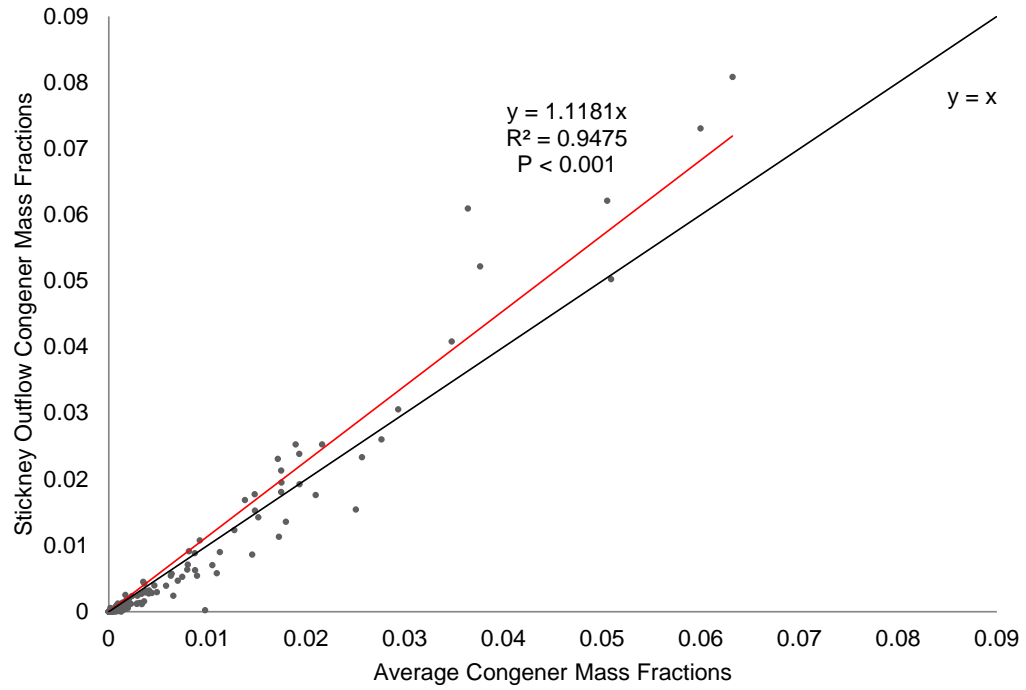


Figure A-20. Aroclor 1248 Congener Profile

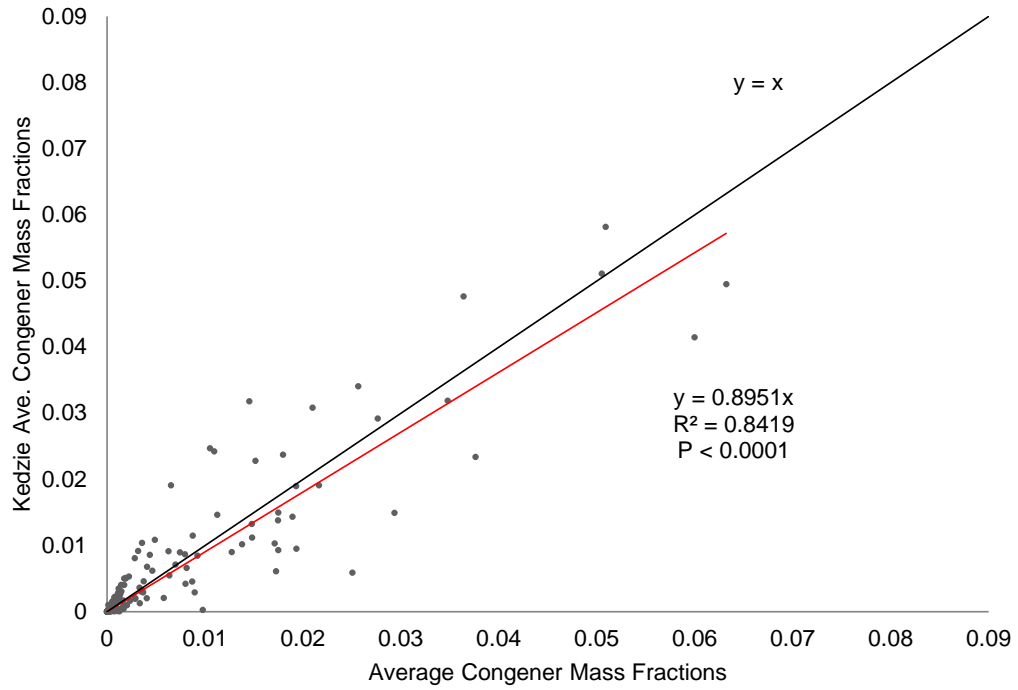
## A.5 Site PCBs Mass Fraction Correlations in the Bulk Sediment



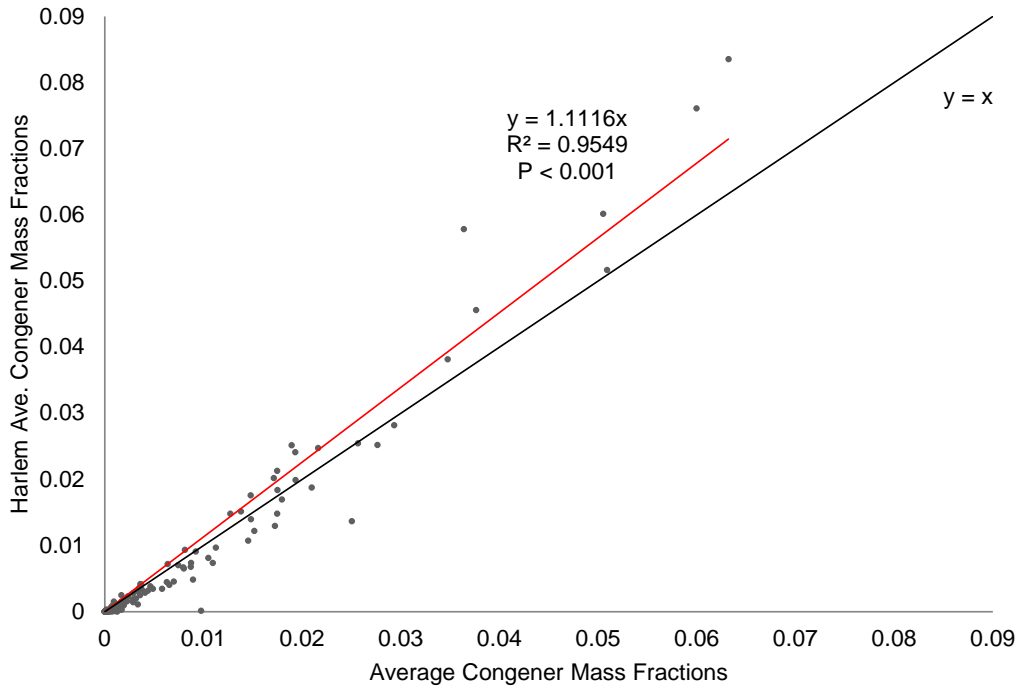
**Figure A-21. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Kedzie Ave.* and the Average Congener Profile for CSSC Sites.**



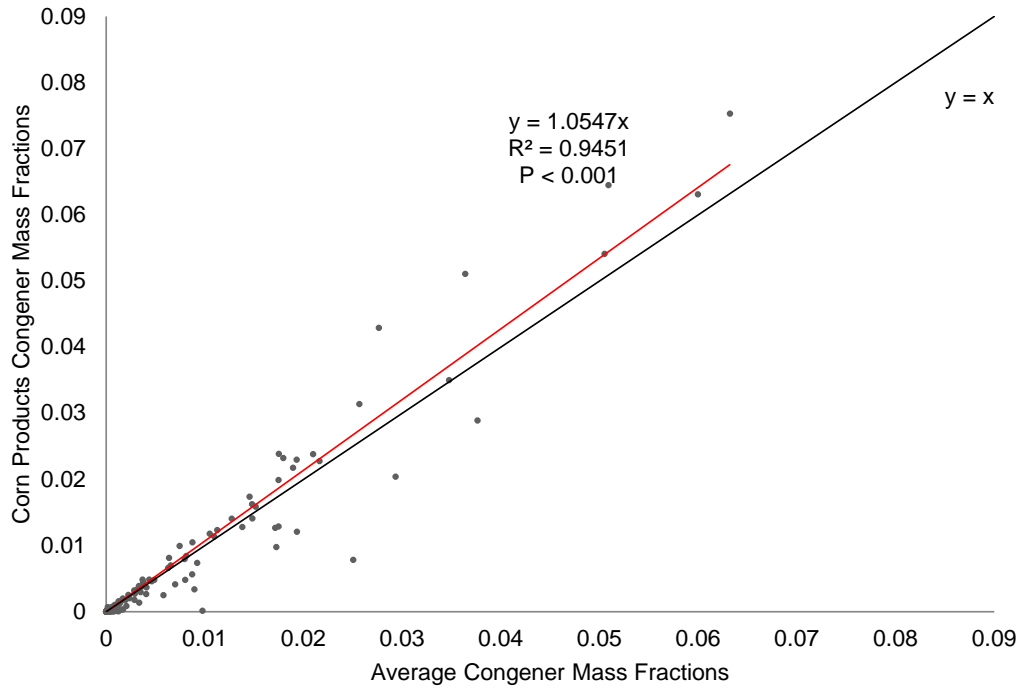
**Figure A-22. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Stickney Outflow* and the Average Congener Profile for CSSC Sites.**



**Figure A-23. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Kedzie Ave.* and the Average Congener Profile for CSSC Sites.**

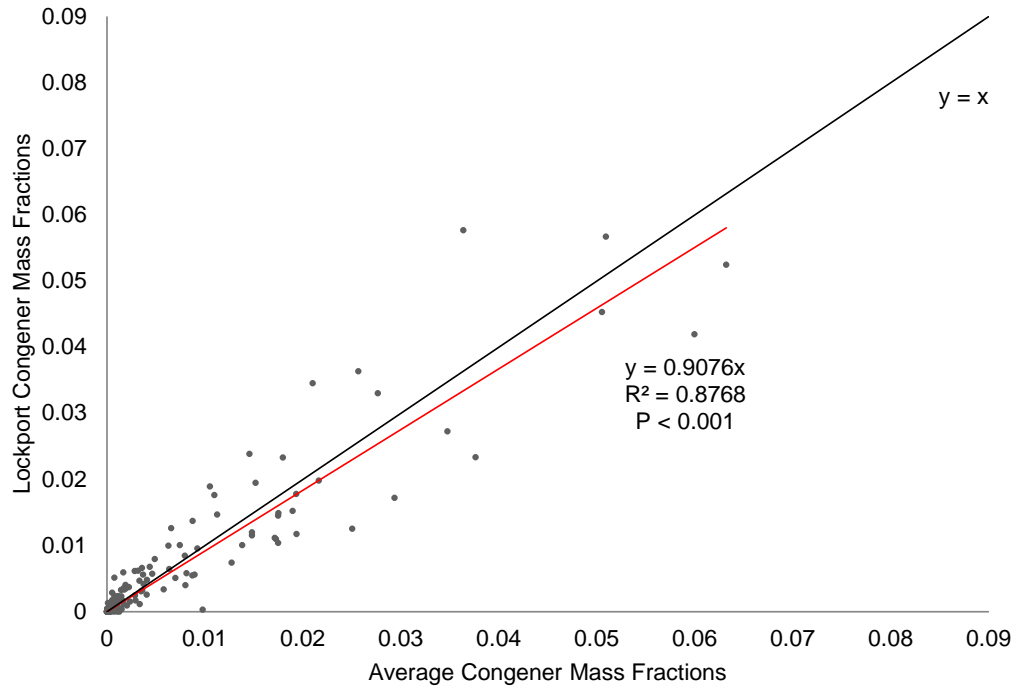


**Figure A-24. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Harlem Ave.* and the Average Congener Profile for CSSC Sites.**

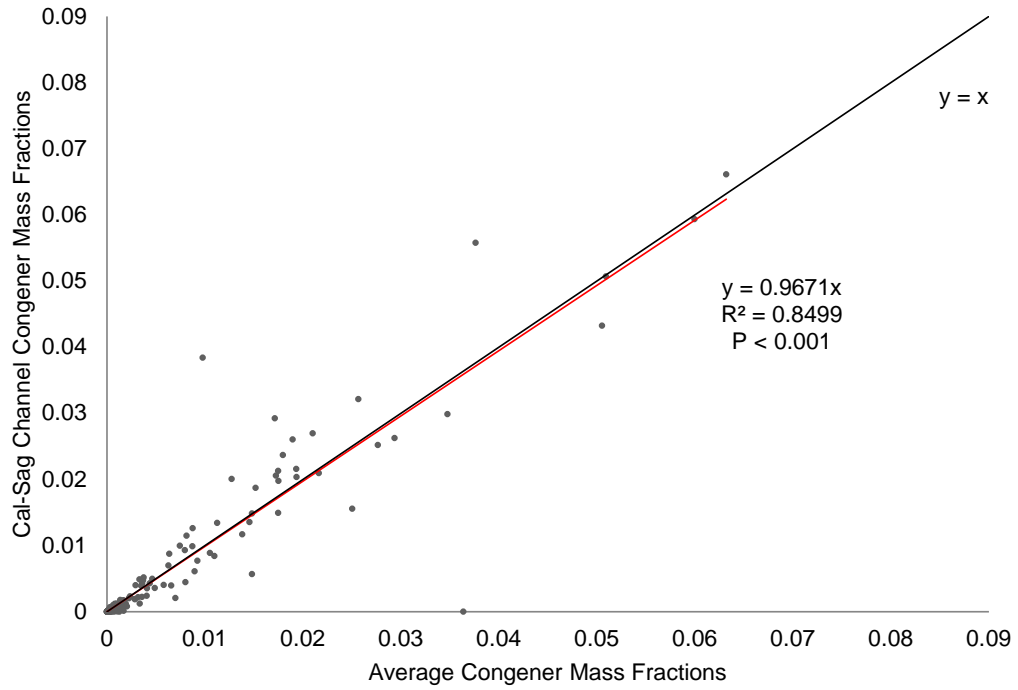


**Figure A-25. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Corn Products* and the Average Congener Profile for CSSC Sites.**

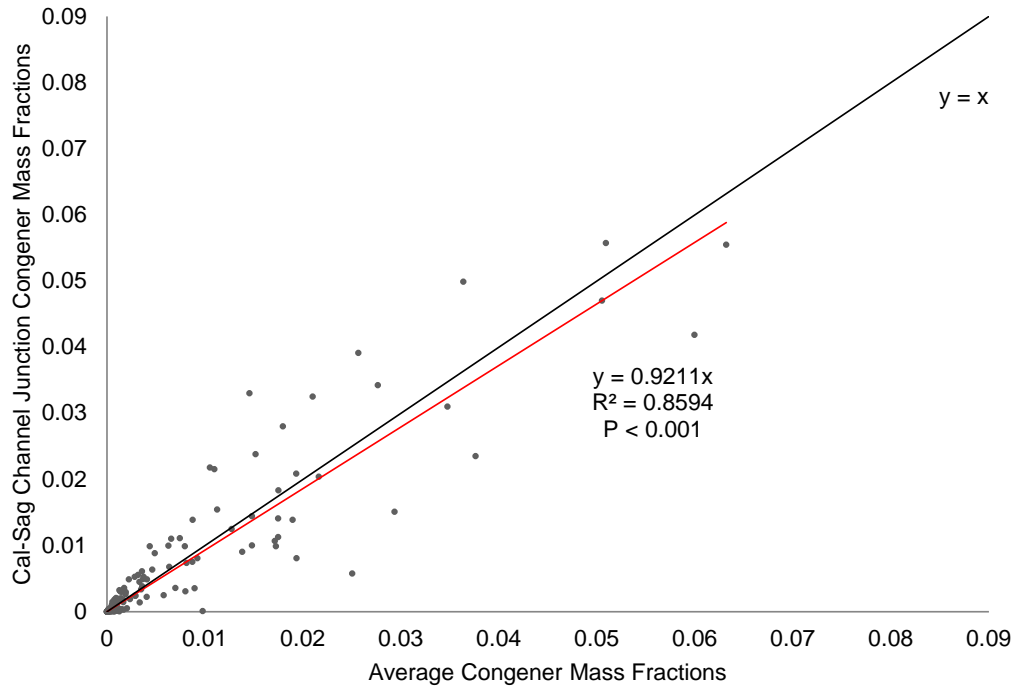




**Figure A-26. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Lockport* and the Average Congener Profile for CSSC Sites.**



**Figure A-27. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Cal-Sag Channel* and the Average Congener Profile for CSSC Sites.**



**Figure A-28. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Cal-Sag Channel Junction* and the Average Congener Profile for CSSC Sites.**

## A.6 Porewater Congener Profiles for CSSC and Cal-Sag Channel

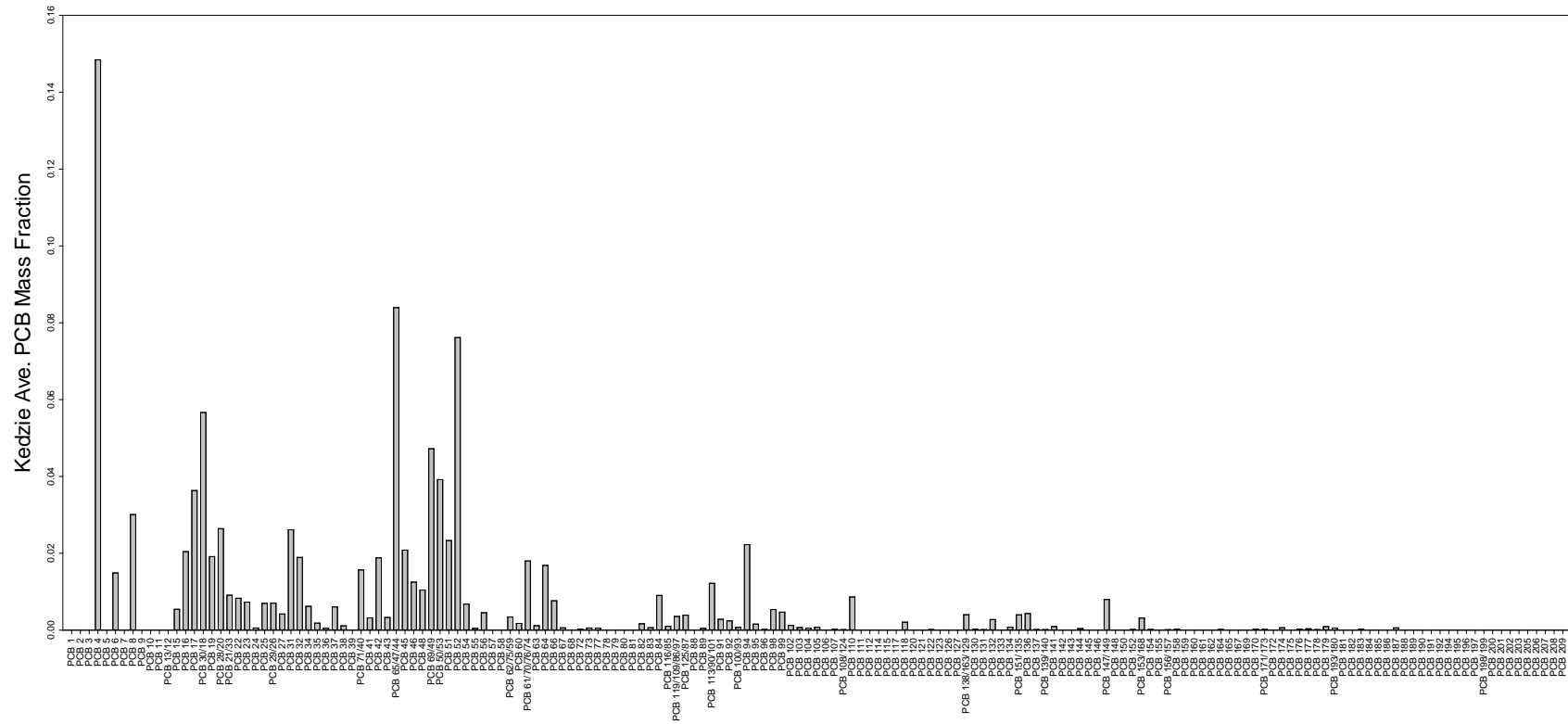


Figure A-29. Porewater: *Kedzie Ave.* Congener Profile

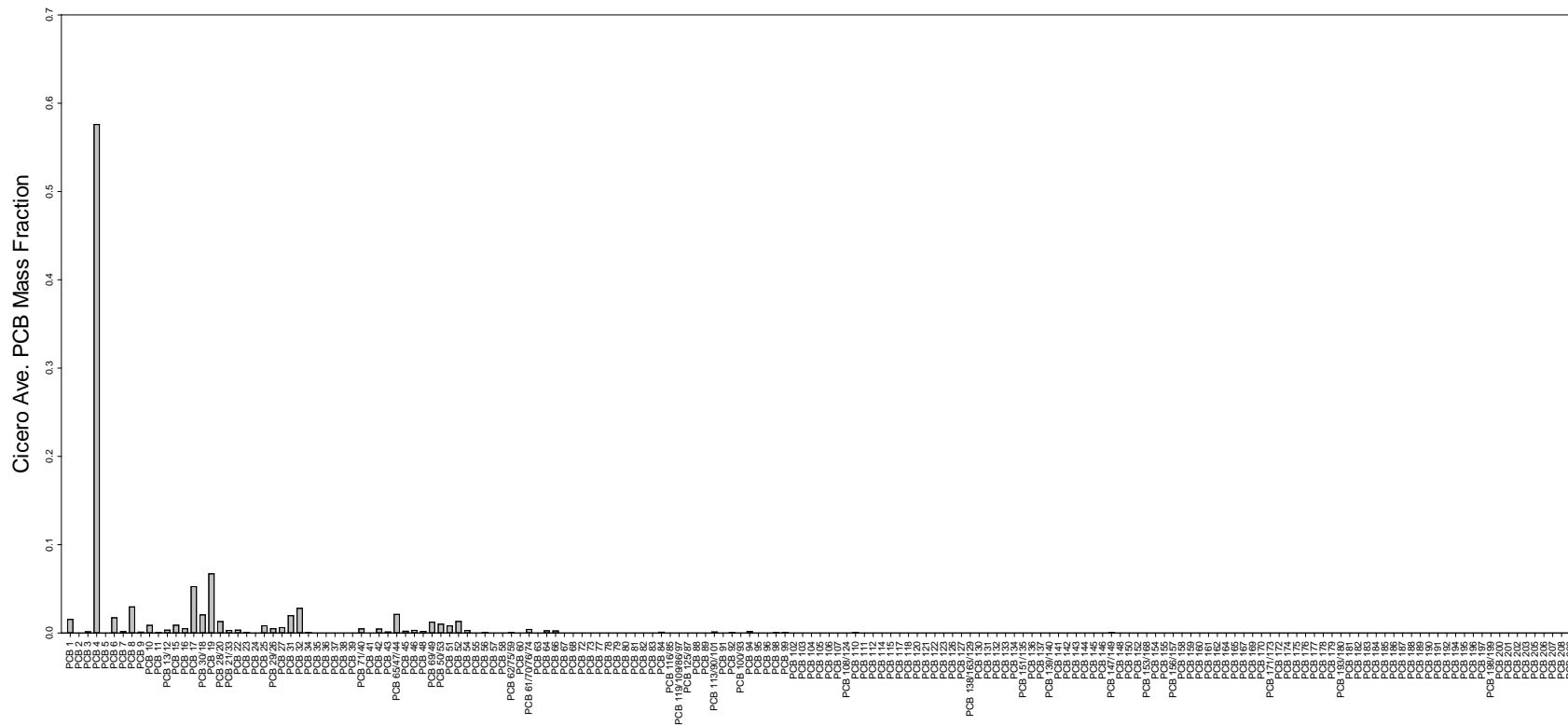


Figure A-30. Porewater: Cicero Ave. Congener Profile

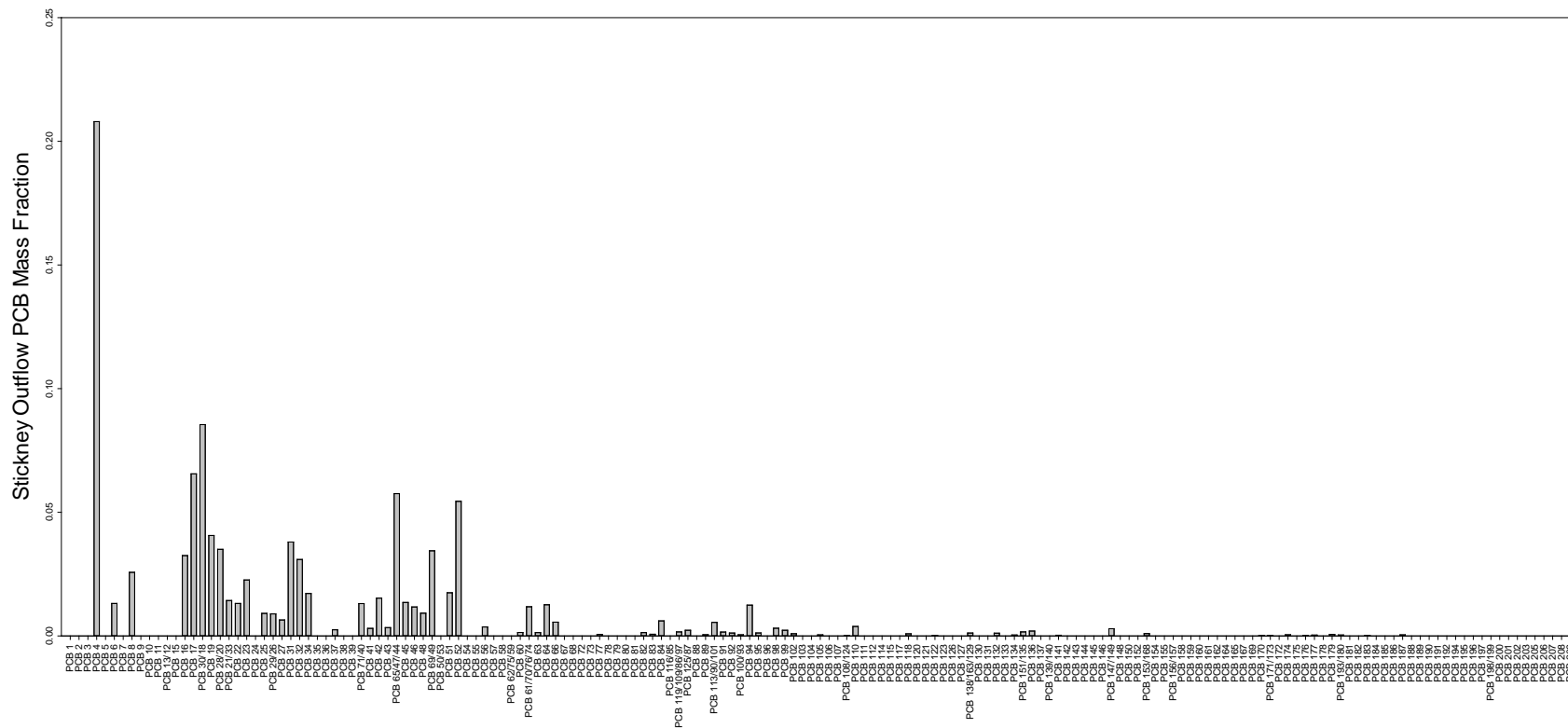


Figure A-31. Porewater: *Stickney Outflow* Congener Profile

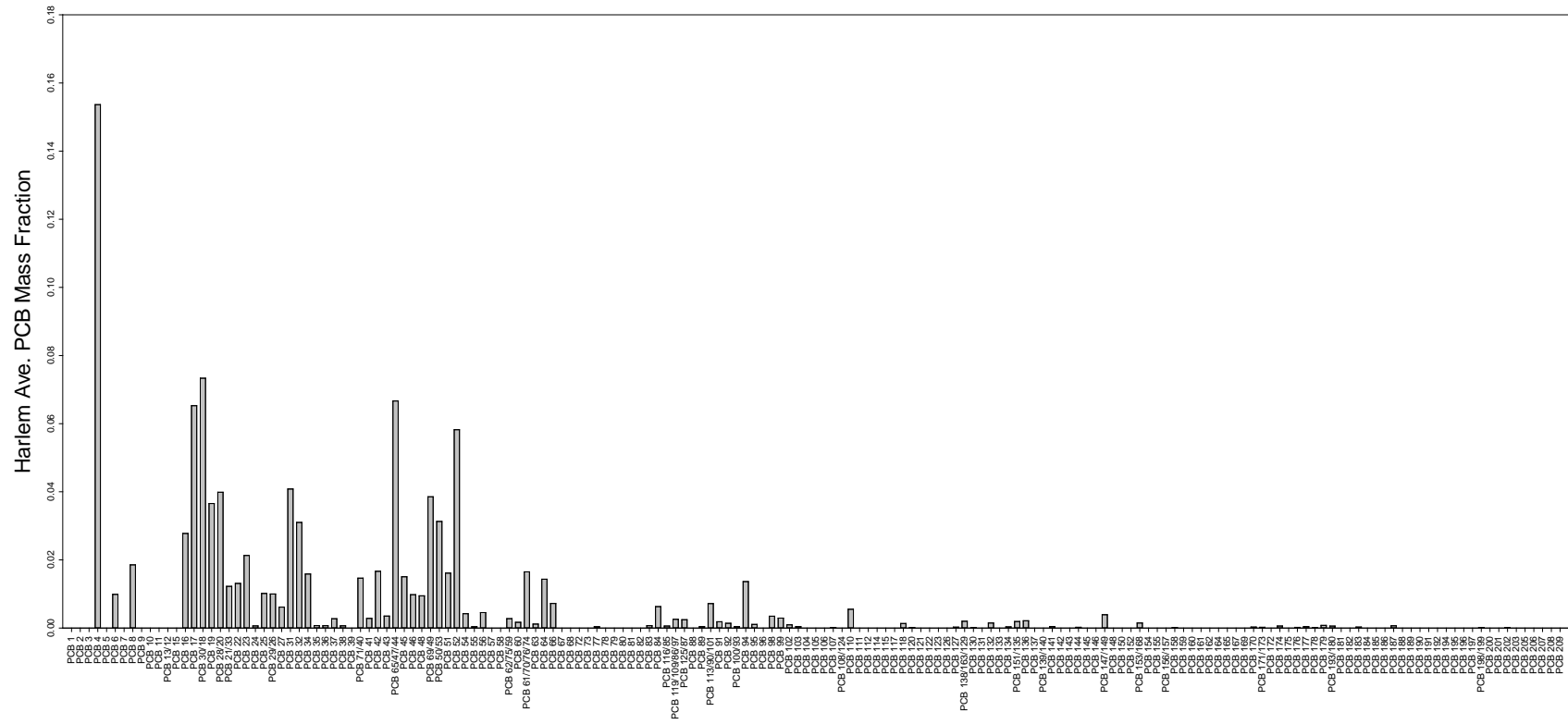


Figure A-32. Porewater: *Harlem Ave.* Congener Profile

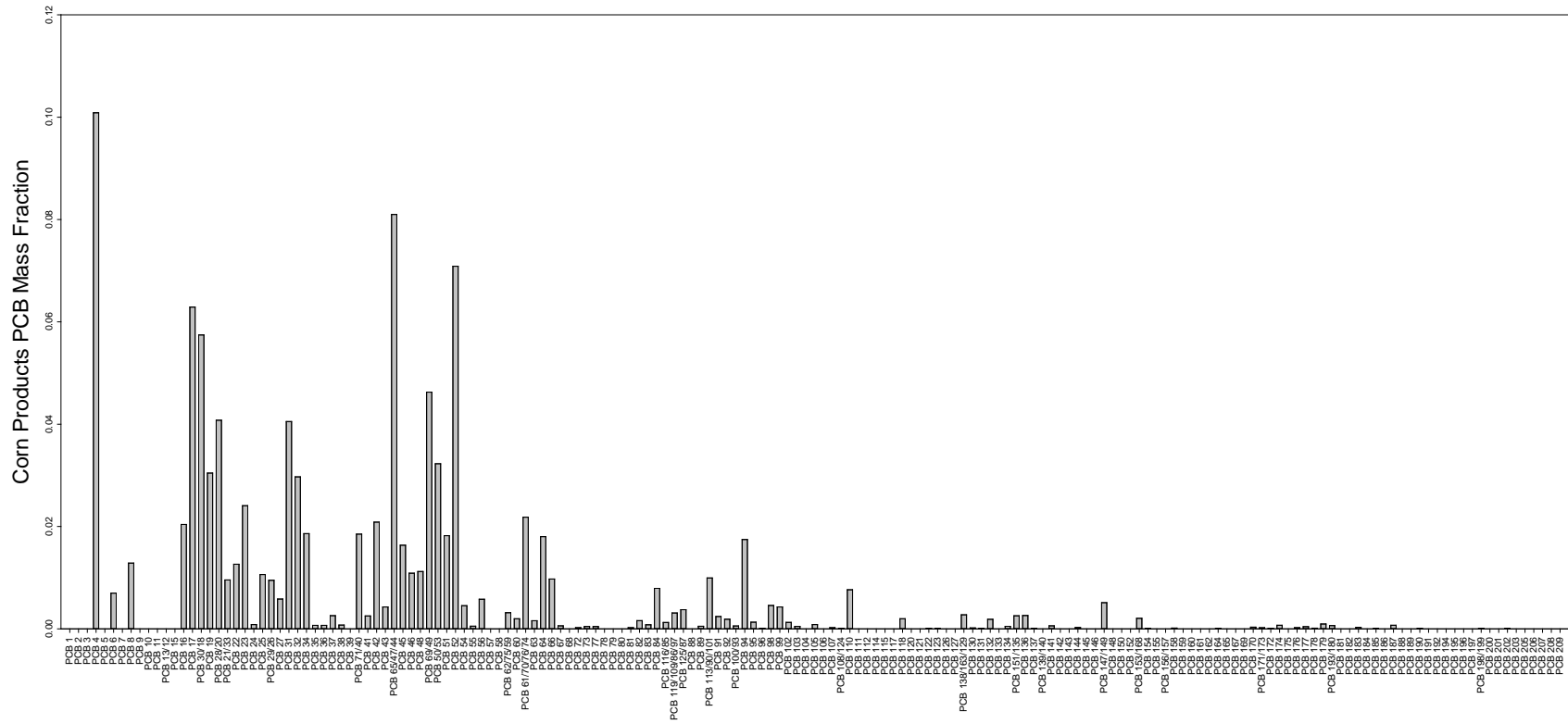


Figure A-33. Porewater: *Corn Products* Congener Profile



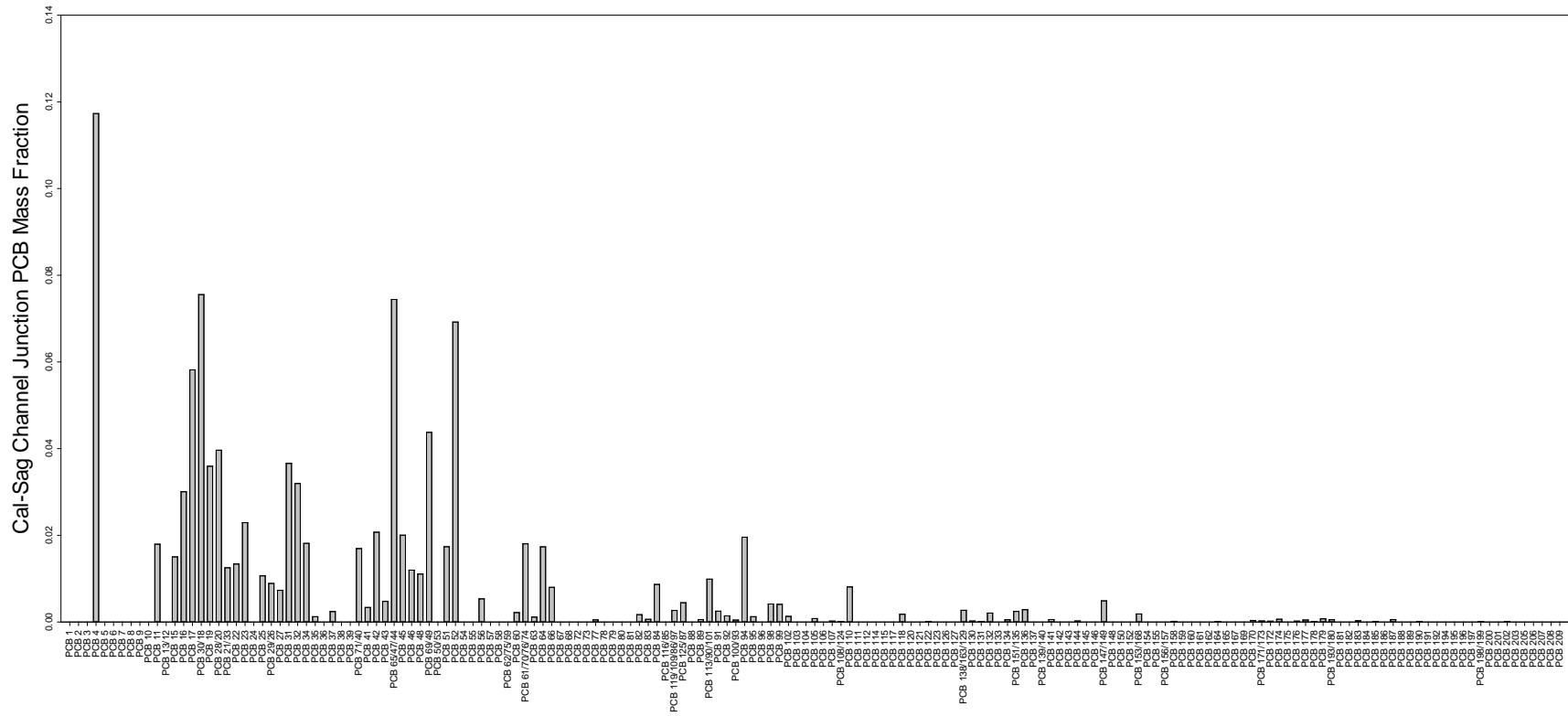


Figure A-34. Porewater: Cal-Sag Channel Junction Congener Profile

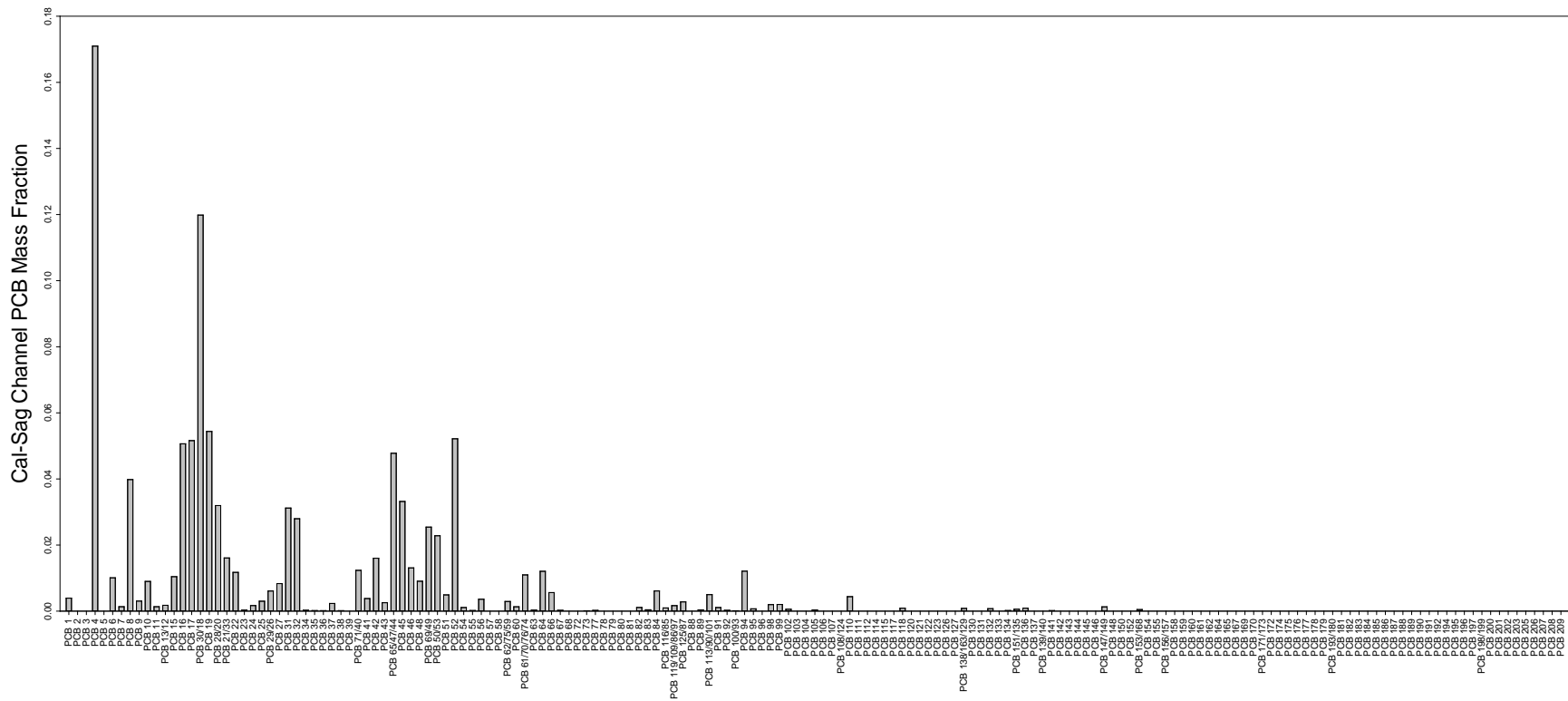


Figure A-35. Porewater: *Cal-Sag Channel* Congener Profile

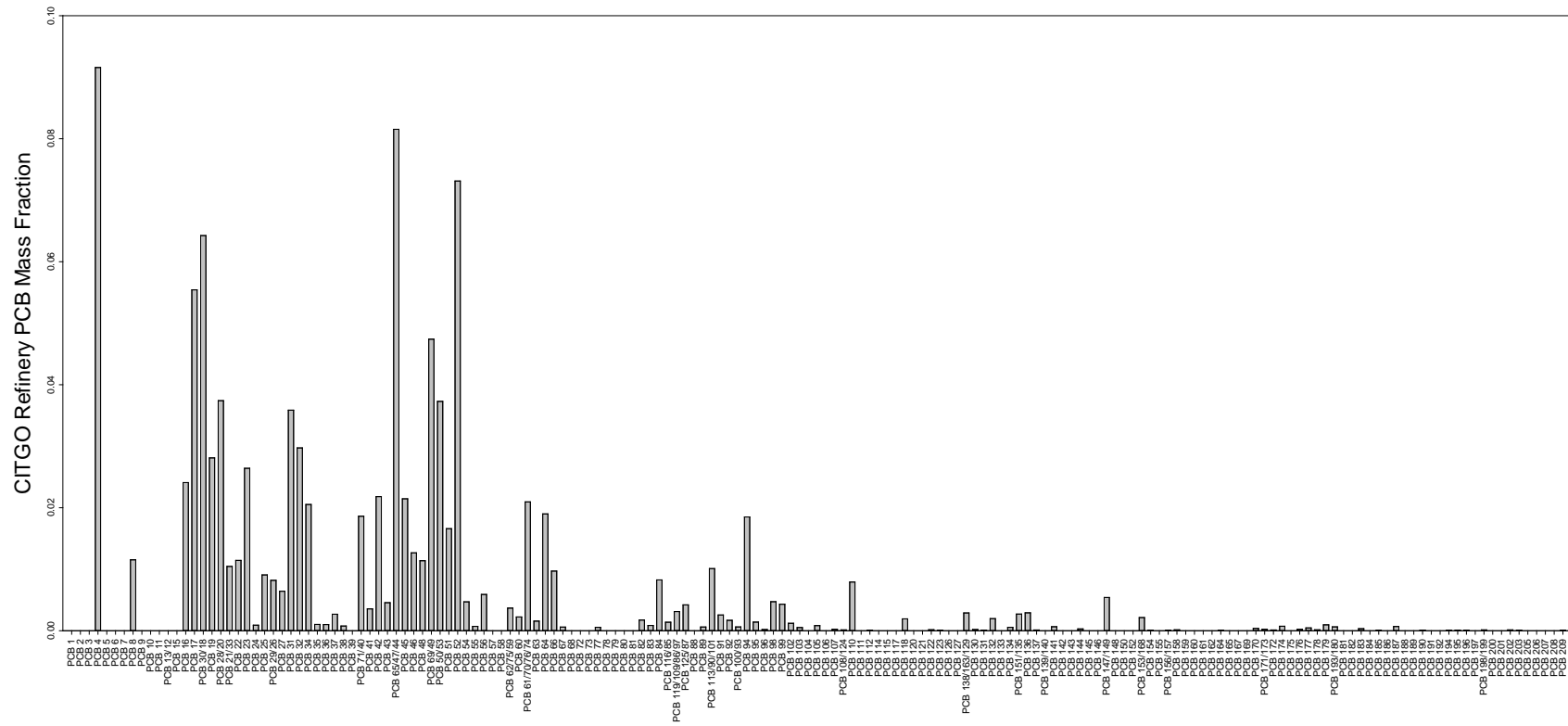


Figure A-36. Porewater: Citgo Refinery Congener Profile

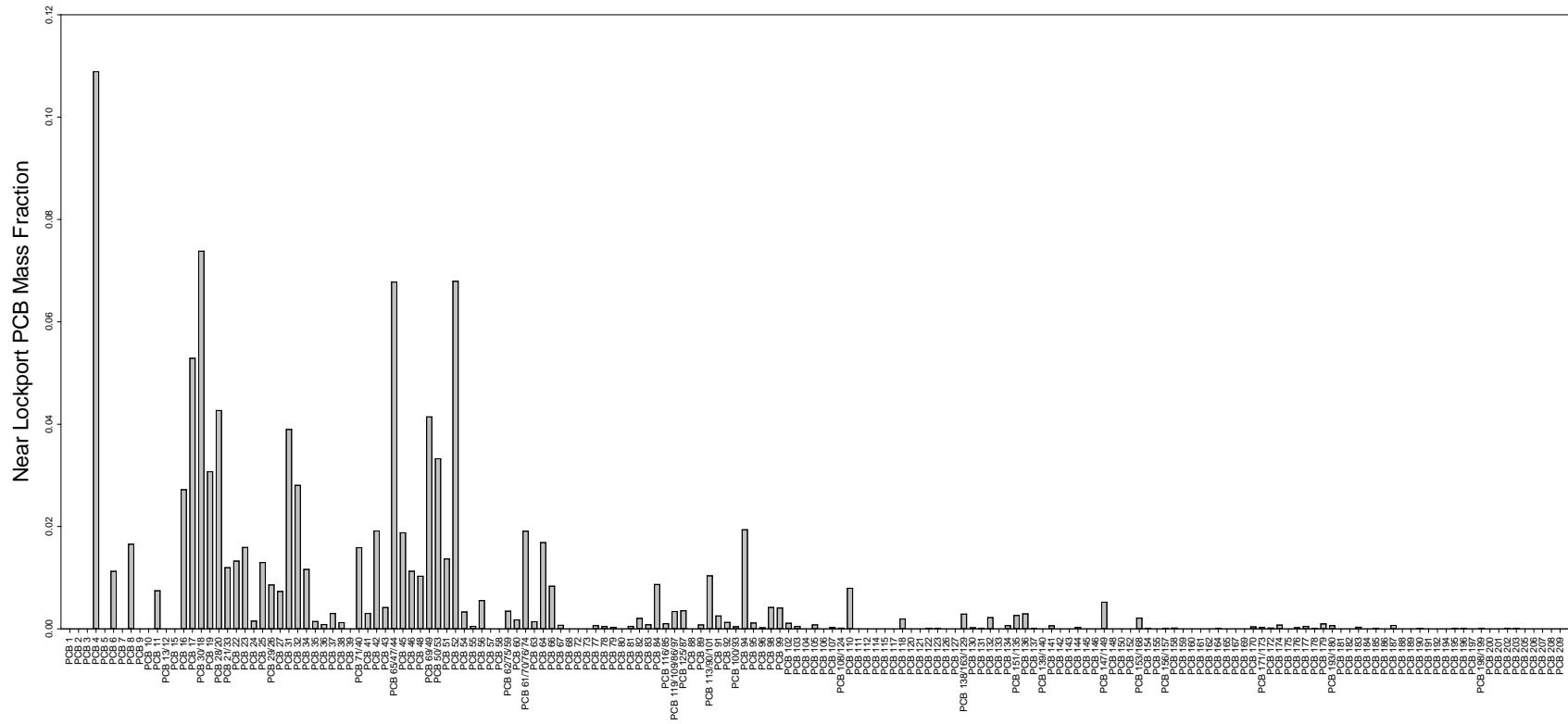
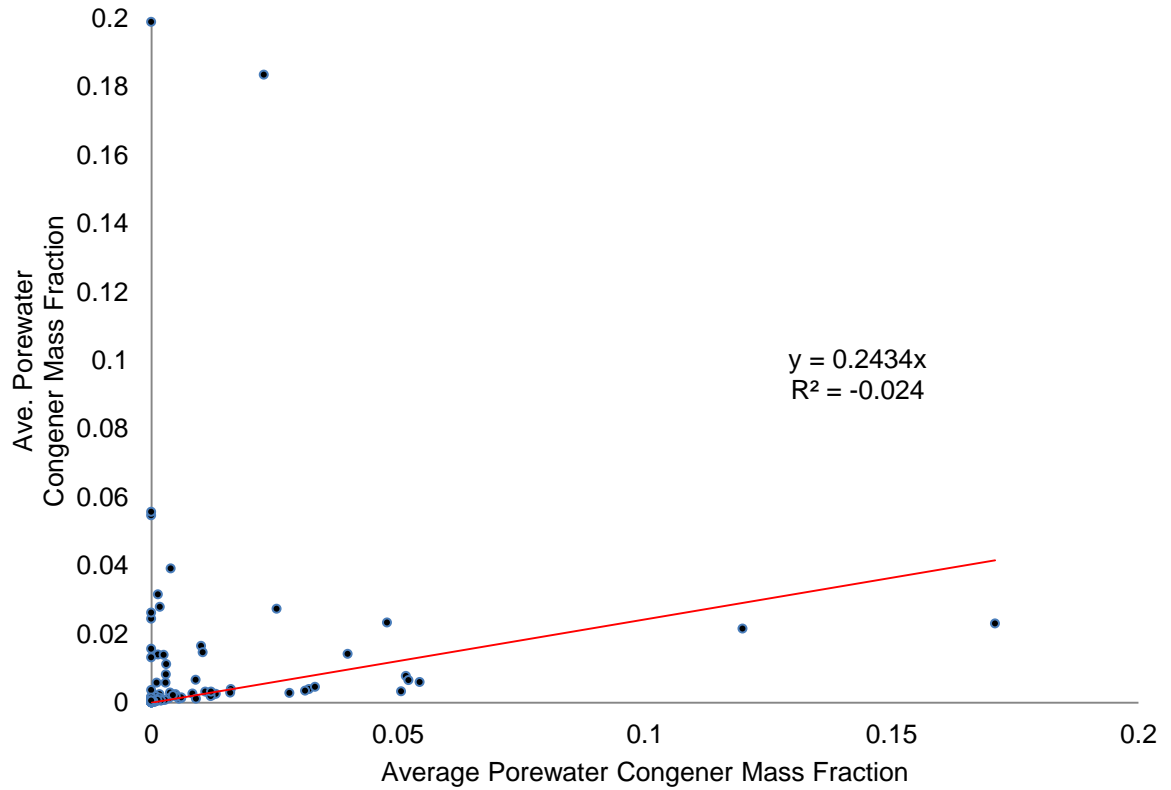


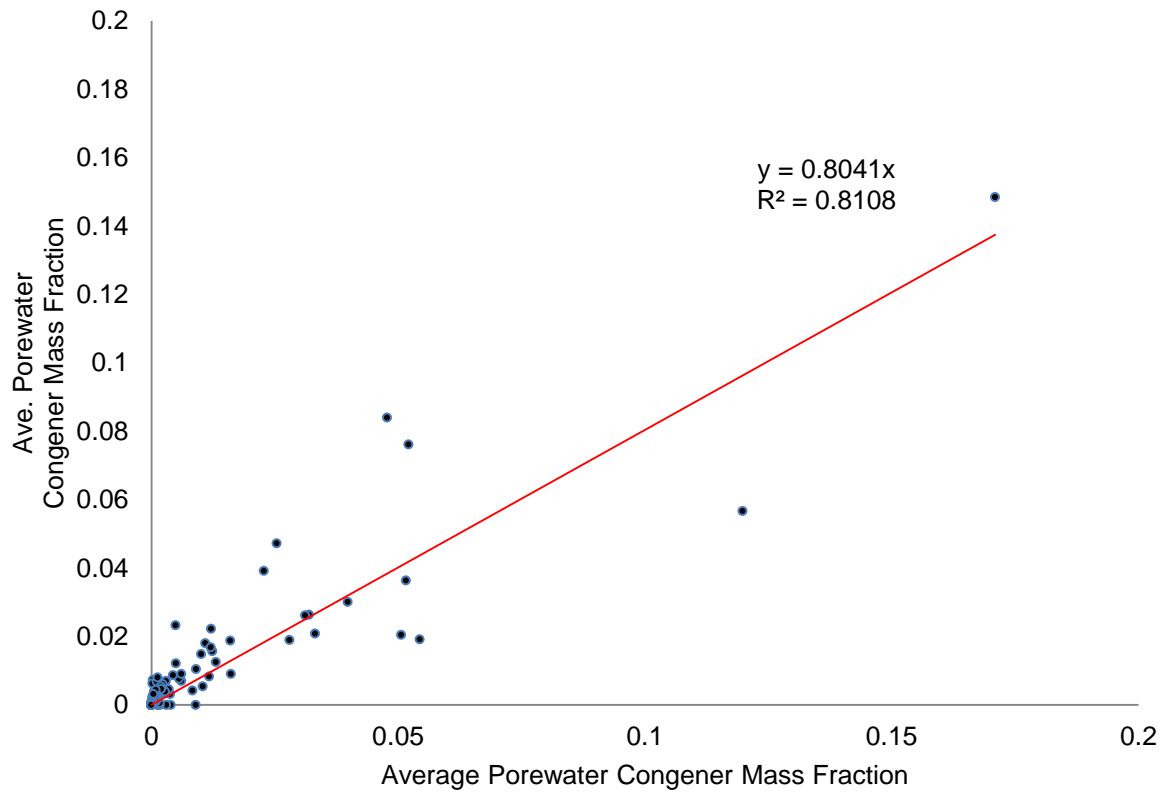
Figure A-37. Porewater: *Near Lockport* Congener Profile



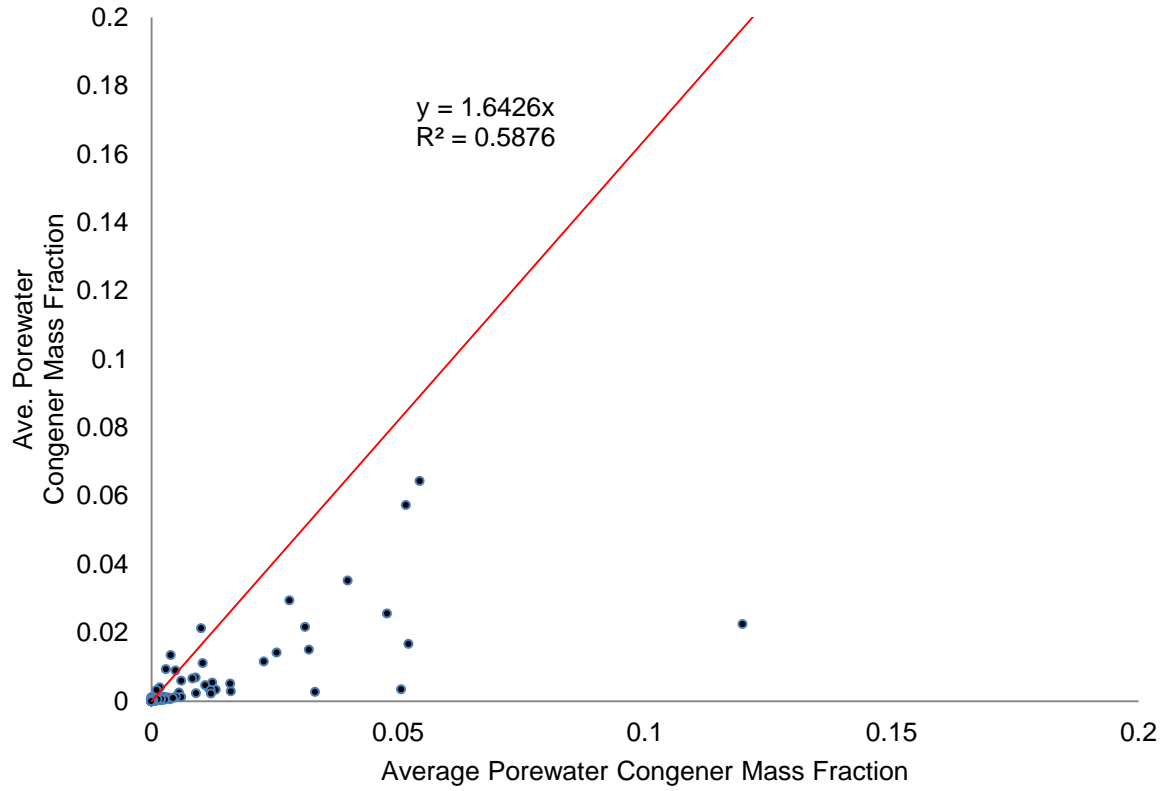
## A.7 Site PCBs Mass Fraction Correlations in the Sediment-Porewater



**Figure A-39. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Kedzie Ave.* and the Average Congener Profile for CSSC Sites.**

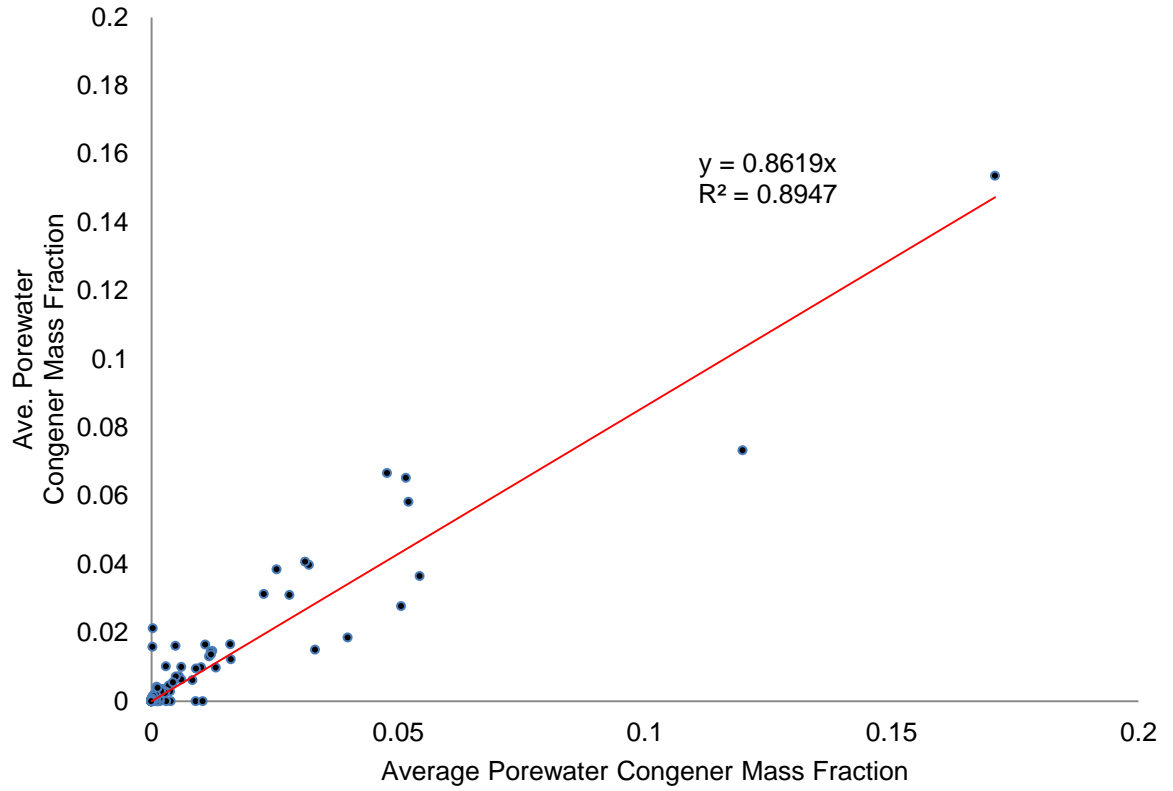


**Figure A-40. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Cicero Ave.* and the Average Congener Profile for CSSC Sites.**

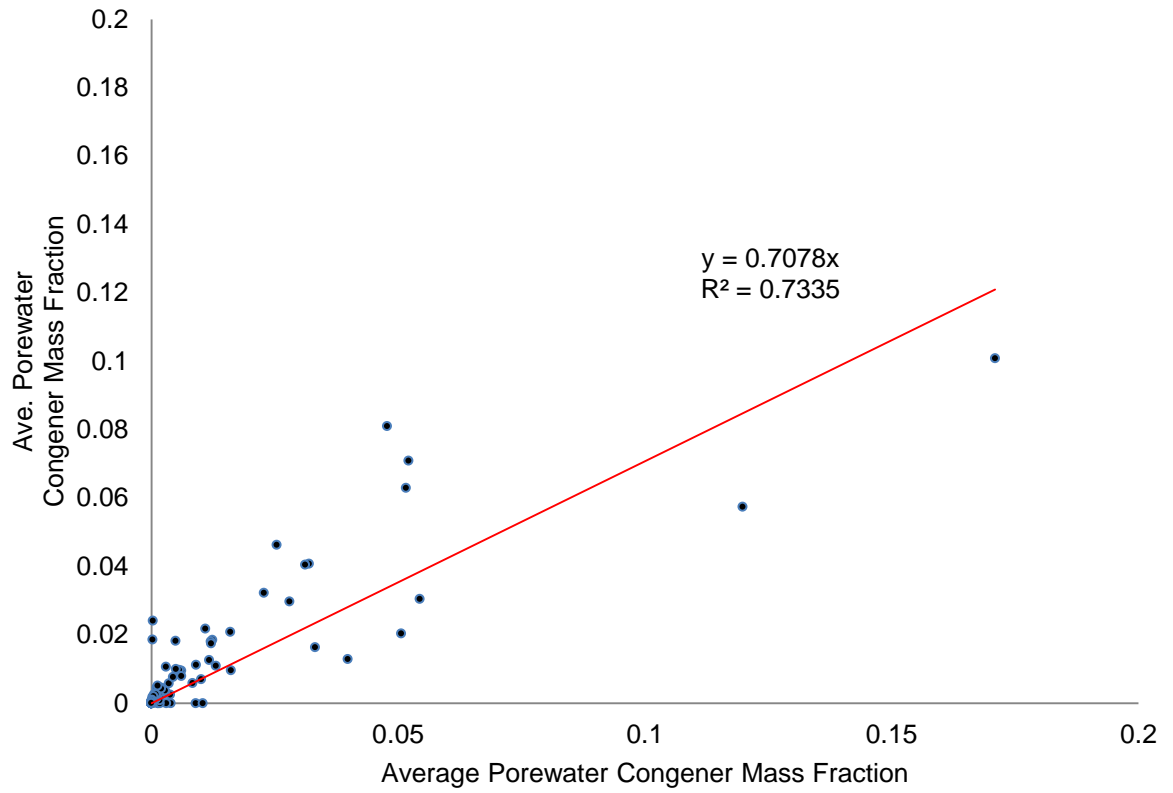


**Figure A-41. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Stickney Outflow* and the Average Congener Profile for CSSC Sites.**

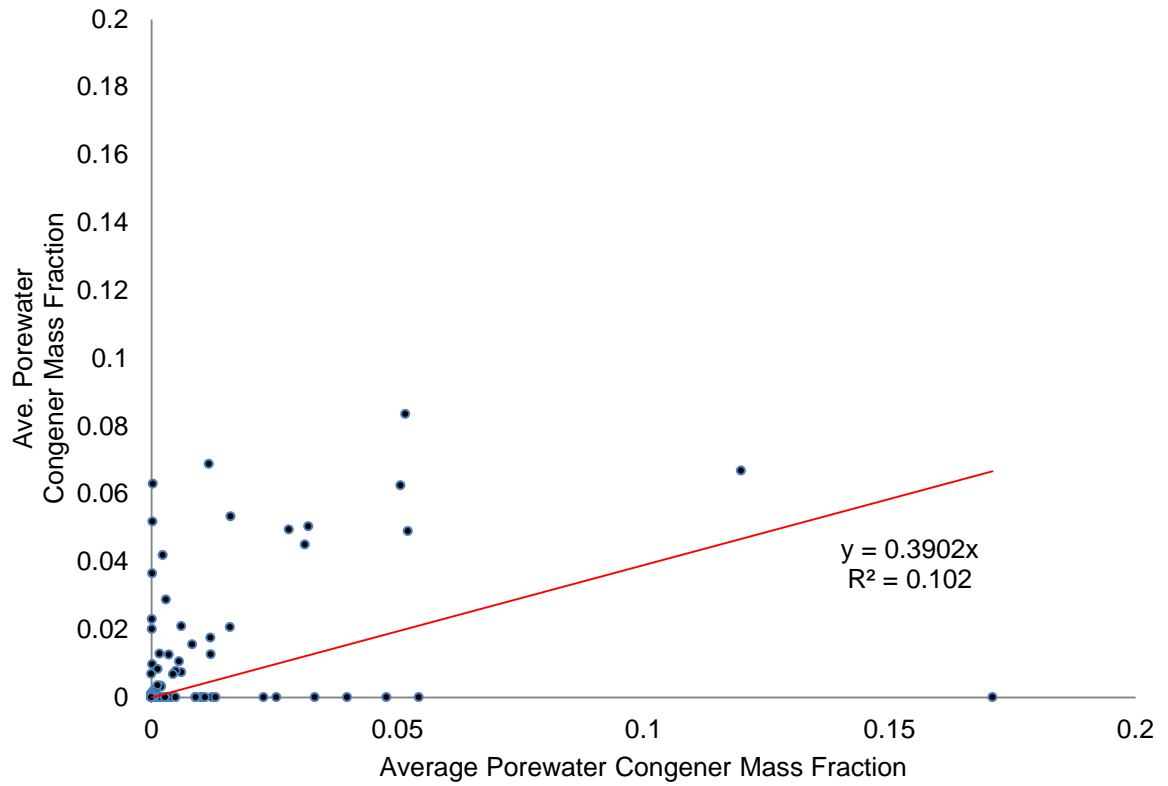




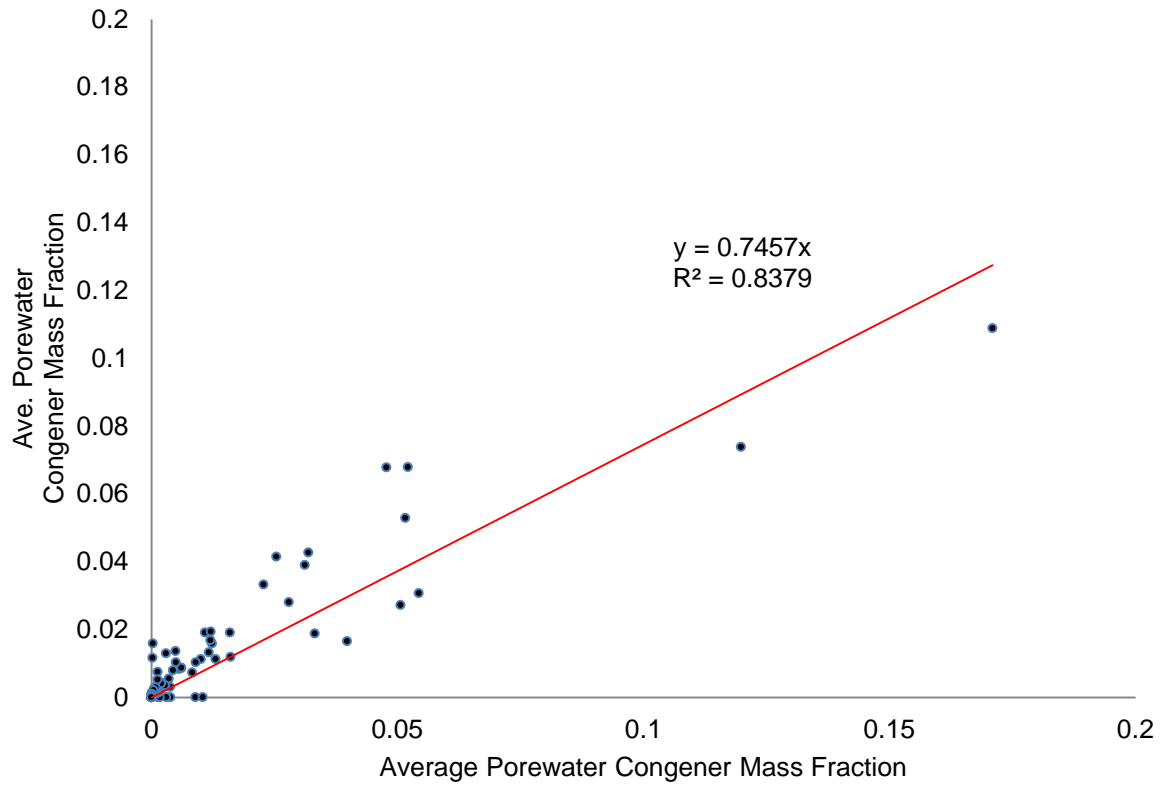
**Figure A-42. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Corn Products* and the Average Congener Profile for CSSC Sites.**



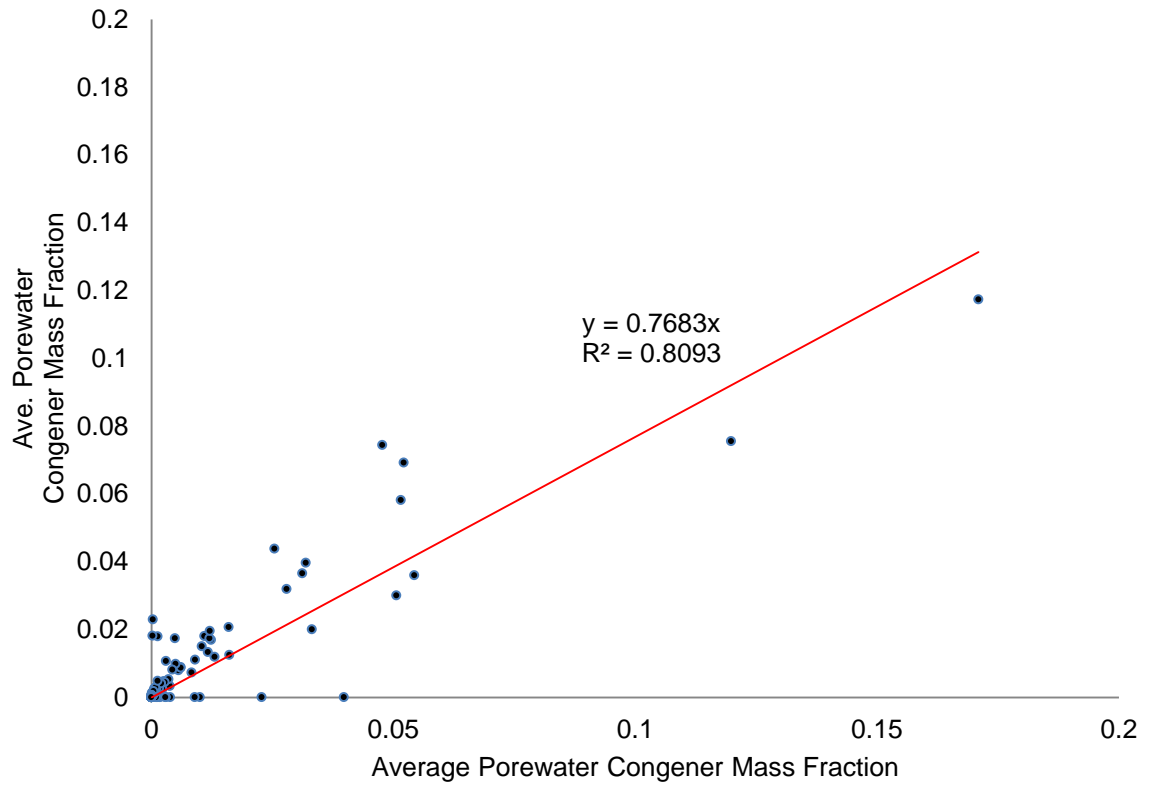
**Figure A-43. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Lockport* and the Average Congener Profile for CSSC Sites.**



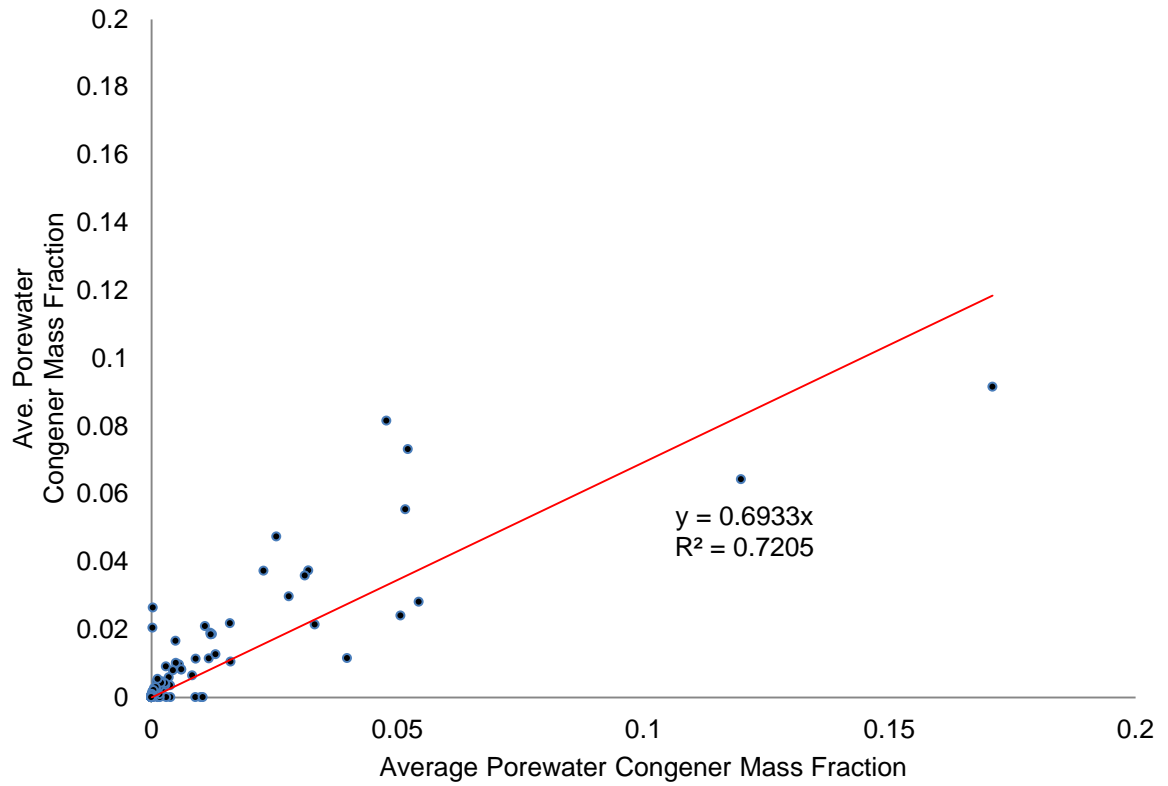
**Figure A-44. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Near Lockport* and the Average Congener Profile for CSSC Sites.**



**Figure A-45. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *CITGO* and the Average Congener Profile for CSSC Sites.**



**Figure A-46. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Cal-Sag Channel* and the Average Congener Profile for CSSC Sites.**



**Figure A-47. Congener Mass Fraction Comparison: Determining the Similarity Between the Congener Profile of CSSC Site *Cal-Sag Channel Junction* and the Average Congener Profile for CSSC Sites.**

## A.8 Raw Data: Bulk Sediment Masses and Sediment-Porewater Concentrations

### A.8.1 Mass of PCBs in the SRM and Blank Study

Batch Sample ID:	COB10_SRM04_Blank01_08 0714	COB10_SRM04_Blank02_08 0714
<b>Location</b>		
mass (g) of sediment (Dry weight)		
Surrogate Recovery - Percent		
PCB 14	32%	25%
D 65	29%	29%
PCB 166	57%	60%
Species	mass (ng)	mass (ng)
PCB 1	0.020546625	0.040034336
PCB 2	0.0040404	0.003405092
PCB 3	0.012961786	0.015259215
PCB 4	0.022815643	0.036157146
PCB 5	0.00163205	0.002211224
PCB 6	0.003737963	0.003817091
PCB 7	0.003334487	0.006777936
PCB 8	0.010204246	0.013996867
PCB 9	0.002645066	0.002904211
PCB 10	0.03179727	0.045017572
PCB 11	0.056739248	0.02832724
PCB 13/12	0.024521486	0.018957779
PCB 15	0.022794912	0.037941621
PCB 16	0.012360414	0.00747432
PCB 17	0.046654287	0.051206028
PCB 30/18	0.021376479	0.02612242
PCB 19	0.002691413	0.002117401
PCB 28/20	0.000435372	0.00049451
PCB 21/33	0.027976045	0.014276175
PCB 22	0.102453018	0.022537192

PCB 23	0.000552215	0.000303049
PCB 24	0.000290804	0.000431419
PCB 25	0.015399362	0.010328088
PCB 29/26	0.011794829	0.010603865
PCB 27	0.051611302	0.04846374
PCB 31	0.051887154	0.059546635
PCB 32	0.020808873	0.033214041
PCB 34	0.021426278	0.019855431
PCB 35	0.000698016	0.00142778
PCB 36	0.000797471	0.000737724
PCB 37	0.000347409	0.000386546
PCB 38	0.000184846	0.000799828
PCB 39	0.006600915	0.007228577
PCB 71/40	0.001968112	0.000217179
PCB 41	0.33345032	0.365074214
PCB 42	0.010734156	0.008406069
PCB 43	0.003541593	0.002868179
PCB 65/47/44	0.002482938	0.001884282
PCB 45	0.36438645	0.198214127
PCB 46	0.001963598	0.00548284
PCB 48	0.001812432	0.005158795
PCB 69/49	0.17315259	0.141694694
PCB 50/53	0.001677612	0.004954645
PCB 51	0.661749036	0.14558296
PCB 52	0.025085495	0.026024934
PCB 54	0.023465079	0.005609345
PCB 55	0.002824671	0.000979528
PCB 56	0.021754677	0.013194996
PCB 57	0.055925499	0.01626678
PCB 58	0.000485219	0.000261768
PCB 62/75/59	0.023858612	0.025393489
PCB 60	0.000789942	0.000591696
PCB 61/70/76/74	0.000203452	0.00063497
PCB 63	0.000245344	0.000518331
PCB 64	0.000632362	0.003920118



PCB 66	0.241062381	0.199948179
PCB 67	0.055479358	0.049471152
PCB 68	0.004991113	0.009380522
PCB 72	0.026595537	0.017073348
PCB 73	0.011936294	0.008088174
PCB 77	0.000258452	0.000861935
PCB 78	0.002051861	0.000773482
PCB 79	0.000517017	0.000908781
PCB 80	0.000171051	0.000499147
PCB 81	0.001745997	0.000555979
PCB 82	0.00541952	0.00561916
PCB 83	0.00189199	0.000491541
PCB 84	0.008376147	0.006098802
PCB 116/85	0.000350314	0.001082392
PCB 119/109/86/97	0.343432695	0.273143216
PCB 125/87	0.002663302	0.002633281
PCB 88	0.004394422	0.004220899
PCB 89	0.001516439	0.00166594
PCB 113/90/101	0.022980072	0.026183161
PCB 91	0.024110194	0.01398595
PCB 92	0.099186461	0.095935307
PCB 100/93	8.37034E-05	0.000842925
PCB 94	0.000152344	0.000418409
PCB 95	0.060584745	0.038032907
PCB 96	0.339453123	0.263861921
PCB 98	0.011503841	0.010467421
PCB 99	0.106611473	0.100591016
PCB 102	0.002550761	0.000836487
PCB 103	0.070636848	0.074565096
PCB 104	0.145208206	0.130065606
PCB 105	0.164012446	0.236724888
PCB 106	0.067647774	0.032937521
PCB 107	0.256514948	0.267523656
PCB 108/124	0.032450207	0.034124882
PCB 110	0.018612967	0.015040528

PCB 111	0.000182781	0.000677703
PCB 112	5.51241E-05	0.000883146
PCB 114	0.005419866	0.005918012
PCB 115	0.003539228	0.004646551
PCB 117	0.003266029	0.005775231
PCB 118	0.000190662	0.000602194
PCB 120	0.116557445	0.108498582
PCB 121	0.001373149	0.001530385
PCB 122	0.006360519	0.006557261
PCB 123	0.032132834	0.028638172
PCB 126	0.00028409	0.000210066
PCB 127	0.346271888	0.362693863
PCB 138/163/129	0.000766074	0.001111004
PCB 130	7.13394E-05	0.000349179
PCB 131	0.00021773	2.63136E-05
PCB 132	0.021744282	0.019466858
PCB 133	0.000166541	0.000211336
PCB 134	3.21705E-05	6.12354E-05
PCB 151/135	0.032124613	0.03446481
PCB 136	0.000591653	0.000341269
PCB 137	0.002726713	0.003498361
PCB 139/140	0.068120276	0.072994492
PCB 141	0.001182007	0.003317166
PCB 142	0.000805945	0.000391681
PCB 143	0.000600075	0.001503922
PCB 144	0.000911676	0.001603874
PCB 145	0.000126756	0.000459573
PCB 146	0.024293772	0.022249699
PCB 147/149	0.000349531	0.000418905
PCB 148	0.000148613	1.45066E-05
PCB 150	0.004021072	0.00661108
PCB 152	0.00021504	2.72881E-05
PCB 153/168	0.036996788	0.043521434
PCB 154	0.009603631	0.003031532
PCB 155	0.001200527	0.000924052

PCB 156/157	0.001946981	0.00015322
PCB 158	0.00117528	0.000144329
PCB 159	0.045591966	0.040430792
PCB 160	0.000498978	0
PCB 161	0.003352827	0.000399354
PCB 162	0.000410943	0.001012278
PCB 164	0.000486457	0.001202945
PCB 165	0.000558132	0.000386321
PCB 167	0.001266553	0.000340926
PCB 169	0.000510483	0.000152421
PCB 170	0.001835651	0.002329394
PCB 171/173	0.008071864	0.006572861
PCB 172	0.016709374	0.014220185
PCB 174	0.001736435	0.001451913
PCB 175	0.000285813	6.80043E-05
PCB 176	0.00031774	0.002217622
PCB 177	0.000246994	0.000598365
PCB 178	0.012433996	0.009016239
PCB 179	0.009781239	0.009368148
PCB 193/180	0.005884359	0.005262649
PCB 181	0.000663981	0.002469616
PCB 182	0.008413704	0.009156216
PCB 183	0.003951855	0.002984376
PCB 184	0.001848843	0.00151851
PCB 185	0.002037035	0.003048909
PCB 186	0.005789242	0.001738793
PCB 187	0.00211118	0.001481469
PCB 188	0.010302469	0.010767187
PCB 189	0.002171219	0.001801285
PCB 190	0.005288899	0.000969344
PCB 191	0.020707197	0.018015913
PCB 192	0.001738272	0.003275535
PCB 194	0.009485564	0.007880061
PCB 195	0.000413256	0.000517419
PCB 196	0.009564091	0.032229221



PCB 15	0.010216726	0.018531542
PCB 16	0.016782413	0.018405557
PCB 17	0.063345089	0.046117374
PCB 30/18	0.02902402	0.022343927
PCB 19	0.00365428	0.002002905
PCB 28/20	0.000646546	7.96382E-05
PCB 21/33	0.037984614	0.030818231
PCB 22	0.139106092	0.141057383
PCB 23	0.000749773	0.000777118
PCB 24	0.000394841	0.000555823
PCB 25	0.02090856	0.007898684
PCB 29/26	0.005538689	0.005927965
PCB 27	0.070075501	0.038793042
PCB 31	0.07045004	0.046675898
PCB 32	0.02825335	0.027257288
PCB 34	0.029091635	0.017891406
PCB 35	0.000947734	0.002791075
PCB 36	0.00108277	0.000942788
PCB 37	0.000471697	0.002635303
PCB 38	0.000250976	0.001300961
PCB 39	0.008962425	0.008227794
PCB 71/40	0.001968112	0.000410719
PCB 41	0.33345032	0.286451635
PCB 42	0.010734156	0.003710592
PCB 43	0.003541593	0.004377653
PCB 65/47/44	0.000751416	0.001718099
PCB 45	0.36438645	0.206702772
PCB 46	0.001963598	0.005991855
PCB 48	0.001812432	0.004364556
PCB 69/49	0.17315259	0.129126091
PCB 50/53	0.001677612	0.007743669
PCB 51	0.661749036	0.24733519
PCB 52	0.00651192	0.017614193
PCB 54	0.01043555	0.012292262
PCB 55	0.002824671	0.003056522

PCB 56	0.021754677	0.021796396
PCB 57	0.055925499	0.037144087
PCB 58	0.000485219	0.000877577
PCB 62/75/59	0.023858612	0.020929544
PCB 60	0.000789942	0.000711023
PCB 61/70/76/74	0.000203452	0.000708486
PCB 63	0.000245344	0.001641906
PCB 64	0.000632362	0.002087991
PCB 66	0.241062381	0.151237731
PCB 67	0.055479358	0.042837128
PCB 68	0.004991113	0.002236561
PCB 72	0.026595537	0.014320997
PCB 73	0.011936294	0.008410241
PCB 77	0.000258452	0.000886939
PCB 78	0.000865	0.001162381
PCB 79	0.000517017	0.001235275
PCB 80	0.000171051	0.000180464
PCB 81	0.000809738	0.002562889
PCB 82	0.00541952	0.002538597
PCB 83	0.00189199	0.001195172
PCB 84	0.006627281	0.007649335
PCB 116/85	0.000175157	0.000341161
PCB 119/109/86/97	0.343432695	0.219498343
PCB 125/87	0.00053266	0.001763727
PCB 88	0.001128622	0.002151496
PCB 89	0.000707672	0.002931758
PCB 113/90/101	0.022980072	0.006883276
PCB 91	0.024110194	0.021388418
PCB 92	0.099186461	0.065739587
PCB 100/93	8.37034E-05	0.000561558
PCB 94	0.000152344	7.69294E-05
PCB 95	0.060584745	0.034184986
PCB 96	0.339453123	0.20100872
PCB 98	0.011503841	0.007377765
PCB 99	0.106611473	0.069328528

PCB 102	0.002550761	0.001285313
PCB 103	0.070636848	0.052396839
PCB 104	0.145208206	0.080214117
PCB 105	0.164012446	0.156438655
PCB 106	0.067647774	0.043447041
PCB 107	0.256514948	0.169303267
PCB 108/124	0.032450207	0.02328595
PCB 110	0.018612967	0.018793309
PCB 111	0.000182781	0.00032041
PCB 112	5.51241E-05	0.000787363
PCB 114	0.005419866	0.002443638
PCB 115	0.003539228	0.004040154
PCB 117	0.003266029	0.002977363
PCB 118	0.000190662	7.42723E-05
PCB 120	0.116557445	0.070375178
PCB 121	0.001373149	0.000969037
PCB 122	0.006360519	0.004940935
PCB 123	0.032132834	0.018306003
PCB 126	0.00028409	0.000567523
PCB 127	0.346271888	0.302836062
PCB 138/163/129	0.000766074	0.001268441
PCB 130	7.13394E-05	7.67023E-05
PCB 131	0.00021773	0.000210688
PCB 132	0.021744282	0.015782638
PCB 133	0.000166541	0.000451232
PCB 134	3.21705E-05	2.42122E-05
PCB 151/135	0.032124613	0.022250285
PCB 136	0.000591653	0.000202405
PCB 137	0.002726713	0.003639507
PCB 139/140	0.068120276	0.05391611
PCB 141	0.001182007	0.003250476
PCB 142	0.000805945	0.000425891
PCB 143	0.000600075	0.001095201
PCB 144	0.000911676	4.67828E-05
PCB 145	0.000126756	0.000245313

PCB 146	0.024293772	0.018794148
PCB 147/149	0.000349531	0.000394597
PCB 148	0.000148613	2.58113E-05
PCB 150	0.004021072	0.00181139
PCB 152	0.00021504	0.001901668
PCB 153/168	0.036996788	0.033334325
PCB 154	0.009603631	0.006976183
PCB 155	0.001200527	0.00149603
PCB 156/157	0.001946981	0.001556214
PCB 158	0.00117528	0.002016373
PCB 159	0.045591966	0.036650572
PCB 160	0.000498978	0.000315796
PCB 161	0.003352827	0.003425279
PCB 162	0.000410943	0.000664053
PCB 164	0.000486457	0.001004477
PCB 165	0.000558132	0.000238672
PCB 167	0.001266553	0.000385146
PCB 169	0.000510483	0.0002712
PCB 170	0.001835651	0.003355195
PCB 171/173	0.008071864	0.005402252
PCB 172	0.016709374	0.014026512
PCB 174	0.001736435	0.000810467
PCB 175	0.000285813	0.000766326
PCB 176	0.00031774	0.00207253
PCB 177	0.000246994	0.000371786
PCB 178	0.012433996	0.01177648
PCB 179	0.009781239	0.01134585
PCB 193/180	0.005884359	0.004594961
PCB 181	0.000663981	0.001197621
PCB 182	0.008413704	0.008199376
PCB 183	0.003951855	0.00436535
PCB 184	0.001848843	0.001195136
PCB 185	0.002037035	0.002786144
PCB 186	0.005789242	0.004176637
PCB 187	0.00211118	0.00183384



PCB 188	0.010302469	0.010663828
PCB 189	0.002171219	0.001864841
PCB 190	0.005288899	0.003074322
PCB 191	0.020707197	0.020221568
PCB 192	0.001738272	0.000463798
PCB 194	0.009485564	0.010080075
PCB 195	0.000413256	0.00099528
PCB 196	0.009564091	0.031369734
PCB 197	0.003263301	0.016947522
PCB 198/199	0.016719471	0.010920991
PCB 200	0.002212514	0.007251387
PCB 201	0.015326395	0.014491368
PCB 202	0.004543268	0.007597676
PCB 203	0.003182037	0.005830648
PCB 205	0.001742715	0.001884637
PCB 206	0.00295708	0.002678732
PCB 207	0.005038128	0.004473231
PCB 208	0.013463642	0.016210845
PCB 209	0.341314105	0.314378847
Sum of mass of PCBs	5.49	3.86

<b>Batch Sample ID:</b>	<b>COB10_SRM04_Bulk01_080 714</b>	<b>COB10_SRM04_Bulk02_080 714</b>
Location		
mass (g) of sediment (Dry weight)	0.704	0.72
Surrogate Recovery - Percent		
PCB 14	76%	89%
D 65	74%	90%
PCB 166	110%	133%
Species	mass (ng)	mass (ng)
PCB 1	1.164873303	1.04792357
PCB 2	0.343561801	0.311859466
PCB 3	1.772175652	1.727493929
PCB 4	5.652259542	5.086616831

PCB 5	0.270886719	0.250662496
PCB 6	0.790998935	0.726713463
PCB 7	0.598387544	0.562124417
PCB 8	3.106393404	2.847847967
PCB 9	0.293482297	0.267947409
PCB 10	12.38633936	11.39511806
PCB 11	17.7923527	10.56523609
PCB 13/12	3.007349933	2.885237724
PCB 15	15.70073222	15.20228082
PCB 16	2.657033253	2.50245302
PCB 17	25.71932299	23.61773558
PCB 30/18	14.83539817	13.3719995
PCB 19	2.469261332	2.214464026
PCB 28/20	0.329568988	0.36589275
PCB 21/33	12.87208902	12.90176779
PCB 22	14.04856998	29.83922866
PCB 23	0.219809846	0.418915402
PCB 24	0.054180234	0.114403642
PCB 25	9.99644353	9.95193309
PCB 29/26	5.807214883	5.776088272
PCB 27	45.89780786	42.75021351
PCB 31	55.91494309	52.722862
PCB 32	21.34766734	21.25439027
PCB 34	16.87365449	17.33751093
PCB 35	0.132150013	0.204342616
PCB 36	0.163206477	0.232873003
PCB 37	0.089123145	0.168096836
PCB 38	2.167892815	2.215254605
PCB 39	17.9772687	17.19834269
PCB 71/40	0.08841805	0.086033702
PCB 41	5.871732577	5.561166888
PCB 42	6.113540591	6.05181986
PCB 43	1.94170637	1.539152595
PCB 65/47/44	2.479222157	2.354144744
PCB 45	45.92513593	44.57698498

PCB 46	0	0
PCB 48	1.780756464	1.659484778
PCB 69/49	28.41867256	26.51215421
PCB 50/53	8.623122589	8.03684275
PCB 51	41.63545225	39.35535505
PCB 52	3.866398785	3.585909506
PCB 54	13.53343737	12.6707406
PCB 55	3.232177121	2.84524653
PCB 56	18.82654911	17.37048099
PCB 57	19.84494766	18.20915517
PCB 58	0.329379455	0.276505783
PCB 62/75/59	0.17082824	0.159823919
PCB 60	0.200408027	0.175438004
PCB 61/70/76/74	0.100071395	0.084284898
PCB 63	1.094488493	0.964937469
PCB 64	1.150723905	1.01252454
PCB 66	46.67704785	41.82730165
PCB 67	23.88635359	21.33007245
PCB 68	0.358016079	0.2818278
PCB 72	18.11536268	14.72344978
PCB 73	0	0
PCB 77	7.815094162	7.182028649
PCB 78	0.178004292	0.196678797
PCB 79	0	0
PCB 80	0.189876484	0.214167844
PCB 81	5.874087206	6.767422541
PCB 82	0	0
PCB 83	0	0
PCB 84	0	0
PCB 116/85	0	0
PCB 119/109/86/97	20.4221778	21.85246021
PCB 125/87	0	0
PCB 88	0	0
PCB 89	0	0
PCB 113/90/101	0	0

PCB 91	0	0
PCB 92	0	0
PCB 100/93	0	0
PCB 94	0	0
PCB 95	0	0
PCB 96	34.92725945	15.99613542
PCB 98	0	0
PCB 99	16.63762729	14.06670766
PCB 102	0	0
PCB 103	0	0
PCB 104	14.75776499	38.63286361
PCB 105	0	0
PCB 106	0	0
PCB 107	40.20264766	41.77833294
PCB 108/124	0	0
PCB 110	0	0
PCB 111	0	0
PCB 112	0	0
PCB 114	0	0
PCB 115	0	0
PCB 117	0	0
PCB 118	0	0
PCB 120	31.19368763	30.42560568
PCB 121	0	0
PCB 122	0	0
PCB 123	12.9586342	12.63873018
PCB 126	0	0
PCB 127	0	0
PCB 138/163/129	0	0
PCB 130	0	0
PCB 131	0	0
PCB 132	0	0
PCB 133	0	0
PCB 134	0	0
PCB 151/135	9.630437309	10.29097448

PCB 136	0	0
PCB 137	0	0
PCB 139/140	23.9642848	25.6568875
PCB 141	0	0
PCB 142	0	0
PCB 143	0	0
PCB 144	0	0
PCB 145	0	0
PCB 146	0	0
PCB 147/149	0	0
PCB 148	0	0
PCB 150	0	0
PCB 152	0	0
PCB 153/168	25.98481078	26.70683468
PCB 154	0	0
PCB 155	0	0
PCB 156/157	0	0
PCB 158	2.017079049	2.27943743
PCB 159	33.4727397	36.15128862
PCB 160	0	0
PCB 161	0	0
PCB 162	0.038959675	0.052696595
PCB 164	0	0
PCB 165	0	0
PCB 167	2.996815758	3.238052391
PCB 169	0	0
PCB 170	0	0
PCB 171/173	0	0
PCB 172	0	0
PCB 174	0	0
PCB 175	0	0
PCB 176	0	0
PCB 177	0	0
PCB 178	10.89894047	10.18764174
PCB 179	0.046858552	0.032381599

PCB 193/180	5.029922564	4.954766836
PCB 181	0	0
PCB 182	0	0
PCB 183	0	0
PCB 184	0	0
PCB 185	0	0
PCB 186	0	0
PCB 187	0	0
PCB 188	18.58755372	17.90503273
PCB 189	0	0
PCB 190	7.438337104	7.676390434
PCB 191	1.664636802	1.776155462
PCB 192	0	0
PCB 194	0	0
PCB 195	0	0
PCB 196	0	0
PCB 197	0	0
PCB 198/199	0	0
PCB 200	0	0
PCB 201	0	0
PCB 202	1.550006355	1.48962665
PCB 203	4.534834261	4.348838245
PCB 205	0	0
PCB 206	0	0
PCB 207	0	0
PCB 208	4.134288029	3.89701085
PCB 209	3.638203959	3.325908935
Sum of mass of PCBs	940	922

<b>Batch Sample ID:</b>	<b>COB10_SRM04_Bulk03_080 714</b>	<b>COB10_SRM04_Bulk04_080 714</b>
Location		
mass (g) of sediment (Dry weight)	0.724	0.702
Surrogate Recovery - Percent		

PCB 14	72%	85%
D 65	71%	83%
PCB 166	105%	125%
Species	mass (ng)	mass (ng)
PCB 1	1.185684473	1.14664679
PCB 2	0.372743191	0.324441091
PCB 3	1.959888956	1.702523428
PCB 4	5.738040617	5.252753173
PCB 5	0.284670499	0.235538861
PCB 6	0.836357943	0.730980705
PCB 7	0.634520449	0.556596956
PCB 8	3.194993227	2.906972487
PCB 9	0.302010422	0.273810239
PCB 10	12.69053261	11.61197338
PCB 11	14.02233723	9.659710915
PCB 13/12	3.172176962	2.826021444
PCB 15	16.54046016	14.71870758
PCB 16	2.689024071	2.376488108
PCB 17	25.84327025	23.94236779
PCB 30/18	14.95545362	13.82987647
PCB 19	2.471183683	2.319429972
PCB 28/20	0.3470051	0.345678801
PCB 21/33	13.5292683	11.80528835
PCB 22	20.34032493	8.930608872
PCB 23	0.332124037	0.202002379
PCB 24	0.105434671	0.0656181
PCB 25	10.18769482	9.233475836
PCB 29/26	5.939786637	5.287050547
PCB 27	46.21062795	42.47861125
PCB 31	56.38594995	51.66830595
PCB 32	21.50841334	19.22111081
PCB 34	17.17458042	15.35048344
PCB 35	0.185811212	0.143678212
PCB 36	0.201216109	0.169563207
PCB 37	0.129381273	0.06428425

PCB 38	2.311136825	1.49903358
PCB 39	18.27276442	16.57157937
PCB 71/40	0.098826692	0.090698731
PCB 41	6.129602663	5.697251347
PCB 42	6.739811941	6.313885084
PCB 43	1.616756846	1.461201372
PCB 65/47/44	2.55237875	2.390976101
PCB 45	46.61287665	45.08340603
PCB 46	0	0
PCB 48	1.837912857	1.700313611
PCB 69/49	28.74890652	27.04459826
PCB 50/53	8.789683795	8.233682547
PCB 51	42.01767626	39.74719778
PCB 52	3.91119268	3.638286341
PCB 54	13.72345717	12.83468062
PCB 55	2.978022358	3.008429321
PCB 56	18.86582723	17.52705672
PCB 57	19.48053529	18.57514416
PCB 58	0.301507904	0.273870937
PCB 62/75/59	0.186511794	0.164771254
PCB 60	0.193462851	0.18476388
PCB 61/70/76/74	0.101471972	0.088233919
PCB 63	1.059623402	0.983613846
PCB 64	1.096517978	1.031088669
PCB 66	44.49420795	42.90491934
PCB 67	22.86876905	21.71317158
PCB 68	0.32550499	0.323063316
PCB 72	12.02380837	17.59310463
PCB 73	0	0
PCB 77	7.680313025	7.34384877
PCB 78	0.204438418	0.203645763
PCB 79	0	0
PCB 80	0.222659498	0.222889204
PCB 81	8.513596433	5.347307557
PCB 82	0	0



PCB 83	0	0
PCB 84	0	0
PCB 116/85	0	0
PCB 119/109/86/97	19.68321436	20.94923265
PCB 125/87	0	0
PCB 88	0	0
PCB 89	0	0
PCB 113/90/101	0	0
PCB 91	0	0
PCB 92	0	0
PCB 100/93	0	0
PCB 94	0	0
PCB 95	0	0
PCB 96	34.29309145	35.71570393
PCB 98	0	0
PCB 99	15.76632391	16.47060299
PCB 102	0	0
PCB 103	0	0
PCB 104	14.78669051	15.01404801
PCB 105	0	0
PCB 106	0	0
PCB 107	39.6778267	40.98401764
PCB 108/124	0	0
PCB 110	0	0
PCB 111	0	0
PCB 112	0	0
PCB 114	0	0
PCB 115	0	0
PCB 117	0	0
PCB 118	0	0
PCB 120	30.53433237	31.06485737
PCB 121	0	0
PCB 122	0	0
PCB 123	12.57427844	12.76274008
PCB 126	0	0

PCB 127	0	0
PCB 138/163/129	0	0
PCB 130	0	0
PCB 131	0	0
PCB 132	0	0
PCB 133	0	0
PCB 134	0	0
PCB 151/135	10.29097448	10.21402709
PCB 136	0	0
PCB 137	0	0
PCB 139/140	25.6568875	25.15477348
PCB 141	0	0
PCB 142	0	0
PCB 143	0	0
PCB 144	0	0
PCB 145	0	0
PCB 146	0	0
PCB 147/149	0	0
PCB 148	0	0
PCB 150	0	0
PCB 152	0	0
PCB 153/168	26.70683468	26.64125705
PCB 154	0	0
PCB 155	0	0
PCB 156/157	0	0
PCB 158	2.27943743	2.285302835
PCB 159	36.15128862	35.76734737
PCB 160	0	0
PCB 161	0	0
PCB 162	0.052696595	0.067993355
PCB 164	0	0
PCB 165	0	0
PCB 167	3.238052391	3.245006424
PCB 169	0	0
PCB 170	0	0

PCB 171/173	0	0
PCB 172	0	0
PCB 174	0	0
PCB 175	0	0
PCB 176	0	0
PCB 177	0	0
PCB 178	11.12570877	10.38629355
PCB 179	0.041855058	0.033727797
PCB 193/180	5.328410374	4.896430982
PCB 181	0	0
PCB 182	0	0
PCB 183	0	0
PCB 184	0	0
PCB 185	0	0
PCB 186	0	0
PCB 187	0	0
PCB 188	18.73685735	17.6133367
PCB 189	0	0
PCB 190	7.924732581	7.533984589
PCB 191	1.799285874	1.759634123
PCB 192	0	0
PCB 194	0	0
PCB 195	0	0
PCB 196	0	0
PCB 197	0	0
PCB 198/199	0	0
PCB 200	0	0
PCB 201	0	0
PCB 202	1.71318357	1.659227488
PCB 203	4.761117548	4.40967899
PCB 205	0	0
PCB 206	0	0
PCB 207	0	0
PCB 208	4.189488388	3.935892356
PCB 209	3.556701387	3.31599264

Sum of mass of PCBs                      947                                      894

**A.8.2 Mass of PCBs in the Lab and Field Blank Study**

<b>Batch Sample ID:</b>	<b>COB10_CSSC_Lab_Blank01_080714</b>	<b>COB10_CSSC_Lab_Blank02_080714</b>
Location	Lab Blank	
mass (g) of sediment (Dry weight)	0	
Surrogate Recovery - Percent	mass (ng)	mass (ng)
PCB 14	0.550099897	0.193035125
D 65	0.712354381	0.640562213
PCB 166	0.825329745	0.855989991
Species		
PCB 1	0.00620678	0.001375106
PCB 2	0.006416203	0.003389043
PCB 3	0.011435937	0.003955252
PCB 4	0.026409172	0.005997462
PCB 5	0.003690386	0.004091416
PCB 6	0.01868672	0.01303651
PCB 7	0.008429754	0.004896109
PCB 8	0.093190706	0.062351816
PCB 9	0.007147499	0.00458589
PCB 10	0.002095892	0.001439802
PCB 11	0.290576427	0.433148315
PCB 13/12	0.005605594	0.018033798
PCB 15	0.043102659	0.065283796
PCB 16	0.045812036	0.079049623
PCB 17	0.044961751	0.078244793
PCB 30/18	0.087950685	0.158241596
PCB 19	0.009467631	0.008488068
PCB 28/20	0.130886539	0.344686453
PCB 21/33	0.086550597	0.237946448
PCB 22	0.05085217	0.145442837

PCB 23	0.001411721	0.00119888
PCB 24	0.002128967	0.004954766
PCB 25	0.015623841	0.033136215
PCB 29/26	0.023821975	0.058019032
PCB 27	0.007072433	0.014685883
PCB 31	0.125695936	0.320131422
PCB 32	0.031380649	0.067641868
PCB 34	0.002094251	0.004494851
PCB 35	0.005168388	0.019073493
PCB 36	0.000455252	0.008072328
PCB 37	0.046958024	0.152510788
PCB 38	0.001526432	0.005751208
PCB 39	0.00132078	0.002020301
PCB 71/40	0.052940227	0.060394369
PCB 41	0.008260658	0.009768113
PCB 42	0.032528833	0.03477508
PCB 43	0.004075187	0.004366162
PCB 65/47/44	0.264743017	0.309580482
PCB 45	0.010102313	0.013083905
PCB 46	0.006216511	0.005578088
PCB 48	0.018906383	0.026699366
PCB 69/49	0.149143044	0.179031871
PCB 50/53	0.090390081	0.102415714
PCB 51	0.007679765	0.006226421
PCB 52	0.624944339	0.707931582
PCB 54	0.001164436	0.000741638
PCB 55	0.003612187	0.009307184
PCB 56	0.040018679	0.055128243
PCB 57	0.00168677	0.002780753
PCB 58	0.001871884	0.001266277
PCB 62/75/59	0.014006854	0.0186321
PCB 60	0.020931118	0.027547684
PCB 61/70/76/74	0.388773024	0.483550875
PCB 63	0.004912421	0.005827493
PCB 64	0.085286019	0.106418971

PCB 66	0.095126895	0.114869075
PCB 67	0.002898438	0.002938579
PCB 68	0.045517616	0.051236342
PCB 72	0.001616897	0.001935938
PCB 73	0.006884381	0.006642517
PCB 77	0.009408692	0.013949998
PCB 78	0.003876628	0.004372441
PCB 79	0.002813513	0.005106518
PCB 80	0.001412326	0.002124923
PCB 81	0.002295405	0.002957113
PCB 82	0.037284626	0.044297367
PCB 83	0.020366157	0.020043857
PCB 84	0.178935696	0.233995818
PCB 116/85	0.047050502	0.042134213
PCB 119/109/86/97	0.104458585	0.142128748
PCB 125/87	0.223567501	0.299256321
PCB 88	0.001343255	0.000992211
PCB 89	0.004510323	0.005221205
PCB 113/90/101	0.603366628	0.777909708
PCB 91	0.073336338	0.099777372
PCB 92	0.105254199	0.144504706
PCB 100/93	0.002925782	0.003131528
PCB 94	0.002238622	0.002919291
PCB 95	0.644444502	0.803588867
PCB 96	0.003582942	0.003872488
PCB 98	0.001455308	0.002572466
PCB 99	0.183201576	0.216774602
PCB 102	0.016543846	0.021893588
PCB 103	0.004158061	0.005081303
PCB 104	0.001795072	0.001891906
PCB 105	0.043196727	0.058511109
PCB 106	0.001462583	0.002052038
PCB 107	0.013571308	0.015413836
PCB 108/124	0.010421079	0.011331874
PCB 110	0.4416336	0.589042389

PCB 111	0.000792206	0.000838894
PCB 112	0.002745904	0.022764217
PCB 114	0.01090982	0.012804326
PCB 115	0.044212516	0.061436957
PCB 117	0.325176953	0.399935196
PCB 118	0.184056878	0.240508668
PCB 120	0.000262041	0.000282837
PCB 121	0.000802297	0.000764749
PCB 122	0.002364331	0.001924598
PCB 123	0.002333503	0.004207354
PCB 126	0.331998931	0.381696047
PCB 127	0.000621988	0.0012056
PCB 138/163/129	0.141796505	0.152434701
PCB 130	0.007289152	0.008257089
PCB 131	0.003935776	0.006313791
PCB 132	0.074517756	0.080108099
PCB 133	0.001628944	0.001377756
PCB 134	0.014493887	0.011511222
PCB 151/135	0.098402446	0.109764857
PCB 136	0.052953787	0.057484723
PCB 137	0.006500473	0.006993305
PCB 139/140	0.006315308	0.005486427
PCB 141	0.03042257	0.033555767
PCB 142	0.000716235	0.00023591
PCB 143	0.004855965	0.0042436
PCB 144	0.016186189	0.014972981
PCB 145	0.00041665	0.000784194
PCB 146	0.022080551	0.023806142
PCB 147/149	0.213370918	0.240811422
PCB 148	0.000300255	0.000102429
PCB 150	0.001450796	0.000614386
PCB 152	0.001069175	0.00103263
PCB 153/168	0.125561789	0.144360587
PCB 154	0.001877309	0.001537012
PCB 155	0.000889208	0.001130406

PCB 156/157	0.008126651	0.00729795
PCB 158	0.013784521	0.015212333
PCB 159	0.009008972	0.006688019
PCB 160	0.000915613	0.000653984
PCB 161	0.000890645	0.000554191
PCB 162	0.006729702	0.004368627
PCB 164	0.006303145	0.008014316
PCB 165	0.000298701	0.000173227
PCB 167	0.003881468	0.003640613
PCB 169	0.001738097	0.00098449
PCB 170	0.008826898	0.011066772
PCB 171/173	0.007005328	0.007329861
PCB 172	0.006735152	0.002914796
PCB 174	0.023188182	0.025134595
PCB 175	0.000474865	0.001036765
PCB 176	0.003998735	0.004387062
PCB 177	0.010554303	0.013069453
PCB 178	0.004370849	0.00362941
PCB 179	0.019399855	0.020032314
PCB 193/180	0.027643621	0.029696826
PCB 181	0.001334599	0.000872091
PCB 182	0.003301005	0.004486376
PCB 183	0.014364262	0.016550587
PCB 184	0.005977677	0.004262461
PCB 185	0.003443346	0.004307508
PCB 186	0.00083396	0.000667946
PCB 187	0.037015553	0.038204048
PCB 188	0.001439116	0.000981874
PCB 189	0.0029393	0.004581731
PCB 190	0.008140316	0.007692649
PCB 191	0.003647224	0.00359458
PCB 192	0.001679349	0.001221695
PCB 194	0.010504767	0.012948206
PCB 195	0.037592247	0.007194422
PCB 196	0.00746339	0.006808258



PCB 197	0.006032059	0.008020522
PCB 198/199	0.01534921	0.013276143
PCB 200	0.002438886	0.00303985
PCB 201	0.003391236	0.003664062
PCB 202	0.023552407	0.024773186
PCB 203	0.0128279	0.011452042
PCB 205	0.00287821	0.002297703
PCB 206	0.017617485	0.035127344
PCB 207	0.003542836	0.005717692
PCB 208	0.012941898	0.006286286
PCB 209	0.10938418	0.108358454
Sum of mass of PCBs	8.26509988	10.82846199

Batch Sample ID: COB10\_CSSC\_Lab\_Blank03\_0 80714 COB10\_CSSC\_Lab\_Blank04\_0 80714

Location

mass (g) of sediment (Dry weight)

Surrogate Recovery - Percent

mass (ng)

mass (ng)

PCB 14	0.460707999	0.330274296
D 65	0.758744008	0.612127568
PCB 166	0.890422282	0.789163166

Species

PCB 1	0.00222293	0.00354047
PCB 2	0.003972467	0.003851008
PCB 3	0.006463355	0.004851155
PCB 4	0.020883812	0.018964161
PCB 5	0.0038269	0.003009222
PCB 6	0.020981789	0.015161417
PCB 7	0.006873837	0.006145949
PCB 8	0.094191762	0.082054597
PCB 9	0.006384551	0.005947787
PCB 10	0.001344911	0.000751009
PCB 11	0.350250107	0.324096164

PCB 13/12	0.034603702	0.033747887
PCB 15	0.069274673	0.053449138
PCB 16	0.065972899	0.055157143
PCB 17	0.067370697	0.057715272
PCB 30/18	0.144810158	0.118412244
PCB 19	0.009015115	0.010468778
PCB 28/20	0.225109715	0.187969298
PCB 21/33	0.145816835	0.129064179
PCB 22	0.082184102	0.072017934
PCB 23	0.00139075	0.001668217
PCB 24	0.00561828	0.003730394
PCB 25	0.02073147	0.021571342
PCB 29/26	0.036400688	0.030540878
PCB 27	0.010734541	0.00698733
PCB 31	0.227011773	0.178228218
PCB 32	0.045597427	0.039111776
PCB 34	0.00252707	0.002403342
PCB 35	0.008130041	0.007556261
PCB 36	0.005305941	0.006545459
PCB 37	0.066802395	0.093953569
PCB 38	0.003979952	0.002602898
PCB 39	0.003751219	0.00307836
PCB 71/40	0.07780071	0.05584596
PCB 41	0.012839059	0.010088263
PCB 42	0.050809738	0.038245093
PCB 43	0.013154325	0.00425627
PCB 65/47/44	0.325318748	0.29226088
PCB 45	0.018913704	0.01656366
PCB 46	0.00825804	0.007872779
PCB 48	0.030952341	0.026395175
PCB 69/49	0.192558555	0.176842772
PCB 50/53	0.093829017	0.097905692
PCB 51	0.008783758	0.005115257
PCB 52	0.703182968	0.689934652
PCB 54	0.001370893	0.000652102

PCB 55	0.006995198	0.007097076
PCB 56	0.061872871	0.046254988
PCB 57	0.001585916	0.002302835
PCB 58	0.001777638	0.00075864
PCB 62/75/59	0.019256094	0.015729008
PCB 60	0.036223294	0.022040487
PCB 61/70/76/74	0.473472595	0.428299969
PCB 63	0.00659352	0.005214043
PCB 64	0.116396607	0.094186939
PCB 66	0.130474988	0.107460259
PCB 67	0.00498347	0.003438082
PCB 68	0.045977686	0.04739154
PCB 72	0.001595812	0.001738982
PCB 73	0.008392865	0.010788784
PCB 77	0.012020761	0.012174704
PCB 78	0.005262368	0.004041419
PCB 79	0.003323645	0.002700458
PCB 80	0.000566557	0.002226749
PCB 81	0.0031913	0.002132643
PCB 82	0.047972161	0.044305253
PCB 83	0.020070542	0.019189126
PCB 84	0.192659224	0.205491491
PCB 116/85	0.03675335	0.114017616
PCB 119/109/86/97	0.113949142	0.107127291
PCB 125/87	0.258866099	0.283577033
PCB 88	0.034018647	0.026149116
PCB 89	0.003679525	0.004325781
PCB 113/90/101	0.63790325	0.709042066
PCB 91	0.053453728	0.060121528
PCB 92	0.119116798	0.117218991
PCB 100/93	0.004960893	0.006681941
PCB 94	0.00263495	0.003243322
PCB 95	0.695801598	0.708287155
PCB 96	0.005368625	0.004564115
PCB 98	0.000645277	0.002016395

PCB 99	0.209092852	0.215774561
PCB 102	0.021506506	0.018281689
PCB 103	0.003819115	0.005099983
PCB 104	0.002203777	0.001599456
PCB 105	0.057968448	0.049004352
PCB 106	0.000721119	0.000165518
PCB 107	0.012277594	0.013834158
PCB 108/124	0.009100262	0.009533557
PCB 110	0.483332003	0.483724861
PCB 111	0.00061727	0.000848544
PCB 112	0.002453541	0.004460416
PCB 114	0.013125804	0.01324888
PCB 115	0.05158742	0.075358438
PCB 117	0.358732668	0.294785307
PCB 118	0.208015701	0.20324865
PCB 120	0.001035697	0.000725819
PCB 121	0.000676553	0.000936836
PCB 122	0.0032669	0.002237208
PCB 123	0.001908053	0.004871896
PCB 126	0.335486316	0.360400771
PCB 127	0.000697091	0.00072629
PCB 138/163/129	0.147307416	0.145111041
PCB 130	0.007381826	0.008783116
PCB 131	0.003646701	0.005845834
PCB 132	0.077539312	0.07416734
PCB 133	0.001885068	0.001583753
PCB 134	0.020886628	0.020001715
PCB 151/135	0.105749566	0.100763014
PCB 136	0.058049219	0.055505269
PCB 137	0.008807084	0.011014582
PCB 139/140	0.005550129	0.005853918
PCB 141	0.032762892	0.030629998
PCB 142	0.000315903	0.000183231
PCB 143	0.001140682	0.000689861
PCB 144	0.012651328	0.016903746

PCB 145	0.000793103	0.00023602
PCB 146	0.02354283	0.023728078
PCB 147/149	0.228547561	0.230102707
PCB 148	0.000404263	0.000443242
PCB 150	0.000846771	0.000575662
PCB 152	0.000925414	0.000632805
PCB 153/168	0.126982501	0.130276201
PCB 154	0.002335023	0.002160205
PCB 155	0.001084667	0.000700778
PCB 156/157	0.007155911	0.00570369
PCB 158	0.013000966	0.012954354
PCB 159	0.003676602	0.003487792
PCB 160	0.000654913	0.001417709
PCB 161	0.000268612	0.000151032
PCB 162	0.004662377	0.00500311
PCB 164	0.008800482	0.005799956
PCB 165	0.000150814	0.000490695
PCB 167	0.002070255	0.002959798
PCB 169	0.00067335	0.000382327
PCB 170	0.010135121	0.007369528
PCB 171/173	0.006903856	0.00758157
PCB 172	0.00512497	0.005614717
PCB 174	0.023498139	0.02205783
PCB 175	0.000438416	0.000402628
PCB 176	0.004172808	0.004558973
PCB 177	0.010505159	0.011785115
PCB 178	0.002874018	0.004004005
PCB 179	0.019730599	0.019951822
PCB 193/180	0.028531578	0.026499632
PCB 181	0.002257513	0.001936432
PCB 182	0.003431123	0.00457612
PCB 183	0.014625067	0.015598549
PCB 184	0.005400693	0.0044265
PCB 185	0.005701229	0.003945103
PCB 186	0.000659059	0.000153717

PCB 187	0.038881116	0.039577444
PCB 188	0.000798614	0.001350047
PCB 189	0.003246169	0.00170228
PCB 190	0.007916639	0.007267995
PCB 191	0.001861774	0.002712385
PCB 192	0.001003371	0.001494639
PCB 194	0.007947423	0.008120333
PCB 195	0.007663364	0.004988196
PCB 196	0.007743207	0.007002655
PCB 197	0.004164639	0.00270985
PCB 198/199	0.012371251	0.015799439
PCB 200	0.003738592	0.002737775
PCB 201	0.002890327	0.00319736
PCB 202	0.022476386	0.023409037
PCB 203	0.012827985	0.01256523
PCB 205	0.006728895	0.003750827
PCB 206	0.022928415	0.018793259
PCB 207	0.004832687	0.004136927
PCB 208	0.004753731	0.003596776
PCB 209	0.099964687	0.11086619
Sum of mass of PCBs	9.611728194	9.317017889

<b>Batch Sample ID:</b>	<b>COB10_CSSC_field_Blank02 _080714</b>	<b>COB10_CSSC_field_Blank03 _080714</b>
Location	Field Blank	Field Blank
mass (g) of sediment (Dry weight)	0	
Surrogate Recovery - Percent		
PCB 14	0.404253515	0.409125778
D 65	0.804027126	0.737793531
PCB 166	0.988755586	0.909483639
Species	mass (ng)	mass (ng)
PCB 1	0.000850318	0.004021361
PCB 2	0.001923668	0.003688891
PCB 3	0.002213716	0.005323734

PCB 4	0.008557334	0.019467714
PCB 5	0.003111067	0.003205221
PCB 6	0.013570519	0.013785502
PCB 7	0.00530071	0.00554993
PCB 8	0.072358566	0.069219413
PCB 9	0.004656053	0.005263566
PCB 10	0.00104931	0.001455046
PCB 11	0.324758817	0.279861792
PCB 13/12	0.009292113	0.00516474
PCB 15	0.043703471	0.047371683
PCB 16	0.058130788	0.050640779
PCB 17	0.057853796	0.051978372
PCB 30/18	0.11130604	0.094418354
PCB 19	0.008862218	0.006561139
PCB 28/20	0.191895806	0.144795122
PCB 21/33	0.12307682	0.096841003
PCB 22	0.081803644	0.065119268
PCB 23	0.002273118	0.002909242
PCB 24	0.002495389	0.001420087
PCB 25	0.021574288	0.017031668
PCB 29/26	0.031775738	0.026148562
PCB 27	0.007656738	0.007577674
PCB 31	0.192682663	0.144729378
PCB 32	0.04228372	0.031582225
PCB 34	0.002128223	0.002018564
PCB 35	0.009363724	0.007042324
PCB 36	0.005842997	0.005732354
PCB 37	0.057148632	0.050001189
PCB 38	0.002027704	0.001285863
PCB 39	0.003271937	0.002018524
PCB 71/40	0.05571917	0.051993944
PCB 41	0.00929711	0.008303096
PCB 42	0.03600446	0.033194653
PCB 43	0.008224111	0.015931032
PCB 65/47/44	0.282657089	0.244636764

PCB 45	0.012835567	0.01148171
PCB 46	0.005544665	0.004679669
PCB 48	0.024993111	0.022288815
PCB 69/49	0.154879401	0.139704296
PCB 50/53	0.079354473	0.084946592
PCB 51	0.004613206	0.00245935
PCB 52	0.659842038	0.558260557
PCB 54	0.000608895	0.001082818
PCB 55	0.006299118	0.004246535
PCB 56	0.048689085	0.042187787
PCB 57	0.000987214	0.001155767
PCB 58	0.002562006	0.001899612
PCB 62/75/59	0.012004824	0.012885341
PCB 60	0.026850598	0.023397161
PCB 61/70/76/74	0.449559478	0.376761496
PCB 63	0.005594082	0.004826691
PCB 64	0.0914114	0.083055783
PCB 66	0.108630219	0.090247155
PCB 67	0.002969087	0.002753481
PCB 68	0.045979809	0.045384733
PCB 72	0.001230215	0.001318249
PCB 73	0.012402657	0.004612943
PCB 77	0.007336784	0.005003368
PCB 78	0.004552029	0.002208448
PCB 79	0.003160746	0.003523737
PCB 80	0.000515064	0.001944527
PCB 81	0.00356799	0.002319969
PCB 82	0.046706532	0.039417339
PCB 83	0.027712682	0.022089308
PCB 84	0.211989452	0.176680547
PCB 116/85	0.061144262	0.231132505
PCB 119/109/86/97	0.11091452	0.091051639
PCB 125/87	0.291557712	0.249754717
PCB 88	0.007799349	0.03705848
PCB 89	0.00299584	0.003230567



PCB 113/90/101	0.699997619	0.589602478
PCB 91	0.075205979	0.039981274
PCB 92	0.125873073	0.106368697
PCB 100/93	0.005005124	0.003641227
PCB 94	0.001613482	0.002522601
PCB 95	0.744806736	0.609934587
PCB 96	0.003108939	0.002630172
PCB 98	0.001451253	0.006001014
PCB 99	0.21028987	0.173811124
PCB 102	0.016916433	0.009426023
PCB 103	0.003951744	0.00359742
PCB 104	0.002142199	0.001370858
PCB 105	0.052707343	0.047000346
PCB 106	0.000610202	0.001545955
PCB 107	0.012995616	0.011785604
PCB 108/124	0.008347045	0.009037916
PCB 110	0.503000143	0.467712693
PCB 111	0.000726391	0.001154343
PCB 112	0.002778662	0.002519966
PCB 114	0.010773308	0.010316132
PCB 115	0.050230041	0.030811472
PCB 117	0.323167906	0.159340852
PCB 118	0.228604158	0.193092086
PCB 120	0.000450641	0.000843568
PCB 121	0.000704109	0.000217764
PCB 122	0.002609015	0.002264988
PCB 123	0.005230821	0.001490728
PCB 126	0.329480757	0.336387412
PCB 127	0.001049013	7.17498E-05
PCB 138/163/129	0.148358069	0.126366239
PCB 130	0.00567279	0.006549632
PCB 131	0.005057491	0.003533969
PCB 132	0.078639795	0.074751916
PCB 133	0.001901338	0.001158395
PCB 134	0.022462245	0.008736175

PCB 151/135	0.109242629	0.095641831
PCB 136	0.060379411	0.050776736
PCB 137	0.011770334	0.010786965
PCB 139/140	0.006213906	0.003583092
PCB 141	0.035598089	0.030462556
PCB 142	0.00035776	2.69009E-05
PCB 143	0.000648535	0.006493252
PCB 144	0.015048956	0.014757165
PCB 145	0.000355533	0.000469465
PCB 146	0.022581034	0.020688575
PCB 147/149	0.242812082	0.207702489
PCB 148	1.29445E-05	0.000490558
PCB 150	0.000155287	0.000505979
PCB 152	0.000553126	0.000408348
PCB 153/168	0.141507331	0.125516708
PCB 154	0.001348898	0.002677676
PCB 155	0.000330273	0.000637407
PCB 156/157	0.007785468	0.005207341
PCB 158	0.014782507	0.012757386
PCB 159	0.002854913	0.003152233
PCB 160	0.00492186	0.008897678
PCB 161	0.000137615	1.55215E-05
PCB 162	0.00179429	0.00144999
PCB 164	0.007503135	0.006151083
PCB 165	0.000306484	1.62673E-05
PCB 167	0.002528322	0.000832867
PCB 169	0.001157915	0.001196608
PCB 170	0.011732838	0.007897772
PCB 171/173	0.007309872	0.005641999
PCB 172	0.007065253	0.002580263
PCB 174	0.027518082	0.023749316
PCB 175	0.000736999	0.000413779
PCB 176	0.005084989	0.004607641
PCB 177	0.014330804	0.01106831
PCB 178	0.00560337	0.004594669

PCB 179	0.023008147	0.017924781
PCB 193/180	0.035369775	0.029806427
PCB 181	0.002051226	0.001928644
PCB 182	0.004016606	0.003077717
PCB 183	0.019022457	0.017410135
PCB 184	0.00503111	0.004444852
PCB 185	0.002624948	0.003608973
PCB 186	0.000350155	0.000266581
PCB 187	0.044439512	0.041386
PCB 188	0.000774695	0.001027341
PCB 189	0.001553633	0.002923439
PCB 190	0.005848491	0.006018747
PCB 191	0.002817572	0.003187394
PCB 192	0.002661267	0.00092444
PCB 194	0.007454325	0.009883413
PCB 195	0.005633147	0.007765666
PCB 196	0.01104061	0.006965083
PCB 197	0.009117339	0.007958587
PCB 198/199	0.018655828	0.016826171
PCB 200	0.004375705	0.005439379
PCB 201	0.003495314	0.003977281
PCB 202	0.024600989	0.02368456
PCB 203	0.012649272	0.013273862
PCB 205	0.001878992	0.004350549
PCB 206	0.020722646	0.020070694
PCB 207	0.004014622	0.003440893
PCB 208	0.005244801	0.003929067
PCB 209	0.093777727	0.097767252
Sum of mass of PCBs	9.264716806	8.089043196

### A.8.3 Mass of PCBs in the Bulk Sediment

<b>Batch Sample ID:</b>	<b>COB10_CSSC_01_Bulk_080 714</b>	<b>COB10_CSSC_02_Bulk_080 714</b>
Location	Kedzie Ave	Cicero Ave
mass (g) of sediment (Dry weight)	1.220215844	1.986282813
Surrogate Recovery	Surrogate Recovery - Percent	Surrogate Recovery - Percent
PCB 14	0.742163199	0.721586095
D 65	0.786007781	0.781423182
PCB 166	1.05435241	1.102968435
Species	mass (ng)	mass (ng)
PCB 1	1.878228147	52.82873761
PCB 2	0.251092818	1.291660856
PCB 3	1.281335503	15.81323867
PCB 4	11.36008849	663.6567573
PCB 5	0.246121405	1.493040581
PCB 6	8.107565489	179.7089246
PCB 7	0.670774253	12.90823259
PCB 8	18.37516561	318.3540043
PCB 9	0.826596859	8.31571455
PCB 10	0.238520405	13.32371286
PCB 11	1.729705365	11.8190473
PCB 13/12	3.919867057	89.53847796
PCB 15	11.79305619	286.5536787
PCB 16	19.92748052	94.1771985
PCB 17	28.86181432	477.3471119
PCB 30/18	45.29559264	265.5494897
PCB 19	5.637422269	216.3029488
PCB 28/20	95.81711859	595.6786854
PCB 21/33	27.76662214	113.8794144
PCB 22	26.72184989	129.98728
PCB 23	0.175419723	0.244327689
PCB 24	0.3135123	0.892236488
PCB 25	21.61773557	277.7032027

PCB 29/26	19.68333056	186.1772994
PCB 27	3.988469087	67.41120867
PCB 31	80.22240285	626.4943964
PCB 32	17.95711543	292.5383762
PCB 34	0.675983907	8.37292607
PCB 35	1.072045147	5.70901927
PCB 36	0.381441002	2.128422541
PCB 37	17.44175847	74.67920279
PCB 38	0.203094928	0.468411508
PCB 39	0.330838494	2.162611734
PCB 71/40	36.96351377	236.5881631
PCB 41	3.894439692	13.90813697
PCB 42	25.61477518	139.5291366
PCB 43	3.148346571	23.55806336
PCB 65/47/44	98.88422655	569.5551892
PCB 45	8.800616315	31.95190026
PCB 46	5.834767824	33.79376015
PCB 48	12.78950615	53.05197533
PCB 69/49	61.67257662	390.9441983
PCB 50/53	16.34891396	115.7250954
PCB 51	13.77811641	86.42379277
PCB 52	92.20663994	438.1448123
PCB 54	0.917203718	10.6538581
PCB 55	0.943792302	3.489233179
PCB 56	29.01314774	113.7200316
PCB 57	0.425649346	3.228770146
PCB 58	0.272319307	1.299445495
PCB 62/75/59	6.163546599	29.106763
PCB 60	10.59390544	43.53897385
PCB 61/70/76/74	112.5546001	452.3362531
PCB 63	3.258718398	23.10566329
PCB 64	36.73555018	140.2696923
PCB 66	56.51652817	261.0999066
PCB 67	2.407725909	8.390821632
PCB 68	0.780066461	6.842027063

PCB 72	0.756952799	6.786506253
PCB 73	0.45501679	3.842222164
PCB 77	5.619216134	26.42516435
PCB 78	0	0.039980109
PCB 79	0.167338724	0.656072567
PCB 80	0.044892511	0.24701212
PCB 81	0.204146045	0.597257224
PCB 82	7.006776023	18.72673866
PCB 83	3.437600234	10.57652418
PCB 84	17.68752239	45.32019046
PCB 116/85	8.889995132	21.79401145
PCB 119/109/86/97	16.79883051	47.02657883
PCB 125/87	22.19112897	42.79129919
PCB 88	0	0
PCB 89	0.751815874	2.737874758
PCB 113/90/101	59.6528469	122.5836515
PCB 91	13.08983435	40.31779812
PCB 92	11.93258415	32.45294418
PCB 100/93	3.663097428	14.68662286
PCB 94	1.167000833	5.222462002
PCB 95	44.13331556	83.10274127
PCB 96	0.927998871	3.310041672
PCB 98	0	0
PCB 99	28.3215912	73.10492173
PCB 102	2.537571098	10.75705557
PCB 103	1.308345157	5.408155172
PCB 104	0.24776802	1.237937258
PCB 105	17.34818644	43.41257754
PCB 106	0	0.197313288
PCB 107	3.735619944	10.37366492
PCB 108/124	1.465782928	3.460425724
PCB 110	65.90199757	145.4392008
PCB 111	0.117101005	0.279581717
PCB 112	0	0
PCB 114	1.03583942	3.299273679

PCB 115	0	0
PCB 117	1.605182065	8.705821687
PCB 118	45.91614306	102.026072
PCB 120	0.1875309	0.455288405
PCB 121	0.076367064	0.263965969
PCB 122	0.568899674	1.61990814
PCB 123	0.797555182	2.671418267
PCB 126	1.982027035	0.689382759
PCB 127	0	0
PCB 138/163/129	61.54541267	82.71408911
PCB 130	2.753090198	4.123068755
PCB 131	0.570690719	0.835573409
PCB 132	16.63743461	21.46846626
PCB 133	0.925605678	1.74946493
PCB 134	3.474628829	5.134071964
PCB 151/135	20.99670923	29.84210934
PCB 136	7.824420412	10.72085967
PCB 137	1.626465216	2.857834123
PCB 139/140	0.69763196	1.31501416
PCB 141	10.28810096	12.72262341
PCB 142	0	0
PCB 143	0	0
PCB 144	2.304726475	2.994796422
PCB 145	0.013257318	0.049878755
PCB 146	0.10402484	0.285228906
PCB 147/149	47.76922903	67.90635881
PCB 148	0.193721166	0.537003866
PCB 150	0.257446415	0.691922718
PCB 152	0.164333196	0.506583896
PCB 153/168	46.88585908	62.08562267
PCB 154	1.030630812	2.533422824
PCB 155	0.036219788	0.097567737
PCB 156/157	4.538440871	6.873926121
PCB 158	5.147824315	7.180797182
PCB 159	0.118915008	0.136725011

PCB 160	0	0
PCB 161	5.956299712	9.025141107
PCB 162	0.161587246	0.219862369
PCB 164	3.789570861	5.061801136
PCB 165	0.026659019	0.036821501
PCB 167	1.55364121	2.270188555
PCB 169	0.743092955	1.243117975
PCB 170	15.63312381	22.71151398
PCB 171/173	4.9532046	7.029215121
PCB 172	2.821057545	4.330900547
PCB 174	17.76157494	23.70916134
PCB 175	0.546461151	0.824163435
PCB 176	1.867816148	2.562142425
PCB 177	9.716249332	13.67422357
PCB 178	3.213984761	5.22354756
PCB 179	6.765221486	9.682686842
PCB 193/180	36.93997449	52.7488075
PCB 181	0.140536773	0.381151289
PCB 182	0.055995616	0.463956762
PCB 183	9.822673567	13.87361708
PCB 184	0.022605932	0.042450118
PCB 185	1.23545903	1.916655428
PCB 186	0.001741064	0
PCB 187	20.08377697	29.95487136
PCB 188	0.065943399	0.190053427
PCB 189	1.386273167	1.812797547
PCB 190	3.465818847	5.530402047
PCB 191	0.727234516	1.187642407
PCB 192	0	0
PCB 194	7.827451378	15.19130063
PCB 195	3.12992581	6.174280982
PCB 196	4.264108943	7.628617903
PCB 197	0.246559347	0.535797616
PCB 198/199	9.671522383	16.73658341
PCB 200	1.014604371	1.718706316



PCB 201	0.943719479	1.703590766
PCB 202	1.723929026	2.85238976
PCB 203	5.495542691	9.608998707
PCB 205	0.422635484	0.97635981
PCB 206	4.026526554	6.384105551
PCB 207	0.405374532	0.704966489
PCB 208	0.993552446	1.334814588
PCB 209	2.546161233	1.908933334
Sum of mass of PCBs	1935.093787	9880.939668

<b>Batch Sample ID:</b>	<b>COB10_CSSC_03_Bulk_080 714</b>	<b>COB10_CSSC_04_Bulk_080 714</b>
Location	Stickney Outflow	Harlem Ave
mass (g) of sediment (Dry weight)	2.759212596	2.43957335
Surrogate Recovery	Surrogate Recovery - Percent	Surrogate Recovery - Percent
PCB 14	0.785564707	0.659245891
D 65	0.863767465	0.704358147
PCB 166	1.0766349	0.914422522
Species	mass (ng)	mass (ng)
PCB 1	6.52652762	9.555707212
PCB 2	0.797107459	1.32014201
PCB 3	4.174383011	7.398229649
PCB 4	51.94659156	67.51432397
PCB 5	0.97841175	1.419572075
PCB 6	23.98829223	32.09016223
PCB 7	2.39981138	3.558271715
PCB 8	64.8685922	98.17067322
PCB 9	3.213456857	4.596663951
PCB 10	1.32708396	1.676157264
PCB 11	8.514428563	12.27108466
PCB 13/12	9.18554226	14.5193718
PCB 15	38.14152298	63.96330715
PCB 16	77.74767045	99.5953139
PCB 17	103.0183953	138.9752347

PCB 30/18	175.7654814	225.0262883
PCB 19	18.31257826	23.81516278
PCB 28/20	272.3575321	412.1369511
PCB 21/33	85.14566843	124.2191931
PCB 22	71.7924408	105.0716733
PCB 23	0.170998742	0.212666902
PCB 24	1.042246542	0.791368274
PCB 25	51.37128747	69.00521122
PCB 29/26	56.77335683	74.82264587
PCB 27	13.18281411	17.06319391
PCB 31	246.1611375	375.5782442
PCB 32	60.92255038	73.10659056
PCB 34	2.055209825	2.854597826
PCB 35	2.401835665	4.041473029
PCB 36	0.777086444	1.023201471
PCB 37	41.46908957	72.99919981
PCB 38	0.22057215	0.317763615
PCB 39	0.65988032	0.995612776
PCB 71/40	85.08378821	122.0582698
PCB 41	8.095636503	13.80407295
PCB 42	59.82089913	86.84393726
PCB 43	7.894103274	11.46891841
PCB 65/47/44	209.2375949	296.7540726
PCB 45	29.73724336	33.49208307
PCB 46	15.19377764	17.6642135
PCB 48	30.71546999	46.10154833
PCB 69/49	137.5692723	188.2294483
PCB 50/53	36.21987403	44.88748294
PCB 51	15.68886059	22.3376946
PCB 52	205.3019772	285.3099128
PCB 54	1.013687604	1.494524729
PCB 55	1.235812878	1.369590791
PCB 56	65.74026076	90.75161802
PCB 57	0.994208973	0.986217636
PCB 58	0.54194408	0.669678582

PCB 62/75/59	14.32008791	20.66076109
PCB 60	19.30322556	35.44448224
PCB 61/70/76/74	169.2761027	254.9583602
PCB 63	5.435652568	7.554713689
PCB 64	80.27998636	118.9752245
PCB 66	87.7472609	124.4241462
PCB 67	3.78222217	5.409388452
PCB 68	1.38327036	1.512713249
PCB 72	1.689778243	1.995281469
PCB 73	0.689686155	0.604393563
PCB 77	10.43540274	20.3616743
PCB 78	0	0
PCB 79	0.273738263	0.438770252
PCB 80	0	0.192805546
PCB 81	0.208517471	0.433724186
PCB 82	9.043813088	15.32783694
PCB 83	4.496345876	5.588607668
PCB 84	18.25830369	21.98517499
PCB 116/85	9.844683338	16.72063829
PCB 119/109/86/97	21.44373645	33.07515915
PCB 125/87	21.1793313	36.42114207
PCB 88	0	0
PCB 89	1.217855108	0.989929771
PCB 113/90/101	59.40000613	92.6253115
PCB 91	10.7097092	14.05532055
PCB 92	13.39211483	18.86054201
PCB 100/93	1.934047822	2.732747548
PCB 94	0.967379829	1.297030588
PCB 95	48.04425449	60.13185995
PCB 96	1.054498605	1.450206822
PCB 98	1.913996228	0
PCB 99	30.28717577	47.81655076
PCB 102	1.270069144	3.499466438
PCB 103	1.094652102	1.423854387
PCB 104	0.103879372	0.18088715

PCB 105	17.66977628	34.57368602
PCB 106	0	0
PCB 107	4.180440799	7.019230855
PCB 108/124	1.215875621	2.329557043
PCB 110	78.64748101	125.6600851
PCB 111	0.100246016	0.136386566
PCB 112	0	0
PCB 114	0.931096882	1.80538458
PCB 115	0	0
PCB 117	1.761952313	2.733460553
PCB 118	45.72582957	83.59992646
PCB 120	0.244161634	0.34759983
PCB 121	0.043153967	0.061759656
PCB 122	0.517413043	0.966176825
PCB 123	0.720649642	1.350815769
PCB 126	0.366867553	0.183849542
PCB 127	0	0
PCB 138/163/129	29.08648662	52.95755364
PCB 130	1.534238461	2.605011385
PCB 131	0.301394225	0.502272625
PCB 132	9.480586418	15.54082164
PCB 133	0.434483775	0.717571968
PCB 134	1.949542284	3.064715059
PCB 151/135	9.990943747	17.11418802
PCB 136	4.02344315	6.25193448
PCB 137	0.894940855	1.433497773
PCB 139/140	0.399942941	0.607299467
PCB 141	3.929985143	7.726161239
PCB 142	0	0
PCB 143	0.024846093	0
PCB 144	0.938008787	1.755982456
PCB 145	0.008418515	0.012918309
PCB 146	0.042926492	0.074758917
PCB 147/149	23.62486681	40.14137243
PCB 148	0.085877474	0.132955804

PCB 150	0.083027536	0.169017745
PCB 152	0.060018834	0.11282069
PCB 153/168	19.62330829	36.38071528
PCB 154	0.464141054	0.784234038
PCB 155	0.012930752	0.018597308
PCB 156/157	2.201967302	4.002508585
PCB 158	2.367818582	4.394097543
PCB 159	0.03924898	0.068226463
PCB 160	0	0
PCB 161	3.006588637	5.271130645
PCB 162	0.06971626	0.125586961
PCB 164	1.749482498	3.229845651
PCB 165	0	0
PCB 167	0.678274885	1.281077964
PCB 169	0.14714254	0.354897115
PCB 170	3.919235316	9.091077276
PCB 171/173	1.299408718	2.861263405
PCB 172	0.719862418	1.559526566
PCB 174	4.381309089	9.862825847
PCB 175	0.131747006	0.312601096
PCB 176	0.460738678	1.023658254
PCB 177	2.531890233	5.553230568
PCB 178	0.743422428	1.73232006
PCB 179	1.672297931	3.636305848
PCB 193/180	8.101320874	19.99116964
PCB 181	0.078524175	0.104692761
PCB 182	0	0.055290505
PCB 183	2.293013465	5.340912418
PCB 184	0.014595229	0.019933866
PCB 185	0.38274943	0.781253559
PCB 186	0	0
PCB 187	5.26322039	12.21064446
PCB 188	0.016096771	0.029791642
PCB 189	0.421656655	0.734358163
PCB 190	0.868904433	1.938689809

PCB 191	0.219095822	0.460029408
PCB 192	0	0
PCB 194	1.408613206	3.752374487
PCB 195	0.623697532	1.561307419
PCB 196	0.785374394	2.043873407
PCB 197	0.082948373	0.171949314
PCB 198/199	1.702177422	4.529370369
PCB 200	0.222107364	0.523499086
PCB 201	0.188299078	0.464992215
PCB 202	0.332442502	0.79464197
PCB 203	0.963788133	2.562450801
PCB 205	0.113652114	0.228833863
PCB 206	0.619594314	1.463058656
PCB 207	0.088570132	0.170674784
PCB 208	0.142103976	0.33227472
PCB 209	0.30055993	0.584069912
Sum of mass of PCBs	3368.447339	4935.159879

<b>Batch Sample ID:</b>	<b>COB10_CSSC_05_Bulk_080 714</b>	<b>COB10_CSSC_06_Bulk_080 714</b>
Location	Corn Products	Lockport
mass (g) of sediment (Dry weight)	1.81040311	1.280628713
Surrogate Recovery - Percent	Surrogate Recovery - Percent	Surrogate Recovery - Percent
PCB 14	0.685971666	0.662172309
D 65	0.709891826	0.640952842
PCB 166	0.953778819	0.813040906
Species	mass (ng)	mass (ng)
PCB 1	2.838535339	0.083348886
PCB 2	0.414380517	0.043583133
PCB 3	2.397182201	0.116524017
PCB 4	26.3251704	1.106506568
PCB 5	0.492415905	0.022472247
PCB 6	16.16752034	0.354008599
PCB 7	1.423589051	0.045183905

PCB 8	40.72754889	1.034501209
PCB 9	1.794712968	0.05303141
PCB 10	0.581009339	0.024728758
PCB 11	6.638491455	0.521863351
PCB 13/12	8.991611534	0.224818822
PCB 15	32.87085508	0.969422933
PCB 16	42.74220549	0.98293993
PCB 17	68.82154321	1.515767954
PCB 30/18	97.33887558	2.059260697
PCB 19	11.34381338	0.495128735
PCB 28/20	253.8323214	4.624106995
PCB 21/33	73.30463965	1.342384877
PCB 22	67.12670934	1.279632363
PCB 23	0.14467924	0
PCB 24	0.652337615	0.04836775
PCB 25	47.4695602	1.015505801
PCB 29/26	43.12534133	0.885605168
PCB 27	8.308343516	0.297943733
PCB 31	212.5966188	3.695939678
PCB 32	43.38240622	0.916326504
PCB 34	1.585230434	0.145160706
PCB 35	2.759504101	0.128900316
PCB 36	0.665898125	0
PCB 37	47.32443064	0.653654755
PCB 38	0.196413442	0
PCB 39	0.652109832	0.159430524
PCB 71/40	76.73207229	1.745076428
PCB 41	9.064482759	0.148660004
PCB 42	54.68784765	1.05613136
PCB 43	6.821637204	0.135142277
PCB 65/47/44	182.3050493	3.99262511
PCB 45	19.03780089	0.481528082
PCB 46	9.999490425	0.270437324
PCB 48	28.32888642	0.513173032
PCB 69/49	117.9281104	2.404586233

PCB 50/53	24.87188862	0.841200256
PCB 51	13.85231821	0.448932172
PCB 52	172.0941885	5.083174924
PCB 54	0.809755638	0.03783385
PCB 55	2.058090379	0.086050477
PCB 56	80.39884043	1.312263235
PCB 57	0.724914633	0.021735773
PCB 58	0.498923934	0.04497724
PCB 62/75/59	12.71735488	0.280453603
PCB 60	27.31473781	0.569046512
PCB 61/70/76/74	217.379847	5.000096629
PCB 63	6.034255666	0.141188023
PCB 64	77.39352797	1.568220203
PCB 66	144.5869688	2.909788803
PCB 67	4.518606972	0.100203808
PCB 68	1.085982658	0.101419946
PCB 72	1.353424147	0.048200057
PCB 73	0.413963093	0.025417048
PCB 77	16.28588726	0.494503406
PCB 78	0	0
PCB 79	0.378017967	0.115159678
PCB 80	0.131692474	0.039840577
PCB 81	0.364684123	0.076644203
PCB 82	13.00395271	0.413488633
PCB 83	4.162541746	0.157249416
PCB 84	22.3158257	0.877801857
PCB 116/85	15.08619327	0.368644149
PCB 119/109/86/97	26.83157482	0.745751316
PCB 125/87	35.35979924	1.209214569
PCB 88	0	0
PCB 89	1.312928643	0.044640385
PCB 113/90/101	80.22583187	3.044698739
PCB 91	12.38305817	0.424712498
PCB 92	15.51162068	0.505350456
PCB 100/93	2.386000297	0.08395618



PCB 94	0.965787432	0.031117912
PCB 95	53.44605046	1.718147329
PCB 96	0.965538088	0.032470108
PCB 98	2.269094167	0
PCB 99	41.59075322	1.295532535
PCB 102	1.275707255	0.107877595
PCB 103	1.076925464	0.037244369
PCB 104	0.144292648	0.007644733
PCB 105	33.50839727	0.88829499
PCB 106	0.93998968	0
PCB 107	6.033698884	0.214624078
PCB 108/124	2.30182508	0.122991975
PCB 110	105.8278825	3.205520599
PCB 111	0.081850393	0
PCB 112	0	0
PCB 114	1.818316528	0.134243983
PCB 115	0	0
PCB 117	1.848411973	0.452572281
PCB 118	78.30671881	2.056154204
PCB 120	0.224264254	0
PCB 121	0.050514832	0
PCB 122	0.986613502	0.099579962
PCB 123	0.234888976	0.077257156
PCB 126	0.330439894	0
PCB 127	0	0
PCB 138/163/129	58.52052372	2.101942084
PCB 130	2.834107984	0.123494401
PCB 131	0.601785023	0.033325568
PCB 132	16.29650472	0.59681313
PCB 133	0.717292426	0.049885137
PCB 134	3.22180261	0.157941947
PCB 151/135	16.11584405	0.700495433
PCB 136	6.125420687	0.293348164
PCB 137	1.961715032	0.096261751
PCB 139/140	0.689796187	0.039818144

PCB 141	8.533575871	0.327085404
PCB 142	0	0
PCB 143	0	0
PCB 144	1.812190657	0.095025048
PCB 145	0.021171769	0
PCB 146	0.078681492	0
PCB 147/149	39.65730454	1.668113213
PCB 148	0.129569438	0
PCB 150	0.152288454	0.009084833
PCB 152	0.104558824	0.008562604
PCB 153/168	38.35426906	1.554972817
PCB 154	0.685888501	0.033871935
PCB 155	0.02380368	0.002281126
PCB 156/157	5.290308321	0.156323424
PCB 158	5.049064935	0.184549502
PCB 159	0.088019534	0
PCB 160	0	0
PCB 161	5.103061693	0.204476868
PCB 162	0.155255628	0
PCB 164	3.417887065	0.117023363
PCB 165	0	0
PCB 167	1.606776472	0.090530076
PCB 169	0.466665382	0
PCB 170	10.84840552	0.541093068
PCB 171/173	3.387045609	0.159873062
PCB 172	2.065525526	0.152235402
PCB 174	11.33290412	0.544756822
PCB 175	0.353745799	0.026820294
PCB 176	1.101440093	0.057619133
PCB 177	6.370944196	0.318907066
PCB 178	1.913342427	0.101542527
PCB 179	3.946712387	0.200684726
PCB 193/180	23.48424573	1.113555118
PCB 181	0.202014464	0
PCB 182	0.077102405	0

PCB 183	6.028859349	0.30699322
PCB 184	0.025683176	0.008580124
PCB 185	0.937095657	0.052756264
PCB 186	0	0
PCB 187	12.86283759	0.583416862
PCB 188	0.039419439	0
PCB 189	1.091793339	0
PCB 190	2.406976618	0.118576179
PCB 191	0.570774848	0
PCB 192	0	0
PCB 194	5.038328506	0.290471799
PCB 195	1.951647585	0.137791315
PCB 196	2.505673545	0.170370339
PCB 197	0.195810887	0.038576476
PCB 198/199	5.761015646	0.35721405
PCB 200	0.61440381	0.054399399
PCB 201	0.559237743	0.042893868
PCB 202	0.954783669	0.088740305
PCB 203	3.278380737	0.208613391
PCB 205	0.34450034	0
PCB 206	2.524774273	0.210386313
PCB 207	0.263806569	0.029593328
PCB 208	0.600537145	0.059749183
PCB 209	1.47777232	0.252106448
Sum of mass of PCBs	3370.949217	88.17008465

Batch Sample ID:	COB10_CSSC_07_Bulk_080 714	COB10_CSSC_08_Bulk_080 714
Location	Near Lockport	Citgo Refinery
mass (g) of sediment (Dry weight)	1.675723442	1.25256211
Surrogate Recovery - Percent	Surrogate Recovery - Percent	Surrogate Recovery - Percent
PCB 14	0.676299063	0.386433648
D 65	0.685820182	0.416854577
PCB 166	1.023306549	0.564338159

Species	mass (ng)	mass (ng)
PCB 1	0.923437595	0.341882552
PCB 2	0.167389315	0.107913235
PCB 3	0.692724473	0.393358206
PCB 4	20.13162445	9.354924945
PCB 5	0.357585079	0.089522024
PCB 6	11.417963	3.638644017
PCB 7	0.901949562	0.275083321
PCB 8	24.3431669	8.866574597
PCB 9	1.258019942	0.335377534
PCB 10	0.72291632	0.152123499
PCB 11	3.687266145	1.983692699
PCB 13/12	4.734542341	2.785495479
PCB 15	23.76047376	10.93015463
PCB 16	41.35760365	11.43140814
PCB 17	46.6334762	23.95105305
PCB 30/18	87.86853882	28.36389175
PCB 19	11.78479218	6.008666332
PCB 28/20	137.9283537	74.35860112
PCB 21/33	40.79965737	14.94831645
PCB 22	38.94118681	17.87224986
PCB 23	0.286126754	0.208830805
PCB 24	0.817291783	0.19414832
PCB 25	29.11347022	16.03604626
PCB 29/26	22.16279854	13.1432078
PCB 27	6.890312836	3.202329227
PCB 31	115.5197778	58.59419595
PCB 32	27.40600505	16.67096763
PCB 34	0.987456232	0.554448945
PCB 35	1.619737904	0.895343904
PCB 36	0.399668954	0.318202778
PCB 37	28.63282956	13.63936852
PCB 38	0.239471375	0.145106648
PCB 39	0.460145824	0.29257952
PCB 71/40	50.43539578	30.66926677

PCB 41	6.213331589	2.601434405
PCB 42	34.19193891	20.25687942
PCB 43	4.922166981	2.745919515
PCB 65/47/44	114.7811772	71.47875178
PCB 45	22.53804469	8.381662499
PCB 46	9.332663746	4.540706034
PCB 48	19.35709226	9.79169751
PCB 69/49	68.37081292	47.36183349
PCB 50/53	21.33199681	12.74501315
PCB 51	7.462692996	8.015627719
PCB 52	121.8704616	66.4400818
PCB 54	0.586346247	0.630000294
PCB 55	1.285750065	0.67338771
PCB 56	39.81532166	24.64204632
PCB 57	0.392301841	0.305082655
PCB 58	0.348041769	0.286326173
PCB 62/75/59	8.9476193	4.798382558
PCB 60	13.91942136	8.654074315
PCB 61/70/76/74	146.3212152	87.54927523
PCB 63	4.023628671	2.462218118
PCB 64	50.93557467	28.40039055
PCB 66	70.76220122	48.56847393
PCB 67	2.943110405	1.590371735
PCB 68	0.623229031	0.51590577
PCB 72	0.821836462	0.553683673
PCB 73	0.216630454	0.283907132
PCB 77	8.378157429	5.390047755
PCB 78	0	0
PCB 79	0.334174937	0.232805401
PCB 80	0.100147314	0
PCB 81	0.257697015	0.222761592
PCB 82	8.071079889	5.208321104
PCB 83	2.681698224	1.270193272
PCB 84	19.96531583	12.1009264
PCB 116/85	8.791753133	6.696366704

PCB 119/109/86/97	17.77802896	11.89022635
PCB 125/87	20.28903336	14.28681562
PCB 88	0	0
PCB 89	0.886544371	0.752379923
PCB 113/90/101	51.74215788	36.81369464
PCB 91	10.66768142	8.058916806
PCB 92	10.40643802	7.671877799
PCB 100/93	1.46406609	1.745644945
PCB 94	0.683133985	0.693478647
PCB 95	42.79487753	26.39139231
PCB 96	0.830279977	0.590257273
PCB 98	0	0
PCB 99	25.02517173	19.49390752
PCB 102	2.536545978	1.701617086
PCB 103	0.758170475	0.742768874
PCB 104	0.087739381	0.140431232
PCB 105	16.5202662	12.54936438
PCB 106	0	0
PCB 107	3.654462814	2.650200686
PCB 108/124	1.339652238	1.016969386
PCB 110	61.15180468	43.61376181
PCB 111	0	0.111313279
PCB 112	0	0
PCB 114	1.057464744	0.860848044
PCB 115	0	0
PCB 117	1.730149582	1.000727818
PCB 118	41.19952806	30.58365145
PCB 120	0.173750549	0.181876534
PCB 121	0.032064107	0.049721447
PCB 122	0.635490213	0.495844206
PCB 123	0.747167915	0.652516108
PCB 126	0	0.428559294
PCB 127	0	0
PCB 138/163/129	42.37538913	34.73393595
PCB 130	2.213655103	1.60360683

PCB 131	0.483981019	0.360171475
PCB 132	12.53162277	9.315835473
PCB 133	0.648530802	0.542720197
PCB 134	2.550947691	1.989144774
PCB 151/135	13.60422621	11.34475769
PCB 136	5.367407437	4.14344698
PCB 137	1.189589382	0.977657028
PCB 139/140	0.550960748	0.414172643
PCB 141	5.989985516	5.325456805
PCB 142	0	0
PCB 143	0	0
PCB 144	1.536653066	1.209404758
PCB 145	0	0.012945765
PCB 146	0.079795579	0.021781119
PCB 147/149	29.95189935	26.6718805
PCB 148	0.116190633	0.107090777
PCB 150	0.115847782	0.132462254
PCB 152	0.089676591	0.10271334
PCB 153/168	29.84632933	25.60862026
PCB 154	0.544951833	0.553194899
PCB 155	0.019419132	0.027687259
PCB 156/157	2.625102849	2.726092375
PCB 158	3.545364205	2.854410957
PCB 159	0.106498767	0.1065267
PCB 160	0	0
PCB 161	4.128798464	3.354721917
PCB 162	0.171887774	0.136803422
PCB 164	2.56578939	2.027551412
PCB 165	0	0
PCB 167	1.119289618	0.949731807
PCB 169	0.533644654	0.550693826
PCB 170	8.573344381	8.458975457
PCB 171/173	2.880514257	2.782267408
PCB 172	1.616489829	1.568326204
PCB 174	10.08042258	9.918255905

PCB 175	0.33652611	0.319715286
PCB 176	1.053339191	0.986671887
PCB 177	5.592799369	5.533857238
PCB 178	1.824495084	1.752260037
PCB 179	3.870059539	3.677357731
PCB 193/180	19.63587543	20.14638281
PCB 181	0.140831329	0.124035565
PCB 182	0	0.080033006
PCB 183	5.529369314	5.492600709
PCB 184	0.030744029	0.031514722
PCB 185	0.63293568	0.880805638
PCB 186	0	0
PCB 187	11.51287578	11.40382656
PCB 188	0.027277073	0.038056014
PCB 189	0.50157797	0.374640848
PCB 190	1.879622208	1.887160791
PCB 191	0.455544235	0.451251481
PCB 192	0	0
PCB 194	4.23303669	4.809430966
PCB 195	1.847374635	2.003933828
PCB 196	2.326992211	2.524047847
PCB 197	0.221887424	0.226595373
PCB 198/199	5.629063275	6.113553143
PCB 200	0.60461147	0.649592015
PCB 201	0.515569279	0.638890821
PCB 202	1.150249846	1.169314797
PCB 203	3.149282935	3.444112705
PCB 205	0.355675174	0.369754655
PCB 206	3.031638935	4.00393624
PCB 207	0.338257502	0.431560239
PCB 208	0.81001273	1.170640397
PCB 209	2.351782589	3.869126765
Sum of mass of PCBs	2185.812971	1336.554



<b>Batch Sample ID:</b>	<b>COB10_CSSC_09_Bulk_080 714</b>	<b>COB10_CSSC_10_Bulk_080 714</b>
Location	Cal-Sag River Junction	Cal-Sag River
mass (g) of sediment (Dry weight)	1.455087119	1.923289329
Surrogate Recovery - Percent	Surrogate Recovery - Percent	Surrogate Recovery - Percent
PCB 14	0.807554437	0.892134719
D 65	0.833518853	1.002772626
PCB 166	1.128000629	1.126056564
Species	mass (ng)	mass (ng)
PCB 1	0.849901214	7.444098553
PCB 2	0.177168777	0.840554642
PCB 3	0.81836815	4.129669811
PCB 4	9.692135087	147.3003131
PCB 5	0.169375249	2.115696217
PCB 6	5.203903488	42.38712873
PCB 7	0.48423831	4.635720925
PCB 8	13.59825185	192.9350591
PCB 9	0.631151172	11.04754234
PCB 10	0.29074059	9.164186823
PCB 11	3.008531844	16.17606174
PCB 13/12	3.750193115	22.6680736
PCB 15	16.67000296	194.7583094
PCB 16	17.98584866	276.8831855
PCB 17	25.48563468	248.7562041
PCB 30/18	39.62812689	528.2417279
PCB 19	5.987416111	57.61571892
PCB 28/20	93.49398397	625.988923
PCB 21/33	23.37476524	246.7224855
PCB 22	23.76978627	201.4876895
PCB 23	0.257532932	2.080859738
PCB 24	0.450252167	6.513083506
PCB 25	16.84333293	53.80809047
PCB 29/26	15.25033742	110.9222255
PCB 27	4.183255929	38.37562754
PCB 31	70.55606378	562.0501856

PCB 32	19.01919446	141.5557523
PCB 34	0.552838634	3.65638849
PCB 35	1.618223051	9.717370176
PCB 36	0.368964681	2.227358438
PCB 37	21.04941484	189.9661615
PCB 38	0.17925502	0.800344576
PCB 39	0.340673384	2.079449692
PCB 71/40	34.37441336	198.3791721
PCB 41	4.010904247	37.92730808
PCB 42	24.3030414	140.627677
PCB 43	3.210911012	21.76194176
PCB 65/47/44	79.23714465	409.6110219
PCB 45	12.72789076	93.75357411
PCB 46	5.695239019	37.01366966
PCB 48	12.40475384	108.9291155
PCB 69/49	52.26730142	282.7846257
PCB 50/53	13.62930892	72.92662754
PCB 51	6.044734999	19.36253197
PCB 52	84.06567223	0
PCB 54	0.43209671	0.923147065
PCB 55	0.989827507	3.580554495
PCB 56	30.9193422	187.0708258
PCB 57	0.321587204	1.663113991
PCB 58	0.224663268	0.856752079
PCB 62/75/59	6.465072664	40.81497033
PCB 60	11.38359805	82.8219893
PCB 61/70/76/74	93.92793046	479.9438502
PCB 63	2.450134068	12.21970475
PCB 64	35.1450139	204.2066442
PCB 66	57.73143962	238.8089214
PCB 67	2.350013871	11.65535024
PCB 68	0.474198861	1.052426763
PCB 72	0.582765248	2.146188289
PCB 73	0.15044932	363.8232548
PCB 77	8.311201737	45.03944177

PCB 78	0	0.180810848
PCB 79	0.269954864	0.654269984
PCB 80	0.075315965	0
PCB 81	0.193565717	1.401057288
PCB 82	7.596936309	46.06679719
PCB 83	3.082514715	16.66676447
PCB 84	16.81864188	66.25965129
PCB 116/85	8.900645376	49.01735545
PCB 119/109/86/97	16.6405471	87.91695798
PCB 125/87	23.42266206	119.6947885
PCB 88	0	0
PCB 89	0.842515431	5.940101602
PCB 113/90/101	54.76782427	255.3980098
PCB 91	8.210468103	33.6035853
PCB 92	10.71718103	47.10851102
PCB 100/93	1.135390874	2.453557596
PCB 94	0.530306132	1.764384057
PCB 95	40.15496798	177.4644022
PCB 96	0.610577885	3.606040397
PCB 98	0	0
PCB 99	25.99147602	127.0042941
PCB 102	1.96423624	11.42341432
PCB 103	0.58425507	1.619095476
PCB 104	0.06720606	0.040437025
PCB 105	18.74024729	94.36738601
PCB 106	0	0.346051128
PCB 107	4.032071624	17.90424329
PCB 108/124	1.710727784	9.063897763
PCB 110	65.96158252	304.2013116
PCB 111	0.103362994	0.26178811
PCB 112	0	0
PCB 114	1.102088272	6.319715001
PCB 115	0	0
PCB 117	1.553107665	7.442083505
PCB 118	47.2031998	224.082075

PCB 120	0.23674878	0.534316859
PCB 121	0	0
PCB 122	0.664067185	3.547610302
PCB 123	0.879226478	5.118475126
PCB 126	0.283733011	1.293741978
PCB 127	0	0
PCB 138/163/129	55.67614761	128.2156758
PCB 130	3.057695437	7.892714731
PCB 131	0.646304748	1.992091103
PCB 132	16.68801167	40.76276786
PCB 133	0.684140631	1.544267701
PCB 134	3.473031042	9.725006221
PCB 151/135	14.882144	33.78780633
PCB 136	6.014248361	15.02528029
PCB 137	2.484505423	6.107744568
PCB 139/140	0.794459142	2.087690561
PCB 141	8.22610977	19.1052885
PCB 142	0	0.066233117
PCB 143	0	0
PCB 144	1.807130698	4.891489654
PCB 145	0.019680285	0.067940341
PCB 146	0.045951321	0.037478298
PCB 147/149	36.69128003	83.91590324
PCB 148	0.076616679	0.07282133
PCB 150	0.086558621	0.100098482
PCB 152	0.065833569	0.114914592
PCB 153/168	36.27709227	79.51794303
PCB 154	0.537150367	0.843104996
PCB 155	0.010215106	0.003598523
PCB 156/157	5.479057448	12.38092193
PCB 158	5.148356431	12.58269128
PCB 159	0.066841125	0.152216099
PCB 160	0	0
PCB 161	5.010002928	10.62689602
PCB 162	0.162150554	0.441571607

PCB 164	3.17217833	7.347447365
PCB 165	0	0.03455354
PCB 167	1.70311159	4.052865441
PCB 169	0.341621767	0.754812302
PCB 170	8.870696586	17.82950407
PCB 171/173	2.953460197	6.307097131
PCB 172	1.474457651	3.279591311
PCB 174	9.385508322	20.54393255
PCB 175	0.296726624	0.744213406
PCB 176	0.983984175	2.382277331
PCB 177	5.326712737	11.02706776
PCB 178	1.590444114	3.516772028
PCB 179	3.291998704	7.508027975
PCB 193/180	18.56457244	37.50646864
PCB 181	0.1351273	0.308536938
PCB 182	0.057435793	0.487933231
PCB 183	4.963070825	11.16129286
PCB 184	0.016953757	0.023769555
PCB 185	0.827542644	1.400088254
PCB 186	0	0.014285542
PCB 187	10.28851051	21.22182292
PCB 188	0.021259245	0.024929499
PCB 189	0.442918632	0.879321286
PCB 190	1.808929148	3.366060858
PCB 191	0.365709617	0.838311281
PCB 192	0	0
PCB 194	3.422891622	7.071238484
PCB 195	1.393024412	2.934958844
PCB 196	1.8595686	4.117465728
PCB 197	0.167695193	0.317025367
PCB 198/199	4.412301135	9.784693132
PCB 200	0.487512904	1.091990653
PCB 201	0.450426317	1.063328951
PCB 202	0.835534825	1.858260493
PCB 203	2.467255098	5.586288462

PCB 205	0.249151477	0.492455586
PCB 206	2.067559908	3.840660303
PCB 207	0.214362635	0.412380723
PCB 208	0.595435905	1.009884227
PCB 209	1.575894778	1.908609345
Sum of mass of PCBs	1685.809127	9470.635009

**Batch Sample ID:** COB10\_CSSC\_11\_Bulk(Blank)\_080714

Location	blank
mass (g) of sediment (Dry weight)	0
Surrogate Recovery - Percent	Surrogate Recovery - Percent
PCB 14	0.497618849
D 65	0.543791697
PCB 166	0.691426195
Species	mass (ng)
PCB 1	0.016653338
PCB 2	0.008048636
PCB 3	0.012847819
PCB 4	0.065219399
PCB 5	0.005466922
PCB 6	0.027477998
PCB 7	0.009276682
PCB 8	0.10003799
PCB 9	0.010049706
PCB 10	0.004766975
PCB 11	0.487206573
PCB 13/12	0.054673411
PCB 15	0.070985214
PCB 16	0.068215264
PCB 17	0.080135926
PCB 30/18	0.159753071
PCB 19	0.022147242
PCB 28/20	0.186113564
PCB 21/33	0.094811759

PCB 22	0.060646308
PCB 23	0.002418137
PCB 24	0.003475458
PCB 25	0.015596797
PCB 29/26	0.033206964
PCB 27	0.010865744
PCB 31	0.158921419
PCB 32	0.048529207
PCB 34	0.003089221
PCB 35	0.007996139
PCB 36	0.001758616
PCB 37	0.056461775
PCB 38	0.001813272
PCB 39	0.003977853
PCB 71/40	0.062295519
PCB 41	0.0138078
PCB 42	0.038196476
PCB 43	0.008115097
PCB 65/47/44	0.220015428
PCB 45	0.011356704
PCB 46	0.016136626
PCB 48	0.033222446
PCB 69/49	0.143512346
PCB 50/53	0.134108252
PCB 51	0.018559848
PCB 52	0.409684093
PCB 54	0.000577714
PCB 55	0.015186811
PCB 56	0.063088404
PCB 57	0.006939756
PCB 58	0.003224143
PCB 62/75/59	0.020041717
PCB 60	0.04542767
PCB 61/70/76/74	0.329190466
PCB 63	0.006252056

PCB 64	0.081888762
PCB 66	0.107156032
PCB 67	0.004699467
PCB 68	0.05088184
PCB 72	0.001221079
PCB 73	0.013514952
PCB 77	0.027496404
PCB 78	0.008278554
PCB 79	0.005928995
PCB 80	0.006135949
PCB 81	0.011037566
PCB 82	0.062594772
PCB 83	0.253844975
PCB 84	0.113879582
PCB 116/85	0.296689318
PCB 119/109/86/97	0.089433958
PCB 125/87	0.146631299
PCB 88	0.017984699
PCB 89	0.010869668
PCB 113/90/101	0.357460285
PCB 91	0.041221508
PCB 92	0.085101868
PCB 100/93	0.009732807
PCB 94	0.007004258
PCB 95	0.350394341
PCB 96	0.00362969
PCB 98	0.007453695
PCB 99	0.012523108
PCB 102	0.006008607
PCB 103	0.009331246
PCB 104	0.003364701
PCB 105	0.095013356
PCB 106	0.13370299
PCB 107	0.01682178
PCB 108/124	0.025548951



PCB 110	0.047427533
PCB 111	0.006488708
PCB 112	0.00644592
PCB 114	0.022312151
PCB 115	0.012996937
PCB 117	0.384798398
PCB 118	0.015481713
PCB 120	0.009213496
PCB 121	0.004675228
PCB 122	0.030565066
PCB 123	0.021587255
PCB 126	0.359429147
PCB 127	0.032153359
PCB 138/163/129	0.135339586
PCB 130	0.023356895
PCB 131	0.010645159
PCB 132	0.076604771
PCB 133	0.024321592
PCB 134	0.024480029
PCB 151/135	0.063886416
PCB 136	0.039238438
PCB 137	0.029733276
PCB 139/140	0.008085556
PCB 141	0.054144919
PCB 142	0.005789014
PCB 143	0.010766
PCB 144	0.008704873
PCB 145	0.0044201
PCB 146	0.034764406
PCB 147/149	0.150576418
PCB 148	0.007913295
PCB 150	0.006444923
PCB 152	0.004728936
PCB 153/168	0.120669037
PCB 154	0.003286678

PCB 155	0.004662883
PCB 156/157	0.005581929
PCB 158	0.03196978
PCB 159	0.009278421
PCB 160	0.008200679
PCB 161	0.013470617
PCB 162	0.009291618
PCB 164	0.024228471
PCB 165	0.017328609
PCB 167	0.002805253
PCB 169	0.007707816
PCB 170	0.011318217
PCB 171/173	0.017795376
PCB 172	0.013124736
PCB 174	0.025879853
PCB 175	0.011519628
PCB 176	0.014260772
PCB 177	0.009341515
PCB 178	0.015233618
PCB 179	0.022828785
PCB 193/180	0.005611543
PCB 181	0.010745772
PCB 182	0.017422915
PCB 183	0.013295152
PCB 184	0.021499404
PCB 185	0.011593085
PCB 186	0.012687663
PCB 187	0.046387098
PCB 188	0.010853281
PCB 189	0.023147731
PCB 190	0.00551245
PCB 191	0.00864631
PCB 192	0.009643602
PCB 194	0.029887104
PCB 195	0.033782289

PCB 196	0.017158142
PCB 197	0.029441903
PCB 198/199	0.03841332
PCB 200	0.010281647
PCB 201	0.016825471
PCB 202	0.039356204
PCB 203	0.014952765
PCB 205	0.025989179
PCB 206	0.062297314
PCB 207	0.018821665
PCB 208	0.038493182
PCB 209	0.192091593
Sum of mass of PCBs	8.808206424

#### A.8.4 Mass of PCBs in the Bulk Sediment Triplicate

<b>Batch Sample ID:</b>	<b>COB10_CSSC08_Bulk01_08 0714</b>	<b>COB10_CSSC08_Bulk02_08 0714</b>
Location	Citgo Refinery	Citgo Refinery
mass (g) of sediment (Dry weight)	0.921184305	1.065441355
Surrogate Recovery		
PCB 14	0.891204734	0.829952795
D 65	0.883301529	0.840102506
PCB 166	1.206619245	1.188714587
Species	mass (ng)	mass (ng)
PCB 1	0.183419469	0.236341502
PCB 2	0.079369113	0.094566875
PCB 3	0.284837755	0.366750239
PCB 4	5.434550317	6.65700875
PCB 5	0.093885997	0.118230897
PCB 6	0.243535984	0.305621361
PCB 7	0.197669425	0.246310496
PCB 8	2.525748497	3.13482236
PCB 9	0.066187518	0.081934517

PCB 10	6.253684562	7.851108422
PCB 11	1.586190916	1.97503635
PCB 13/12	2.095272952	2.69746297
PCB 15	8.183478084	10.4775909
PCB 16	3.952858282	4.796276958
PCB 17	20.13614421	24.58850319
PCB 30/18	17.29511862	20.95401974
PCB 19	2.306788163	2.826165799
PCB 28/20	0.190566739	0.210249984
PCB 21/33	7.596705309	9.371816129
PCB 22	12.30278497	14.57419528
PCB 23	0.404952891	0.490374117
PCB 24	0.164209976	0.225945748
PCB 25	9.623457463	11.84251116
PCB 29/26	11.90930789	14.61405115
PCB 27	44.4482055	54.52567158
PCB 31	56.15031645	68.66737228
PCB 32	11.02299215	13.21058493
PCB 34	13.65458046	16.25956066
PCB 35	0.26036318	0.342887653
PCB 36	0.265772971	0.32517609
PCB 37	0.136531464	0.173905537
PCB 38	0.920516692	0.944132505
PCB 39	10.8776363	13.35225789
PCB 71/40	0.443070166	0.554802031
PCB 41	9.726245765	11.9042923
PCB 42	7.419138442	7.482313479
PCB 43	5.175377191	7.568473982
PCB 65/47/44	3.536206187	4.37624675
PCB 45	53.68258106	65.74226026
PCB 46	0.196377231	0.31971544
PCB 48	2.209018172	2.745226535
PCB 69/49	37.29356664	45.1731588
PCB 50/53	7.897982107	9.719132148
PCB 51	54.91662999	66.99464951

PCB 52	3.774028317	4.689565762
PCB 54	16.21054435	19.67128815
PCB 55	1.99874534	2.656906798
PCB 56	24.39612903	28.66829123
PCB 57	22.66703651	26.88304171
PCB 58	0.445468295	0.511614234
PCB 62/75/59	0.432074923	0.463479121
PCB 60	0.255847949	0.263391981
PCB 61/70/76/74	0.053715755	0.082305472
PCB 63	0.193496257	0.212820487
PCB 64	1.306211568	1.429377543
PCB 66	2.242554955	2.429547625
PCB 67	63.67774763	63.30833839
PCB 68	39.85579122	36.53333699
PCB 72	20.08040788	23.7038067
PCB 73	7.115810152	8.511216846
PCB 77	0	0
PCB 78	0.194756586	0.235249353
PCB 79	0	0
PCB 80	0.154614835	0.163912593
PCB 81	5.324077972	5.26581561
PCB 82	0.098851537	0.120093333
PCB 83	0.462073096	0.586522947
PCB 84	0.56154417	0.653917312
PCB 116/85	0.536918276	0.627651088
PCB 119/109/86/97	21.85475444	23.95195678
PCB 125/87	1.357998727	1.459419609
PCB 88	0.041375737	0.061165105
PCB 89	1.737895108	2.04509578
PCB 113/90/101	0.009459926	0.011557635
PCB 91	5.681196656	5.833757147
PCB 92	9.40140993	8.708176944
PCB 100/93	0.536040569	0.628562803
PCB 94	0.036433534	0.045612505
PCB 95	6.246592002	7.329752798

PCB 96	30.6440416	35.05651798
PCB 98	1.453692442	1.653363254
PCB 99	14.37922527	16.50327443
PCB 102	0.051424122	0.056555182
PCB 103	8.756159315	10.24526346
PCB 104	11.30666977	12.95589746
PCB 105	0.989547675	1.408643369
PCB 106	5.023884582	5.401140385
PCB 107	35.45151895	40.48436569
PCB 108/124	0.119732337	0.2635976
PCB 110	4.025627396	4.76767071
PCB 111	0.081467273	0.080558448
PCB 112	0.131484098	0.180430205
PCB 114	0.795345572	0.969512017
PCB 115	2.102698566	2.509385176
PCB 117	0.531686956	0.593301022
PCB 118	0.069395562	0.062761249
PCB 120	25.32366352	28.92305187
PCB 121	0.374002346	0.478934894
PCB 122	0.667031671	0.787212806
PCB 123	10.05097434	11.43773435
PCB 126	0	0
PCB 127	0.274839763	0.181068026
PCB 138/163/129	0.018729748	0.029113001
PCB 130	0.079789574	0.108304523
PCB 131	0.122633418	0.150248732
PCB 132	3.631842051	4.548296868
PCB 133	0.011280536	0.015843532
PCB 134	0.091463017	0.129386623
PCB 151/135	10.4921011	13.29271032
PCB 136	0.465078771	0.608265222
PCB 137	1.134009803	1.428517945
PCB 139/140	25.37284442	30.98274249
PCB 141	1.232519423	1.538490485
PCB 142	0.275610278	0.367603217

PCB 143	0.37814945	0.491743364
PCB 144	0.304574004	0.403189042
PCB 145	0	0
PCB 146	8.905415345	11.01865908
PCB 147/149	0.464738796	0.659373439
PCB 148	0.037681459	0.057903983
PCB 150	4.364708118	5.477427491
PCB 152	0	0
PCB 153/168	23.92625493	29.42733427
PCB 154	4.914109861	6.277775353
PCB 155	1.372549235	1.838475719
PCB 156/157	0.792726105	1.117730146
PCB 158	1.687100356	2.098663132
PCB 159	30.8602854	37.64458158
PCB 160	0	0
PCB 161	2.484391178	3.118125244
PCB 162	0.05619675	0.065432532
PCB 164	0.091198203	0.121464241
PCB 165	0.822054965	1.008306078
PCB 167	2.415303751	2.83629613
PCB 169	0.395925913	0.458109784
PCB 170	0.029150586	0.046089731
PCB 171/173	3.379176249	4.188409042
PCB 172	0.018056758	0.030446568
PCB 174	0.899805364	1.132354418
PCB 175	0.001580104	0.006594006
PCB 176	1.506730271	1.925717603
PCB 177	0.220902856	0.28381735
PCB 178	9.873002512	12.11855049
PCB 179	0.044306275	0.200632426
PCB 193/180	5.040719222	5.948154773
PCB 181	0.673559721	1.068394872
PCB 182	9.251523149	11.2366843
PCB 183	5.141367814	6.42588967
PCB 184	0.101003429	0.090619447

PCB 185	2.603937921	3.280860543
PCB 186	1.565121025	2.050756785
PCB 187	0	0
PCB 188	19.05127227	21.68897643
PCB 189	0.48493573	0.568430638
PCB 190	8.148736941	9.305345905
PCB 191	1.786089855	1.995632105
PCB 192	1.142236809	1.600091736
PCB 194	1.029041653	1.297514662
PCB 195	0.506110457	0.653319349
PCB 196	0.152652905	0.240516013
PCB 197	0.520700997	0.680758065
PCB 198/199	5.038344342	6.05049047
PCB 200	2.216658762	2.695459392
PCB 201	3.010380038	3.584564706
PCB 202	1.635278045	2.025912488
PCB 203	4.255890001	5.041349867
PCB 205	0.336891834	0.505318333
PCB 206	0.930437355	1.178255989
PCB 207	0.258664264	0.336824408
PCB 208	3.270744467	3.9615905
PCB 209	3.296601345	3.776393839
Sum of mass of PCBs	1069.51	1256.41

**Batch Sample ID:**

**COB10\_CSSC08\_Bulk03\_080714**

Location

Citgo Refinery

mass (g) of sediment (Dry weight)

1.088522483

Surrogate Recovery - Percent

PCB 14

0.824411962

D 65

0.826330768

PCB 166

1.172681747

Species

mass (ng)

PCB 1

0.21614093

PCB 2

0.089350617



PCB 3	0.333795634
PCB 4	6.144095776
PCB 5	0.105490455
PCB 6	0.26892866
PCB 7	0.214541834
PCB 8	2.826350811
PCB 9	0.068684812
PCB 10	6.978598017
PCB 11	1.797943301
PCB 13/12	2.400447478
PCB 15	9.191280471
PCB 16	4.216556206
PCB 17	22.03300407
PCB 30/18	18.82807347
PCB 19	2.545438969
PCB 28/20	0.203396133
PCB 21/33	8.38286521
PCB 22	12.81216901
PCB 23	0.454872282
PCB 24	0.184381282
PCB 25	10.52748606
PCB 29/26	12.82327099
PCB 27	48.21964359
PCB 31	60.8961251
PCB 32	11.93589555
PCB 34	14.66104101
PCB 35	0.290281031
PCB 36	0.260387687
PCB 37	0.147891463
PCB 38	0.796151522
PCB 39	11.72259696
PCB 71/40	0.496802342
PCB 41	10.72437667
PCB 42	6.458431873
PCB 43	7.126252682

PCB 65/47/44	4.093741626
PCB 45	59.47056017
PCB 46	0.283018985
PCB 48	2.463375989
PCB 69/49	40.65089985
PCB 50/53	8.792401937
PCB 51	60.26747835
PCB 52	4.177344992
PCB 54	17.73576003
PCB 55	2.354206256
PCB 56	25.7828768
PCB 57	23.9545123
PCB 58	0.475337878
PCB 62/75/59	0.436714296
PCB 60	0.247241944
PCB 61/70/76/74	0.054198141
PCB 63	0.185442894
PCB 64	1.329368242
PCB 66	2.207116432
PCB 67	59.02432681
PCB 68	34.41681357
PCB 72	21.33635936
PCB 73	7.758319411
PCB 77	0
PCB 78	0.123751681
PCB 79	0
PCB 80	0.151807184
PCB 81	4.612108851
PCB 82	0.105426734
PCB 83	0.516884252
PCB 84	0.613885375
PCB 116/85	0.561668538
PCB 119/109/86/97	22.00886317
PCB 125/87	1.420470934
PCB 88	0.046376129

PCB 89	1.786660329
PCB 113/90/101	0.022271656
PCB 91	5.484959079
PCB 92	8.262897377
PCB 100/93	0.572477444
PCB 94	0.045457938
PCB 95	6.588091817
PCB 96	31.40420773
PCB 98	1.567494552
PCB 99	14.75951556
PCB 102	0.074538149
PCB 103	8.613621047
PCB 104	12.24885733
PCB 105	0.938497973
PCB 106	5.238089412
PCB 107	35.64017671
PCB 108/124	0.293803191
PCB 110	4.237605353
PCB 111	0.078973912
PCB 112	0.158803239
PCB 114	0.858093006
PCB 115	2.237379519
PCB 117	0.514990833
PCB 118	0.073296778
PCB 120	25.68120154
PCB 121	0.390138517
PCB 122	0.690118986
PCB 123	10.15803651
PCB 126	0
PCB 127	0.22788656
PCB 138/163/129	0.028243087
PCB 130	0.10739935
PCB 131	0.147710485
PCB 132	4.163194459
PCB 133	0.014911727

PCB 134	0.114102141
PCB 151/135	12.34396225
PCB 136	0.547608843
PCB 137	1.312248871
PCB 139/140	28.43796926
PCB 141	1.300034726
PCB 142	0.426341552
PCB 143	0.45593022
PCB 144	0.375994976
PCB 145	0
PCB 146	10.12899672
PCB 147/149	0.612140427
PCB 148	0.058855872
PCB 150	4.985366417
PCB 152	0
PCB 153/168	26.52466912
PCB 154	5.724793827
PCB 155	1.61614817
PCB 156/157	0.973730615
PCB 158	1.910879066
PCB 159	34.15498855
PCB 160	0
PCB 161	2.777631771
PCB 162	0.089878211
PCB 164	0.14653008
PCB 165	0.946309583
PCB 167	2.582838668
PCB 169	0.432443591
PCB 170	0.047403429
PCB 171/173	3.795611488
PCB 172	0.033617767
PCB 174	1.020784029
PCB 175	0.005085299
PCB 176	1.743578994
PCB 177	0.295732576

PCB 178	11.01542035
PCB 179	0.371784036
PCB 193/180	5.595004943
PCB 181	0.83097701
PCB 182	10.23039797
PCB 183	5.938656545
PCB 184	0.246253478
PCB 185	2.965748144
PCB 186	1.897890981
PCB 187	0
PCB 188	19.33361286
PCB 189	0.580701921
PCB 190	8.683481961
PCB 191	1.942857302
PCB 192	1.228211303
PCB 194	1.2415186
PCB 195	0.61638129
PCB 196	0.229446821
PCB 197	0.668552138
PCB 198/199	5.62216954
PCB 200	2.585880477
PCB 201	3.376839477
PCB 202	2.018779457
PCB 203	4.634511342
PCB 205	0.534205822
PCB 206	1.12061099
PCB 207	0.357983546
PCB 208	3.725758495
PCB 209	3.386300844
Sum of mass of PCBs	1135.25

### A.8.5 Concentration of PCBs in the Uptake Experiment

Batch Sample ID:	COB10_05_PW03_UE_Blank_0807 14	COB10_06_PW03_UE_14_0807 14
Location (Duration )	Blank (63 days)	Cicero Ave (14 days)
Species	Cfiber (ng/L)	Cfiber (ng/L)
PCB 1	0.027261753	4.605085359
PCB 2	0.056160487	0
PCB 3	0.019382187	0.403474406
PCB 4	0.119346082	156.6471591
PCB 5	0.009388475	0
PCB 6	0.021711251	7.019628176
PCB 7	0.009781078	0.647393024
PCB 8	0.035589162	11.57582252
PCB 9	0.00700073	0.394655858
PCB 10	0.002369441	2.269300438
PCB 11	0.047006316	0.178482259
PCB 13/12	0.008204162	1.304820658
PCB 15	0.011235387	3.67953891
PCB 16	0.008635786	2.197991561
PCB 17	0.032293976	20.37922698
PCB 30/18	0.036856103	7.78401474
PCB 19	0.022993039	23.85944825
PCB 28/20	0.020954053	4.718331058
PCB 21/33	0.010317383	1.08205941
PCB 22	0.007515423	1.550022432
PCB 23	0.005771895	0
PCB 24	0.001604964	0
PCB 25	0.010841867	3.301375542
PCB 29/26	0.004649591	1.821955838
PCB 27	0.003539507	2.502411776
PCB 31	0.021224564	7.287652912
PCB 32	0.015572698	10.64504309
PCB 34	0.003833901	0

PCB 35	0.000325897	0.019050998
PCB 36	0.000436207	0.023346287
PCB 37	0.003240281	0.183425936
PCB 38	0.000144819	0.005177634
PCB 39	3.40124E-05	0
PCB 71/40	0.004251739	1.636873659
PCB 41	0.001409064	0.20885926
PCB 42	0.004022442	1.498502902
PCB 43	0.001461819	0.334762871
PCB 65/47/44	0.033577717	7.7917667
PCB 45	0.003277705	0.683317345
PCB 46	0.002112801	0.955831271
PCB 48	0.002464596	0.717936514
PCB 69/49	0.032342427	4.049808099
PCB 50/53	0.145615864	3.29656845
PCB 51	0.003540781	2.672470178
PCB 52	0.025191351	4.995682102
PCB 54	0.001073775	1.007889458
PCB 55	0.000272434	0.014619733
PCB 56	0.00269528	0.332539265
PCB 57	0.000110692	0.010975595
PCB 58	4.24061E-05	0
PCB 62/75/59	0.003772309	0.192048556
PCB 60	0.001175099	0.126947429
PCB 61/70/76/74	0.00942036	1.444969335
PCB 63	0.000311415	0.110856095
PCB 64	0.004551285	1.053167356
PCB 66	0.004116429	0.731937541
PCB 67	0.000166191	0.026669244
PCB 68	0.011909894	0.038395217
PCB 72	0.000105519	0.026061702
PCB 73	0.002643901	0.036597493
PCB 77	0.000391407	0.018285202
PCB 78	0.00044471	0
PCB 79	2.67286E-05	0

PCB 80	5.11656E-05	0
PCB 81	3.62645E-05	0
PCB 82	0.000813381	0.043006103
PCB 83	0.000393105	0.025147034
PCB 84	0.004338233	0.378073946
PCB 116/85	0.005910081	0.046264526
PCB 119/109/86/97	0.00193972	0.139231627
PCB 125/87	0.002382698	0.13698912
PCB 88	0.000363914	0
PCB 89	7.10085E-05	0.023938016
PCB 113/90/101	0.005526875	0.393018564
PCB 91	0.001253689	0.114507848
PCB 92	0.000468199	0.146487332
PCB 100/93	2.61648E-05	0.03742577
PCB 94	0.011090538	0.712870409
PCB 95	0.000432568	0.072430761
PCB 96	4.39045E-05	0.005888467
PCB 98	4.39045E-05	0.005888467
PCB 99	0.001956763	0.193651476
PCB 102	0.00018133	0.07294283
PCB 103	0.00071617	0.033402215
PCB 104	0.001422515	0.028173212
PCB 105	0.000533662	0.030288066
PCB 106	0.000164824	0.000661514
PCB 107	9.02462E-05	0.008657189
PCB 108/124	6.06122E-05	0.003690469
PCB 110	0.003928543	0.249378785
PCB 111	6.22582E-06	0
PCB 112	4.04083E-05	0
PCB 114	0.000592969	0
PCB 115	0.002673761	0
PCB 117	0.045155815	0
PCB 118	0.001056407	0.068533979
PCB 120	3.81483E-06	0



PCB 121	3.34435E-05	0.000652404
PCB 122	1.5281E-05	0.001871311
PCB 123	2.32586E-05	0.001892653
PCB 126	0.020881024	0
PCB 127	6.4039E-06	0
PCB 138/163/129	0.000692148	0.078201614
PCB 130	4.12434E-05	0.004206336
PCB 131	1.56674E-05	0.002080866
PCB 132	0.000615606	0.052713602
PCB 133	2.29258E-06	0.002382801
PCB 134	4.37205E-05	0.015273482
PCB 151/135	0.000562682	0.077994593
PCB 136	0.000765848	0.080770076
PCB 137	5.76294E-05	0.003384004
PCB 139/140	5.6172E-05	0.002514653
PCB 141	0.000167801	0.018421442
PCB 142	1.61172E-05	0
PCB 143	2.91794E-05	0
PCB 144	6.27306E-05	0.007300286
PCB 145	6.00601E-05	0
PCB 146	8.33633E-05	0.013411404
PCB 147/149	0.001184247	0.159489756
PCB 148	1.95375E-06	0.001274241
PCB 150	9.78707E-06	0.005672534
PCB 152	1.63212E-05	0.005726716
PCB 153/168	0.000501966	0.06281943
PCB 154	2.31454E-05	0.004596645
PCB 155	0.000187158	0
PCB 156/157	2.10048E-05	0.001734219
PCB 158	4.49825E-05	0.004141569
PCB 159	0.000111745	0
PCB 160	1.01176E-05	0
PCB 161	5.24813E-06	0
PCB 162	6.35053E-05	0
PCB 164	2.73422E-05	0.002789311

PCB 165	5.85829E-06	0.000160534
PCB 167	5.44006E-05	0.00074418
PCB 169	2.06685E-05	0.000460931
PCB 170	6.36132E-05	0.00979042
PCB 171/173	8.46511E-05	0.006014935
PCB 172	8.85891E-05	0.001770091
PCB 174	0.000118139	0.021458568
PCB 175	6.48473E-06	0.000657775
PCB 176	4.0092E-05	0.008175794
PCB 177	9.39719E-05	0.012890929
PCB 178	1.44502E-05	0.004823387
PCB 179	0.000149529	0.035517302
PCB 193/180	0.000109878	0.020400838
PCB 181	5.53923E-05	0
PCB 182	0.000259688	0
PCB 183	5.82428E-05	0.0099438
PCB 184	0.000715507	0
PCB 185	2.16477E-05	0.00239805
PCB 186	6.54151E-05	0
PCB 187	0.000206821	0.024241541
PCB 188	0.000163014	0
PCB 189	5.74336E-06	0.000349297
PCB 190	0.000306628	0.001802458
PCB 191	2.4409E-05	0.000307915
PCB 192	2.06489E-05	0
PCB 194	1.07525E-05	0.001509725
PCB 195	2.59706E-05	0.001325422
PCB 196	3.63438E-05	0.001541744
PCB 197	8.04862E-05	0
PCB 198/199	7.8881E-05	0.003653297
PCB 200	3.6094E-05	0.001518793
PCB 201	5.51084E-06	0.000545697
PCB 202	0.000376879	0.003074231
PCB 203	5.80598E-05	0.001961926
PCB 205	4.49499E-06	3.1369E-05

PCB 206	1.97114E-05	0.000386593
PCB 207	1.09727E-05	0.000170815
PCB 208	9.1771E-06	0.000430479
PCB 209	0.000467865	0.000521601
Sum	1.011904976	313.8606778

<b>Batch Sample ID: COB10_07_PW03_UE_24_080714</b>		<b>COB10_08_PW03_UE_39_080714</b>
Location	Cicero Ave (24 days)	Cicero Ave (39 days)
Species	Cfiber (ng/L)	Cfiber (ng/L)
PCB 1	5.471599907	4.467062749
PCB 2	0	0
PCB 3	0.472769859	0.44300128
PCB 4	172.2328457	180.5718477
PCB 5	0	0
PCB 6	7.780435673	9.152375991
PCB 7	0.680363402	0.69793663
PCB 8	12.52391255	15.16126169
PCB 9	0.429586545	0.433085576
PCB 10	2.160366181	1.895903906
PCB 11	0.190319186	0.197231728
PCB 13/12	1.371833325	1.777864361
PCB 15	3.692217317	4.859115576
PCB 16	2.446281748	0
PCB 17	22.07885033	14.45125828
PCB 30/18	8.62228801	5.708323836
PCB 19	23.82073305	14.67657044
PCB 28/20	5.749710113	3.997612159
PCB 21/33	1.157672729	0.66633022
PCB 22	1.467837612	0.927412334
PCB 23	0	0
PCB 24	0	0.659736008
PCB 25	3.700540328	2.419468592
PCB 29/26	2.415465595	1.602016698
PCB 27	2.565216356	1.638355856

PCB 31	8.377638377	5.533633788
PCB 32	10.94589425	7.359241897
PCB 34	0	0
PCB 35	0.029071961	0.02096295
PCB 36	0.026262415	0.014855575
PCB 37	0.220357283	0.11337927
PCB 38	0.020238844	0.010429991
PCB 39	0.019884984	0
PCB 71/40	1.786752548	1.832589304
PCB 41	0.172004909	0.167494639
PCB 42	1.605396251	1.740933878
PCB 43	0.390208774	0.433364034
PCB 65/47/44	8.773655828	8.895444366
PCB 45	0.900931617	1.028734357
PCB 46	1.079011696	1.14854729
PCB 48	0.798920068	0.816165484
PCB 69/49	4.7285471	4.88131386
PCB 50/53	3.692408617	4.057587683
PCB 51	2.982503446	2.988002044
PCB 52	5.84297821	5.971686884
PCB 54	1.100216268	1.099173391
PCB 55	0.016192298	0.016105868
PCB 56	0.351385205	0.342822445
PCB 57	0.014838158	0.012771189
PCB 58	0.007029362	0.007233845
PCB 62/75/59	0.241723594	0.238270343
PCB 60	0.132985726	0.128990572
PCB 61/70/76/74	1.573199456	1.563716868
PCB 63	0.12117489	0.118636936
PCB 64	1.16423615	1.142805139
PCB 66	0.80354659	0.808008111
PCB 67	0.03382656	0.033067348
PCB 68	0.044074776	0.042376825
PCB 72	0.031265514	0.02837295
PCB 73	0.038564513	0.038280347

PCB 77	0.020470981	0.020505085
PCB 78	0	0
PCB 79	0	0
PCB 80	0	0
PCB 81	0	0
PCB 82	0.058410104	0.063850714
PCB 83	0.035458718	0.033761136
PCB 84	0.439398971	0.420748192
PCB 116/85	0.063493475	0.05686012
PCB 119/109/86/97	0.140071145	0.137605989
PCB 125/87	0.150132844	0.129504425
PCB 88	0	0.35354751
PCB 89	0.024111522	0.02220794
PCB 113/90/101	0.449882627	0.426449807
PCB 91	0.1345301	0.126597955
PCB 92	0.211785912	0.157612129
PCB 100/93	0.045396366	0.043387908
PCB 94	0.814741546	0.7721045
PCB 95	0.085362983	0.084000518
PCB 96	0.007325494	0
PCB 98	0.007325494	0
PCB 99	0.222194644	0.20597993
PCB 102	0.082005111	0.063516528
PCB 103	0.042711495	0.040171487
PCB 104	0.034414787	0.03063646
PCB 105	0.033891175	0.030184042
PCB 106	0.002201592	0.001154272
PCB 107	0.010030957	0.009907047
PCB 108/124	0.004313683	0.004169472
PCB 110	0.304873455	0.285952727
PCB 111	0	0
PCB 112	0	0
PCB 114	0	0
PCB 115	0	0

PCB 117	0	0
PCB 118	0.083079116	0.080782777
PCB 120	0	0
PCB 121	0.000873615	0.000996558
PCB 122	0.001777159	0.003122789
PCB 123	0.000759532	0.000822425
PCB 126	0.01802968	0
PCB 127	0	0
PCB 138/163/129	0.098010732	0.091340495
PCB 130	0.005060867	0.005223752
PCB 131	0.001966614	0.002702529
PCB 132	0.061724867	0.058790268
PCB 133	0.002675543	0.002931793
PCB 134	0.017708176	0.017524148
PCB 151/135	0.096147218	0.089010869
PCB 136	0.092067978	0.08702277
PCB 137	0.004259323	0.003916602
PCB 139/140	0.003046111	0.003176531
PCB 141	0.021610564	0.020728221
PCB 142	0	0
PCB 143	0	0
PCB 144	0.008305727	0.007593274
PCB 145	0	0
PCB 146	0.016784066	0.015740783
PCB 147/149	0.195017782	0.181672652
PCB 148	0.001668579	0.001425036
PCB 150	0.006524	0.006330486
PCB 152	0.006376064	0.006413
PCB 153/168	0.079968807	0.073575409
PCB 154	0.005571524	0.004958034
PCB 155	0	0
PCB 156/157	0.001916969	0.001832411
PCB 158	0.004352981	0.004563161
PCB 159	0	0
PCB 160	0	0

PCB 161	0	0
PCB 162	0	0
PCB 164	0.003089601	0.00348982
PCB 165	0.000176804	0.000273729
PCB 167	0.000777878	0.000810391
PCB 169	0.000557704	0.000621682
PCB 170	0.014179996	0.010319282
PCB 171/173	0.009010519	0.007552287
PCB 172	0.002771966	0.00313184
PCB 174	0.029042768	0.024171621
PCB 175	0.000851027	0.000742717
PCB 176	0.010369103	0.008649616
PCB 177	0.017258552	0.015285468
PCB 178	0.006388327	0.004972953
PCB 179	0.045685133	0.037614984
PCB 193/180	0.030956911	0.023411822
PCB 181	0	0
PCB 182	0	0
PCB 183	0.014132066	0.012261175
PCB 184	0	0
PCB 185	0.00284039	0.002409073
PCB 186	0	0
PCB 187	0.032758488	0.027145266
PCB 188	0	0
PCB 189	0.000291779	0.000435479
PCB 190	0.002083472	0.001806504
PCB 191	0.000426917	0.000277923
PCB 192	0	0
PCB 194	0.002577205	0.001500851
PCB 195	0.002035165	0.001406751
PCB 196	0.00285075	0.00194475
PCB 197	0	0.001591251
PCB 198/199	0.00576079	0.004318343
PCB 200	0.002304618	0
PCB 201	0.000997607	0.000728571

PCB 202	0.004855668	0.003582987
PCB 203	0.003323301	0.002367722
PCB 205	9.12283E-05	8.12604E-05
PCB 206	0.000727142	0.000558393
PCB 207	0.000252268	0.000244049
PCB 208	0.000625686	0.00054306
PCB 209	0.000592023	0.000536855
Sum	343.6082334	323.5361723

**Batch Sample ID: COB10\_09\_PW03\_UE\_63\_080714 PW\_CSSC02\_072814**

Location	Cicero Ave (63 days)	Cicero Ave
Species	Cfiber (ng/L)	Cfiber (ng/L)
PCB 1	1.325950954	8.365640268
PCB 2	0	0
PCB 3	0	0.704223318
PCB 4	112.6450087	314.0545635
PCB 5	0	0
PCB 6	4.912671262	9.3432749
PCB 7	0.37213354	0.804360519
PCB 8	7.75327967	16.07245849
PCB 9	0.244745637	0.491605206
PCB 10	1.333909109	4.705376142
PCB 11	0.162701194	0.271462959
PCB 13/12	0.992109245	1.71118312
PCB 15	2.89165329	4.767080342
PCB 16	0	2.618702095
PCB 17	18.83336358	28.58340528
PCB 30/18	7.439278722	11.13805088
PCB 19	19.12699793	36.50746401
PCB 28/20	5.209821995	7.003263447
PCB 21/33	0.86838385	1.52994245
PCB 22	1.208634801	1.739743272
PCB 23	0	0.414568681
PCB 24	0.859790051	0
PCB 25	3.153132466	4.421968445



PCB 29/26	2.087801792	2.603564413
PCB 27	2.135160199	3.294136042
PCB 31	7.211616804	10.66350534
PCB 32	9.590810407	15.20068426
PCB 34	0	0.319057135
PCB 35	0.027319618	0.041578237
PCB 36	0.019360283	0.0373583
PCB 37	0	0.211647864
PCB 38	0.013592714	0.024178064
PCB 39	0	0.030187844
PCB 71/40	1.807504696	2.50063892
PCB 41	0.161906677	0.204705239
PCB 42	1.665193221	2.416897697
PCB 43	0.427473393	0.590177779
PCB 65/47/44	8.309682559	11.43506259
PCB 45	0.946642648	1.057635051
PCB 46	1.094250142	1.581158983
PCB 48	0.752423467	0.975743409
PCB 69/49	4.449757586	6.638355223
PCB 50/53	3.794952221	5.415173327
PCB 51	2.660001039	4.393064958
PCB 52	5.565316858	7.080052188
PCB 54	1.038876263	1.524090514
PCB 55	0.016798136	0.027028204
PCB 56	0.325302113	0.431097921
PCB 57	0.013604031	0.017893517
PCB 58	0.00614376	0.010528997
PCB 62/75/59	0.227552243	0.323632418
PCB 60	0.12209695	0.148462618
PCB 61/70/76/74	1.451690081	2.166401149
PCB 63	0.107364004	0.157450148
PCB 64	1.143454018	1.326310675
PCB 66	0.732612791	1.234159714
PCB 67	0.030135952	0.040362333
PCB 68	0.035987514	0.054578223

PCB 72	0.024510642	0.038848229
PCB 73	0.039987879	0.048155437
PCB 77	0.018456762	0.033771089
PCB 78	0	0
PCB 79	0	0.005300158
PCB 80	0	0
PCB 81	0	0
PCB 82	0.063899621	0.08594265
PCB 83	0.023300698	0.045558034
PCB 84	0.386682028	0.459964787
PCB 116/85	0.053518645	0.075546485
PCB 119/109/86/97	0.120582415	0.211354908
PCB 125/87	0.125086177	0.204739781
PCB 88	0.338367716	0
PCB 89	0.023188591	0.030125862
PCB 113/90/101	0.38671433	0.571225071
PCB 91	0.110385506	0.175280411
PCB 92	0.160495277	0.230961652
PCB 100/93	0.041727346	0.059208688
PCB 94	0.736405374	0.845701449
PCB 95	0.079075435	0.106742722
PCB 96	0.002906484	0.00368122
PCB 98	0	0.379529434
PCB 99	0.188173799	0.318276428
PCB 102	0.073775524	0.117236464
PCB 103	0.036074199	0.051527472
PCB 104	0.029558535	0.040940968
PCB 105	0.028339878	0.049251878
PCB 106	0.001226068	0.001489159
PCB 107	0.008781356	0.015355701
PCB 108/124	0.003501032	0.005933533
PCB 110	0.274651927	0.408036711
PCB 111	0	0.001235955
PCB 112	0	0.003157139

PCB 114	0	0
PCB 115	0	0
PCB 117	0	0
PCB 118	0.068485085	0.126823201
PCB 120	0	0.001366602
PCB 121	0.000676678	0.001198762
PCB 122	0.001722474	0.003971824
PCB 123	0.001049897	0.004193466
PCB 126	0	0
PCB 127	0	0
PCB 138/163/129	0.074514096	0.121338264
PCB 130	0.00396511	0.007354697
PCB 131	0.001883286	0.004271538
PCB 132	0.049399568	0.073198228
PCB 133	0.002535196	0.004141418
PCB 134	0.01384915	0.023015903
PCB 151/135	0.07277134	0.116911521
PCB 136	0.072712552	0.115977613
PCB 137	0.00299223	0.004934103
PCB 139/140	0.002588735	0.004870226
PCB 141	0.017428837	0.024428168
PCB 142	0	0.000645376
PCB 143	0	0.001279973
PCB 144	0.006905342	0.010933974
PCB 145	0	0
PCB 146	0.012536497	0
PCB 147/149	0.151509374	0.241802198
PCB 148	0.001329835	0.002326004
PCB 150	0.005151232	0.009460818
PCB 152	0.004895523	0.00956415
PCB 153/168	0.060901511	0.092583296
PCB 154	0.004458993	0.008658
PCB 155	0	0
PCB 156/157	0.001926547	0.003432043
PCB 158	0.004118377	0.006532603

PCB 159	0	0
PCB 160	0	0.000207723
PCB 161	0	0
PCB 162	0	0
PCB 164	0.002582911	0.004793939
PCB 165	0.000269434	0.000378216
PCB 167	0.000601159	0.001259253
PCB 169	0.000507537	0.000989617
PCB 170	0.003883873	0.016268511
PCB 171/173	0.005375129	0.010025958
PCB 172	0.001895933	0.004940206
PCB 174	0.017589726	0.033028039
PCB 175	0.000781737	0.001133853
PCB 176	0.006172551	0.010548313
PCB 177	0.009990157	0.020192394
PCB 178	0.003924863	0.00755352
PCB 179	0.026735243	0.046246514
PCB 193/180	0.00070086	0.03443244
PCB 181	0	0
PCB 182	0	0
PCB 183	0.00878875	0.0158459
PCB 184	0	0
PCB 185	0.00205314	0.003214477
PCB 186	0	0
PCB 187	0.020263213	0.035312945
PCB 188	0	0
PCB 189	0.000332131	0
PCB 190	0	0.002997125
PCB 191	0.002863334	0.001027248
PCB 192	0.010870171	0
PCB 194	0.001365421	0.003474213
PCB 195	0.001218177	0.003261351
PCB 196	0.001610875	0.003353198
PCB 197	0.001501712	0.002264086
PCB 198/199	0.003266357	0.00733392

PCB 200	0	0.003281649
PCB 201	0.000519328	0.001230372
PCB 202	0.002835571	0.005582285
PCB 203	0.001984514	0.004229045
PCB 205	5.77968E-05	0.000253448
PCB 206	0.000490815	0.000939257
PCB 207	0.000186817	0.000505548
PCB 208	0.000396527	0.000850923
PCB 209	0.000487242	0.000781144
Sum	251.4677339	545.3619267

#### A.8.6 Concentration of PCBs in the Triplicate Uptake Experiment

Batch Sample ID:	CO_B12_PW05_UE_CSSC02_7day_01	CO_B12_PW05_UE_CSSC02_7day_02
Location (Duration )	Cicero Ave (7 days)	Cicero Ave (7 days)
Species	Cfiber (ng/L)	Cfiber (ng/L)
PCB 1	1.333016076	0.890460452
PCB 2	0.475334076	0.373332504
PCB 3	0.48217806	0.362202611
PCB 4	71.49843212	121.1410573
PCB 5	0.171684738	0.11307112
PCB 6	1.198589508	1.302377458
PCB 7	0.206326602	0.163456578
PCB 8	1.824952664	1.931209466
PCB 9	0.168832351	0.130539037
PCB 10	1.893339255	2.31980175
PCB 11	0.185769687	0.146983227
PCB 13/12	0.592690101	0.708762413
PCB 15	2.000303298	3.047817787
PCB 16	0.695658495	0.974422321
PCB 17	6.071008314	9.581266015
PCB 30/18	2.382984666	3.283594679
PCB 19	13.50355079	16.51309547

PCB 28/20	1.228056082	1.907086306
PCB 21/33	0.169812761	0.220735237
PCB 22	0.190369047	0.303185235
PCB 23	0.028178729	0.019216385
PCB 24	0	0
PCB 25	0.79706037	1.177237112
PCB 29/26	0.590531209	0.816347264
PCB 27	1.27172436	1.751269918
PCB 31	1.414654565	2.273241631
PCB 32	3.987855607	5.615506404
PCB 34	0.039520552	0.052360228
PCB 35	0.017469994	0.021830305
PCB 36	0.012154672	0.025557161
PCB 37	0.05256757	0.063687597
PCB 38	0.019667091	0.017904999
PCB 39	0.013489247	0.016390409
PCB 71/40	1.464091213	1.671507145
PCB 41	0.131645687	0.165618427
PCB 42	1.401901653	1.494158232
PCB 43	0.349338681	0.387004278
PCB 65/47/44	7.89777853	8.283454892
PCB 45	0.731195271	0.875320746
PCB 46	1.03892082	1.084861494
PCB 48	0.526987767	0.641856662
PCB 69/49	4.112840582	4.353667638
PCB 50/53	3.60837194	3.757050449
PCB 51	2.658600446	2.884693263
PCB 52	4.454159448	4.820153732
PCB 54	1.206123396	1.246295864
PCB 55	0.024274602	0.020620863
PCB 56	0.209032841	0.251102229
PCB 57	0.020721417	0.018451182
PCB 58	0.019158318	0.014193964
PCB 62/75/59	0.290517486	0.289297328
PCB 60	0.062358659	0.081481345

PCB 61/70/76/74	0.91940602	1.126232033
PCB 63	0.077564658	0.085878988
PCB 64	0.769179116	0.897930607
PCB 66	0.506917144	0.606167072
PCB 67	0.029511029	0.030565446
PCB 68	0.049583065	0.04625065
PCB 72	0.035385048	0.033689812
PCB 73	0.053040505	0.053683164
PCB 77	0.019813368	0.020976047
PCB 78	0.008283702	0.00391782
PCB 79	0.007762303	0.004677384
PCB 80	0.006331317	0.004545166
PCB 81	0.006223321	0.003704967
PCB 82	0.070842578	0.067432411
PCB 83	0.043427582	0.044952031
PCB 84	0.355096639	0.370297939
PCB 116/85	0.043492425	0.057951506
PCB 119/109/86/97	0.155843607	0.164979515
PCB 125/87	0.170772048	0.162286785
PCB 88	0.025284163	0.016160063
PCB 89	0.0325517	0.032560834
PCB 113/90/101	0.421787684	0.422928211
PCB 91	0.125956128	0.12488289
PCB 92	0.203378361	0.179692888
PCB 100/93	0.05457366	0.050660791
PCB 94	0.649460603	0.678477682
PCB 95	0.114070501	0.113307514
PCB 96	0.017961335	0.00621217
PCB 98	0.277022462	0.293776386
PCB 99	0.218809054	0.219573382
PCB 102	0.087114757	0.094475359
PCB 103	0.049965953	0.043272042
PCB 104	0.056674482	0.045637046
PCB 105	0.028797032	0.0300125

PCB 106	0	0.001213305
PCB 107	0.009819329	0.011096361
PCB 108/124	0.00539826	0.004860666
PCB 110	0.273032359	0.279056467
PCB 111	0.001521332	0.001463644
PCB 112	0.001180262	0.002994533
PCB 114	0.012441621	0.011825347
PCB 115	0.014235077	0.024136938
PCB 117	0.080945013	0.093225907
PCB 118	0.07390479	0.079292277
PCB 120	0.00114467	0.00140792
PCB 121	0.002367458	0.002272002
PCB 122	0.003090834	0.003358418
PCB 123	0.003145873	0.003502256
PCB 126	0	0
PCB 127	0	0
PCB 138/163/129	0.086089691	0.086123524
PCB 130	0.005057958	0.005414794
PCB 131	0.004051344	0.00282369
PCB 132	0.054757606	0.053164832
PCB 133	0.003344519	0.003575175
PCB 134	0.020083221	0.017191972
PCB 151/135	0.085920456	0.084469403
PCB 136	0.091750663	0.089518011
PCB 137	0.003269317	0.003819575
PCB 139/140	0.005318659	0.005124726
PCB 141	0.017720302	0.018228442
PCB 142	0.000517244	0.000152968
PCB 143	0.000724325	0.001153416
PCB 144	0.008794664	0.008814959
PCB 145	0.004455872	0.00281712
PCB 146	0.015261624	0.014372119
PCB 147/149	0.169570992	0.164078333
PCB 148	0.002824968	0.00222247
PCB 150	0.010587784	0.008948862



PCB 152	0.010531346	0.008379092
PCB 153/168	0.06467837	0.064643759
PCB 154	0.006592454	0.006560743
PCB 155	0.004295314	0.002821177
PCB 156/157	0.00221757	0.002007769
PCB 158	0.004960229	0.004581073
PCB 159	0	0
PCB 160	0	0
PCB 161	0.000376341	0.000269044
PCB 162	0	0
PCB 164	0.003607389	0.002539959
PCB 165	0.000481871	0.000319114
PCB 167	0.000914908	0.000886897
PCB 169	0.000568282	0.000436719
PCB 170	0.005381717	0.005866204
PCB 171/173	0.004861997	0.004631715
PCB 172	0.001676453	0.001778783
PCB 174	0.012710605	0.013077961
PCB 175	0.000615792	0.000861711
PCB 176	0.004929689	0.004936701
PCB 177	0.00812722	0.008641131
PCB 178	0.003231939	0.003165498
PCB 179	0.020029857	0.01982231
PCB 193/180	0.012590113	0.012446104
PCB 181	0.003368568	0.003750808
PCB 182	0.004616157	0.005104598
PCB 183	0.00595427	0.00620206
PCB 184	0.013627807	0.015439292
PCB 185	0.001728693	0.001239586
PCB 186	0.002443887	0.00262016
PCB 187	0.015227301	0.015014496
PCB 188	0.010206468	0.011384545
PCB 189	0	0
PCB 190	0.000893195	0.000989018
PCB 191	0.000347818	0.000424803

PCB 192	0	0
PCB 194	0.001054472	0.001152245
PCB 195	0.000982038	0.001019664
PCB 196	0.001308663	0.001402346
PCB 197	0.000355701	0.000474486
PCB 198/199	0.002426022	0.002408438
PCB 200	0.001284039	0.001079717
PCB 201	0.000435141	0.000437956
PCB 202	0.002156475	0.00226802
PCB 203	0.001319933	0.001387264
PCB 205	8.45947E-05	0.000119287
PCB 206	0.00033546	0.000390588
PCB 207	0.000173266	0.000187874
PCB 208	0.00033057	0.000357363
PCB 209	0.000515865	0.000502208
Sum	151.7345487	217.0792959

<b>Batch Sample ID:</b>	<b>CO_B12_PW05_UE_CSSC02_7day_03</b>	<b>CO_B12_PW05_UE_CSSC02_7day_blank</b>
Location	Cicero Ave (7 days)	Blank (7 days)
Species	Cfiber (ng/L)	Cfiber (ng/L)
PCB 1	1.108354986	0.466612512
PCB 2	0.406727384	0.700263496
PCB 3	0.376679567	0.365970456
PCB 4	99.06303677	0.874137778
PCB 5	0.119414072	0.139391473
PCB 6	2.122410206	0.133687492
PCB 7	0.218593178	0.105566738
PCB 8	3.260784935	0.140153025
PCB 9	0.162500731	0.098013041
PCB 10	1.950350309	0.11148459
PCB 11	0.155998848	0.118154185
PCB 13/12	0.749712498	0.207917091
PCB 15	3.025211132	0.13845893

PCB 16	0.817467794	0.02268845
PCB 17	8.422036793	0.066613621
PCB 30/18	2.744950865	0.052276228
PCB 19	16.09752554	0.098338021
PCB 28/20	1.724192081	0.032954389
PCB 21/33	0.230637817	0.02246267
PCB 22	0.268385757	0.012807603
PCB 23	0.014188829	0.010052981
PCB 24	0	0.010041661
PCB 25	1.174834503	0.02008068
PCB 29/26	0.688979745	0.023522818
PCB 27	1.650228754	0.020936679
PCB 31	2.125871657	0.025779499
PCB 32	5.393255161	0.043939429
PCB 34	0.048666573	0.008093692
PCB 35	0.016427208	0.004410653
PCB 36	0.021165038	0.007119401
PCB 37	0.066309281	0.006673142
PCB 38	0.013159246	0.008316196
PCB 39	0.012139862	0.005786225
PCB 71/40	1.405876275	0.030336329
PCB 41	0.129412293	0.026161333
PCB 42	1.252409199	0.028982104
PCB 43	0.32593579	0.024201517
PCB 65/47/44	6.950125102	0.128821949
PCB 45	0.706827948	0.047362657
PCB 46	0.889096812	0.029204059
PCB 48	0.487394913	0.02256257
PCB 69/49	3.448527637	0.141866459
PCB 50/53	3.072260364	0.574667967
PCB 51	2.377704235	0.034568721
PCB 52	3.77084615	0.044293642
PCB 54	1.074523242	0.055229627
PCB 55	0.015487396	0.007468634
PCB 56	0.202863949	0.010918756

PCB 57	0.012694379	0.009945752
PCB 58	0.011507014	0.008459283
PCB 62/75/59	0.234572511	0.05082856
PCB 60	0.065327083	0.011483075
PCB 61/70/76/74	0.922278761	0.039854541
PCB 63	0.070269544	0.010171653
PCB 64	0.716329749	0.026271523
PCB 66	0.537958198	0.010001717
PCB 67	0.024138498	0.011011926
PCB 68	0.041934785	0.034632626
PCB 72	0.026317457	0.00647457
PCB 73	0.046821542	0.013653108
PCB 77	0.019564534	0.001233304
PCB 78	0.003531648	0.007515297
PCB 79	0.002718219	0.004574111
PCB 80	0.003741706	0.004824339
PCB 81	0.003774381	0.006008265
PCB 82	0.056640768	0.003547334
PCB 83	0.02183822	0.002231667
PCB 84	0.283825658	0.004214348
PCB 116/85	0.049271396	0.009452825
PCB 119/109/86/97	0.108421106	0.012351621
PCB 125/87	0.139252147	0.007268987
PCB 88	0.015956407	0.005042962
PCB 89	0.023261463	0.004444771
PCB 113/90/101	0.301820958	0.009086568
PCB 91	0.087911752	0.002451972
PCB 92	0.116131934	0.008557624
PCB 100/93	0.036210997	0.003986022
PCB 94	0.506763147	0.013887781
PCB 95	0.079458275	0.00791478
PCB 96	0.006037072	0.002227414
PCB 98	0.20984266	0.005998714
PCB 99	0.153935429	0.003429852

PCB 102	0.065749047	0.003921882
PCB 103	0.032261667	0.0062487
PCB 104	0.03091104	0.014738236
PCB 105	0.023662329	0.000640121
PCB 106	0	0.000218256
PCB 107	0.008771129	0.000141789
PCB 108/124	0.003650291	0.000425824
PCB 110	0.210111848	0.002543758
PCB 111	0.000861174	0.000197094
PCB 112	0.002295273	0.001152279
PCB 114	0.015681691	0.038741613
PCB 115	0.021638003	0.085005866
PCB 117	0.098364344	0.165536833
PCB 118	0.059477325	0.001448646
PCB 120	0.001043836	0.000489965
PCB 121	0.001460028	0.000688435
PCB 122	0.001785728	0.000402638
PCB 123	0.00189194	0.000294431
PCB 126	0	0.000269869
PCB 127	0	0.000269557
PCB 138/163/129	0.042884505	0.000304031
PCB 130	0.002060107	4.42059E-05
PCB 131	0.000921778	0.000222908
PCB 132	0.02749962	0.000847837
PCB 133	0.00154792	0.001667729
PCB 134	0.008631688	0.000484583
PCB 151/135	0.041028197	0.000794162
PCB 136	0.043147595	0.002421538
PCB 137	0.001998977	0.001215118
PCB 139/140	0.003343293	0.003325785
PCB 141	0.008584935	9.61554E-05
PCB 142	0.000394525	0.000159801
PCB 143	0.000494796	0.000542735
PCB 144	0.004371024	0.000256507

PCB 145	0.002684519	0.005078436
PCB 146	0.007052909	9.66941E-05
PCB 147/149	0.081523503	0.002799335
PCB 148	0.00108277	0.001316121
PCB 150	0.004749001	0.00519768
PCB 152	0.005518897	0.003411955
PCB 153/168	0.031402836	0.000647114
PCB 154	0.003346427	0.001313897
PCB 155	0.002360666	0.003500531
PCB 156/157	0.001245102	2.3694E-05
PCB 158	0.002406839	6.25588E-05
PCB 159	0	4.1241E-05
PCB 160	0	5.00512E-05
PCB 161	0.0002638	0.001110841
PCB 162	0	5.17161E-05
PCB 164	0.001799584	0.000166753
PCB 165	0.000117996	0.000102026
PCB 167	0.000486247	0.000479375
PCB 169	6.2493E-05	2.03243E-06
PCB 170	0.002484446	9.55424E-05
PCB 171/173	0.002046456	0.000510724
PCB 172	0.000973735	7.52165E-05
PCB 174	0.005034323	0.000224886
PCB 175	0	5.27853E-05
PCB 176	0.001643644	0.000235939
PCB 177	0.003776528	0.000312484
PCB 178	0.001010433	6.82585E-06
PCB 179	0.00601622	0.000248821
PCB 193/180	0.004765344	2.64406E-05
PCB 181	0.005107602	0.012888228
PCB 182	0.006973504	0.019721413
PCB 183	0.002240094	9.454E-05
PCB 184	0.020427369	0.060983939
PCB 185	0.001079177	0.000190046
PCB 186	0.003658246	0.010674243

PCB 187	0.005308533	0.00023579
PCB 188	0.014569604	0.041668978
PCB 189	0	0.000112949
PCB 190	0.000522784	3.63581E-05
PCB 191	0	3.30003E-05
PCB 192	0	2.13962E-05
PCB 194	0.000407371	4.03879E-05
PCB 195	0.000496547	0.000109484
PCB 196	0.00052946	9.49799E-05
PCB 197	0	0.000208343
PCB 198/199	0.000845803	3.9711E-05
PCB 200	0	0.0001031
PCB 201	0.000154747	1.88436E-05
PCB 202	0.000860114	0.000208025
PCB 203	0.000551684	7.39531E-05
PCB 205	0	2.24084E-05
PCB 206	0.00021327	7.71324E-05
PCB 207	0.000146322	0.000156786
PCB 208	0.000165081	8.26522E-05
PCB 209	0.000437814	0.000729163
Sum	186.3046233	6.184016512

#### A.8.7 Concentration of PCBs in the Porewater of the CSSC

<b>Batch Sample ID:</b>	<b>PW_CSSC_Blank_072814</b>	<b>PW_CSSC01_072814</b>
Location	Blank	Kedzie Ave
Species	C <sub>fiber</sub> (ng/L)	C <sub>fiber</sub> (ng/L)
PCB 1	0.045806859	0.43750668
PCB 2	0.232671017	0.169648972
PCB 3	0.063943981	0.25763458
PCB 4	0.026974129	4.37321669
PCB 5	0.01836755	0.053028367
PCB 6	0.019295375	0.438450234
PCB 7	0.016344345	0.074603404

PCB 8	0.016633317	0.886121329
PCB 9	0.013077009	0.076034942
PCB 10	0.007714822	0.083870495
PCB 11	0.036979586	0.081408917
PCB 13/12	0.032706405	0.099787669
PCB 15	0.017085862	0.159957623
PCB 16	0.003773511	0.601665826
PCB 17	0.009086139	1.070379242
PCB 30/18	0.025228931	1.669381706
PCB 19	0.006918516	0.563757628
PCB 28/20	0.004532301	0.777566118
PCB 21/33	0.004568764	0.267310653
PCB 22	0.003241306	0.244579014
PCB 23	0.001513053	0.214575531
PCB 24	0.002845964	0.016296697
PCB 25	0.009538757	0.205666013
PCB 29/26	0.001436534	0.206748044
PCB 27	0.002978844	0.12362104
PCB 31	0.004009151	0.769452752
PCB 32	0.003197789	0.557597617
PCB 34	0.001432331	0.182366837
PCB 35	0.0007159	0.053476876
PCB 36	0.000521378	0.014710233
PCB 37	0.000870615	0.177882142
PCB 38	0.000725968	0.033123536
PCB 39	0.028569246	0.0208975
PCB 71/40	0.002427721	0.461572169
PCB 41	0.003371841	0.093918839
PCB 42	0.003324058	0.554060979
PCB 43	0.016230562	0.096905909
PCB 65/47/44	0.02735701	2.473336574
PCB 45	0.005276659	0.613553404
PCB 46	0.002891021	0.368175429
PCB 48	0.001241906	0.307283614
PCB 69/49	0.032038813	1.39098145



PCB 50/53	0.214662048	1.153728093
PCB 51	0.002810322	0.68661928
PCB 52	0.007605381	2.243376588
PCB 54	0.006788801	0.199578734
PCB 55	0.000560515	0.013428243
PCB 56	0.001330337	0.133237937
PCB 57	0.000484332	0.004836881
PCB 58	0.000874612	0.005638004
PCB 62/75/59	0.006767206	0.100249314
PCB 60	0.001129409	0.051639819
PCB 61/70/76/74	0.003647315	0.53009129
PCB 63	0.000597044	0.034159541
PCB 64	0.00212903	0.495812566
PCB 66	0.001221247	0.224784771
PCB 67	0.000722245	0.017312661
PCB 68	0.015420309	0.020341041
PCB 72	0.00059232	0.006899878
PCB 73	0.00113226	0.016282934
PCB 77	0.00145519	0.015576815
PCB 78	0.001754422	0
PCB 79	0.000329877	0
PCB 80	0.000429989	0.003777036
PCB 81	0.001297318	0
PCB 82	0.001412438	0.048512136
PCB 83	0.000224619	0.018776036
PCB 84	0.001734653	0.265927588
PCB 116/85	0.001996518	0.029469345
PCB 119/109/86/97	0.001554868	0.104932241
PCB 125/87	0.000777675	0.114464264
PCB 88	0.000358336	0.000512232
PCB 89	0.000176346	0.013791225
PCB 113/90/101	0.002061675	0.358278003
PCB 91	0.00054382	0.083068136
PCB 92	0.000551898	0.070842347
PCB 100/93	0.000434281	0.020948503

PCB 94	0.003647734	0.655115386
PCB 95	0.000826079	0.046328774
PCB 96	0.000288882	0.00454829
PCB 98	0.00059754	0.157506085
PCB 99	0.000770721	0.137821005
PCB 102	0.00037849	0.036428087
PCB 103	0.001038619	0.019828301
PCB 104	0.001934046	0.015254609
PCB 105	0.000270176	0.021882663
PCB 106	7.59502E-05	0
PCB 107	8.12467E-05	0.006602656
PCB 108/124	5.77287E-05	0.003307626
PCB 110	0.002480212	0.254068506
PCB 111	2.70729E-05	0.001129106
PCB 112	0.000156533	0.000795362
PCB 114	0.001560458	0.004906587
PCB 115	0.00417251	0.003318486
PCB 117	0.065153387	0.058730907
PCB 118	0.000499935	0.060651733
PCB 120	4.67557E-05	0.000915539
PCB 121	9.46738E-05	0.000552883
PCB 122	4.47783E-05	0.003886303
PCB 123	1.9095E-05	0.002236265
PCB 126	0.030662828	0.023081604
PCB 127	4.46807E-05	0
PCB 138/163/129	0.000671736	0.117470341
PCB 130	1.75744E-05	0.006750665
PCB 131	1.22532E-05	0.003611907
PCB 132	0.000295594	0.081041242
PCB 133	3.30862E-05	0.002426932
PCB 134	0.00023034	0.022313398
PCB 151/135	0.000146547	0.11725725
PCB 136	0.000356343	0.127519913
PCB 137	0.000114074	0.004161915
PCB 139/140	0.000127015	0.003350112

PCB 141	7.85858E-05	0.026751069
PCB 142	5.86128E-05	0.000265817
PCB 143	2.69997E-05	0.000306041
PCB 144	0.000110054	0.011759711
PCB 145	0.00017217	0.000389449
PCB 146	7.32737E-05	0.017930482
PCB 147/149	0.000814256	0.234708468
PCB 148	6.84209E-05	0.001071286
PCB 150	0.000182355	0.004838611
PCB 152	0.000107499	0.00433592
PCB 153/168	0.000384981	0.092337842
PCB 154	8.72074E-05	0.004745965
PCB 155	0.000361311	0.000981105
PCB 156/157	0.000107965	0.002717569
PCB 158	4.82843E-05	0.006161656
PCB 159	6.73552E-05	0.000251177
PCB 160	6.04594E-05	0
PCB 161	6.19312E-06	8.02903E-05
PCB 162	5.55579E-05	0.000224159
PCB 164	8.58313E-06	0.004326974
PCB 165	2.12342E-05	0.000192792
PCB 167	5.99269E-05	0.001176684
PCB 169	3.44842E-05	0.000813221
PCB 170	0.000129104	0.008096421
PCB 171/173	0.00016377	0.005305063
PCB 172	6.83845E-05	0.001837851
PCB 174	0.000141948	0.017916718
PCB 175	1.5719E-05	0.000502533
PCB 176	0.000106454	0.006253968
PCB 177	0.000170349	0.010212215
PCB 178	2.40942E-05	0.003770796
PCB 179	7.83227E-05	0.026780407
PCB 193/180	0.000157856	0.015835089
PCB 181	0.000223063	0
PCB 182	0.000453876	0.000392752

PCB 183	8.30489E-05	0.007889222
PCB 184	0.001548952	0.000986436
PCB 185	6.16991E-05	0.00125113
PCB 186	0.000166555	6.81298E-05
PCB 187	0.00013182	0.01723122
PCB 188	0.000766224	0.000628241
PCB 189	3.00007E-05	0.000880728
PCB 190	0.000198709	0.001650102
PCB 191	7.20278E-05	0.000423091
PCB 192	5.88776E-05	0
PCB 194	2.66551E-05	0.001073082
PCB 195	4.15726E-05	0.00109352
PCB 196	2.69563E-05	0.001084805
PCB 197	0.000206994	0.000965461
PCB 198/199	3.37927E-05	0.002478258
PCB 200	0.000100246	0.001662631
PCB 201	1.12746E-05	0.000426279
PCB 202	0.00040608	0.002172402
PCB 203	9.18956E-05	0.001375218
PCB 205	1.15338E-05	0.000123662
PCB 206	5.57975E-05	0.000343777
PCB 207	2.22982E-05	0.000155839
PCB 208	4.57705E-05	0.00037334
PCB 209	0.000590448	0.000696931
Sum	1.169486135	30.97211079

**Batch Sample ID:**

Location

Species

PCB 1

PCB 2

PCB 3

PCB 4

PCB 5

PCB 6

**PW\_CSSC02\_072814**

Cicero Ave

Cfiber (ng/L)

8.365640268

0.179774717

0.704223318

314.0545635

0.100287084

9.3432749

**PW\_CSSC03\_072814**

Stickney Outflow

Cfiber (ng/L)

0.101874798

0.122546482

0.059795799

2.126393818

0.020374313

0.134353648

PCB 7	0.804360519	0.032057091
PCB 8	16.07245849	0.262654207
PCB 9	0.491605206	0.029518295
PCB 10	4.705376142	0.035046897
PCB 11	0.271462959	0.105068925
PCB 13/12	1.71118312	0.084503648
PCB 15	4.767080342	0.091158712
PCB 16	2.618702095	0.332098201
PCB 17	28.58340528	0.669881407
PCB 30/18	11.13805088	0.873777444
PCB 19	36.50746401	0.415144738
PCB 28/20	7.003263447	0.35791995
PCB 21/33	1.52994245	0.146250706
PCB 22	1.739743272	0.134319945
PCB 23	0.414568681	0.231230877
PCB 24	0	0.008345302
PCB 25	4.421968445	0.093135413
PCB 29/26	2.603564413	0.090917251
PCB 27	3.294136042	0.065754753
PCB 31	10.66350534	0.388025781
PCB 32	15.20068426	0.316023741
PCB 34	0.319057135	0.17552483
PCB 35	0.041578237	0
PCB 36	0.0373583	0
PCB 37	0.211647864	0.02518425
PCB 38	0.024178064	0
PCB 39	0.030187844	0
PCB 71/40	2.50063892	0.133520933
PCB 41	0.204705239	0.031224073
PCB 42	2.416897697	0.15614636
PCB 43	0.590177779	0.03422292
PCB 65/47/44	11.43506259	0.588278745
PCB 45	1.057635051	0.138273554
PCB 46	1.581158983	0.119555591
PCB 48	0.975743409	0.093894044

PCB 69/49	6.638355223	0.351968626
PCB 50/53	5.415173327	0.423144912
PCB 51	4.393064958	0.17831026
PCB 52	7.080052188	0.556321396
PCB 54	1.524090514	0.054579857
PCB 55	0.027028204	0.003605176
PCB 56	0.431097921	0.036979418
PCB 57	0.017893517	0.002063088
PCB 58	0.010528997	0.002097407
PCB 62/75/59	0.323632418	0.028551795
PCB 60	0.148462618	0.014072241
PCB 61/70/76/74	2.166401149	0.120369699
PCB 63	0.157450148	0.013651937
PCB 64	1.326310675	0.128563096
PCB 66	1.234159714	0.056755391
PCB 67	0.040362333	0.004300925
PCB 68	0.054578223	0.016481095
PCB 72	0.038848229	0.002265208
PCB 73	0.048155437	0.008480151
PCB 77	0.033771089	0.006368214
PCB 78	0	0.003911757
PCB 79	0.005300158	0
PCB 80	0	0
PCB 81	0	0
PCB 82	0.08594265	0.013589661
PCB 83	0.045558034	0.006731318
PCB 84	0.459964787	0.062066669
PCB 116/85	0.075546485	0.004116171
PCB 119/109/86/97	0.211354908	0.016584195
PCB 125/87	0.204739781	0.023312194
PCB 88	0.00160378	0
PCB 89	0.030125862	0.004822869
PCB 113/90/101	0.571225071	0.055918996
PCB 91	0.175280411	0.01604301
PCB 92	0.230961652	0.011789976

PCB 100/93	0.059208688	0.004539651
PCB 94	0.845701449	0.127194415
PCB 95	0.106742722	0.012216037
PCB 96	0.00368122	0.001382726
PCB 98	0.379529434	0.031555034
PCB 99	0.318276428	0.023340311
PCB 102	0.117236464	0.009046352
PCB 103	0.051527472	0.00488784
PCB 104	0.040940968	0.003709937
PCB 105	0.049251878	0.004350431
PCB 106	0.001489159	0.000848797
PCB 107	0.015355701	0
PCB 108/124	0.005933533	0.001813631
PCB 110	0.408036711	0.038911879
PCB 111	0.001235955	0
PCB 112	0.003157139	0
PCB 114	0.007540615	0.002282383
PCB 115	0.011251973	0.006956965
PCB 117	0.094340234	0.059021814
PCB 118	0.126823201	0.008480041
PCB 120	0.001366602	0.000876482
PCB 121	0.001198762	0
PCB 122	0.003971824	0.001511951
PCB 123	0.004193466	0
PCB 126	0.027482554	0.021957183
PCB 127	0	0
PCB 138/163/129	0.121338264	0.011750706
PCB 130	0.007354697	0.001071381
PCB 131	0.004271538	0.000482209
PCB 132	0.073198228	0.01133524
PCB 133	0.004141418	0.000581144
PCB 134	0.023015903	0.003508841
PCB 151/135	0.116911521	0.016486279
PCB 136	0.115977613	0.019916467
PCB 137	0.004934103	0.000571609

PCB 139/140	0.004870226	0.000755345
PCB 141	0.024428168	0.002882509
PCB 142	0.000645376	0.000361572
PCB 143	0.001279973	0.000272869
PCB 144	0.010933974	0.001415585
PCB 145	0.000818759	0.00047033
PCB 146	0.019972732	0.002706181
PCB 147/149	0.241802198	0.029709419
PCB 148	0.002326004	0.000286373
PCB 150	0.009460818	0.000843164
PCB 152	0.00956415	0.000668912
PCB 153/168	0.092583296	0.009451163
PCB 154	0.008658	0.000933239
PCB 155	0.001663647	0.000505017
PCB 156/157	0.003432043	0.000464686
PCB 158	0.006532603	0.000801898
PCB 159	0	0
PCB 160	0.000207723	0.000176634
PCB 161	0	4.82295E-05
PCB 162	0	0
PCB 164	0.004793939	0.000669639
PCB 165	0.000378216	8.13896E-05
PCB 167	0.001259253	0
PCB 169	0.000989617	0
PCB 170	0.016268511	0.002260215
PCB 171/173	0.010025958	0.002315256
PCB 172	0.004940206	0
PCB 174	0.033028039	0.004661352
PCB 175	0.001133853	0.000140952
PCB 176	0.010548313	0.001547634
PCB 177	0.020192394	0.003494527
PCB 178	0.00755352	0.000938399
PCB 179	0.046246514	0.006190497
PCB 193/180	0.03443244	0.003615426
PCB 181	0.001441023	0



PCB 182	0.000616333	0.000381168
PCB 183	0.0158459	0.002143302
PCB 184	0.001219914	0.00108958
PCB 185	0.003214477	0.000710757
PCB 186	0.000152646	0.000131492
PCB 187	0.035312945	0.004146855
PCB 188	0.001517176	0.000408731
PCB 189	0	0
PCB 190	0.002997125	0.000968872
PCB 191	0.001027248	0
PCB 192	0	0
PCB 194	0.003474213	0.000653059
PCB 195	0.003261351	0.00088295
PCB 196	0.003353198	0.000638185
PCB 197	0.002264086	0
PCB 198/199	0.00733392	0.001222588
PCB 200	0.003281649	0
PCB 201	0.001230372	0.000286046
PCB 202	0.005582285	0.001359067
PCB 203	0.004229045	0.000661856
PCB 205	0.000253448	0
PCB 206	0.000939257	0.000287975
PCB 207	0.000505548	0.000186939
PCB 208	0.000850923	0.000221901
PCB 209	0.000781144	0.00081245
Sum	545.8116098	11.57826407

<b>Batch Sample ID:</b>	<b>PW_CSSC04_072814</b>	<b>PW_CSSC05_072814</b>
Location	Harlem Ave	Corn Products
Species	Cfiber (ng/L)	Cfiber (ng/L)
PCB 1	0.080637928	0.081943447
PCB 2	0.110755975	0.106918805
PCB 3	0.047468566	0.048704127
PCB 4	3.128162419	3.175992365
PCB 5	0.024354874	0.030066513

PCB 6	0.201383126	0.219469213
PCB 7	0.039920266	0.038651891
PCB 8	0.377476879	0.404641592
PCB 9	0.035622475	0.036999037
PCB 10	0.04145373	0.029959181
PCB 11	0.101216212	0.113598214
PCB 13/12	0.083853788	0.105382464
PCB 15	0.126637999	0.129399593
PCB 16	0.56527475	0.642244119
PCB 17	1.329318479	1.980372992
PCB 30/18	1.49356993	1.808869656
PCB 19	0.744107585	0.958796171
PCB 28/20	0.811633286	1.284177974
PCB 21/33	0.248944487	0.300977343
PCB 22	0.266772907	0.397428225
PCB 23	0.433765244	0.757772163
PCB 24	0.012717601	0.026262603
PCB 25	0.206505215	0.334107167
PCB 29/26	0.203287153	0.298796649
PCB 27	0.124937511	0.183309252
PCB 31	0.83065293	1.275994444
PCB 32	0.630825721	0.935510873
PCB 34	0.322813931	0.5858726
PCB 35	0.0145363	0.021571649
PCB 36	0.013957973	0.021178128
PCB 37	0.055587089	0.080781363
PCB 38	0.013216838	0.023070152
PCB 39	0.012434765	0.01797058
PCB 71/40	0.297988355	0.583004063
PCB 41	0.057511717	0.079399303
PCB 42	0.33920768	0.656503661
PCB 43	0.071315774	0.134562315
PCB 65/47/44	1.357198938	2.550355073
PCB 45	0.306454402	0.514487243
PCB 46	0.199229679	0.342110731

PCB 48	0.19260099	0.352575779
PCB 69/49	0.784349941	1.456700957
PCB 50/53	0.636761253	1.016484116
PCB 51	0.328018089	0.573413487
PCB 52	1.185430911	2.231585036
PCB 54	0.085636968	0.142378744
PCB 55	0.007864663	0.016297164
PCB 56	0.092374865	0.182005148
PCB 57	0.004489302	0.006021876
PCB 58	0.004108113	0.005344103
PCB 62/75/59	0.055766072	0.098987826
PCB 60	0.034303749	0.062171355
PCB 61/70/76/74	0.335708479	0.686674394
PCB 63	0.023845927	0.049729787
PCB 64	0.291710599	0.567148695
PCB 66	0.146913283	0.306195343
PCB 67	0.010121494	0.018152861
PCB 68	0.017255579	0.021580495
PCB 72	0.004524481	0.007311854
PCB 73	0.010554346	0.014355592
PCB 77	0.007751651	0.01400583
PCB 78	0	0
PCB 79	0	0
PCB 80	0.002187826	0
PCB 81	0	0.007205834
PCB 82	0	0.050146349
PCB 83	0.013951421	0.024681003
PCB 84	0.128020851	0.249155848
PCB 116/85	0.011795175	0.03898989
PCB 119/109/86/97	0.052011882	0.097528648
PCB 125/87	0.049450218	0.117790814
PCB 88	0.000993872	0.002383633
PCB 89	0.007983964	0.015896959
PCB 113/90/101	0.146127824	0.312956372
PCB 91	0.037324372	0.075592213

PCB 92	0.028343016	0.05892611
PCB 100/93	0.008237426	0.017560763
PCB 94	0.277507282	0.549500688
PCB 95	0.021436088	0.040881749
PCB 96	0.001657568	0.003077611
PCB 98	0.070679779	0.143560851
PCB 99	0.059424877	0.134452856
PCB 102	0.018886427	0.039486695
PCB 103	0.007967457	0.014818248
PCB 104	0.005422526	0.009088971
PCB 105	0	0.026021928
PCB 106	0.000656881	0.001314324
PCB 107	0.003587506	0.007233006
PCB 108/124	0.001825045	0.003628034
PCB 110	0.111899586	0.240474008
PCB 111	0	0
PCB 112	0.000895932	0.001335631
PCB 114	0.002837825	0.005141472
PCB 115	0.00602405	0.00541748
PCB 117	0.061610004	0.067286452
PCB 118	0.026990731	0.062066701
PCB 120	0.002949925	0
PCB 121	0.00028653	0.000629161
PCB 122	0.002038674	0.003040763
PCB 123	0.001200404	0.002392347
PCB 126	0.022914298	0.025659201
PCB 127	0.005153723	0
PCB 138/163/129	0.040338327	0.086366651
PCB 130	0.002606975	0.005200117
PCB 131	0.001172764	0.002913018
PCB 132	0.029768097	0.058593166
PCB 133	0.001105117	0.002056495
PCB 134	0.00708642	0.015464284
PCB 151/135	0.038909551	0.080198752
PCB 136	0.043393256	0.081949553

PCB 137	0.00120105	0.003277327
PCB 139/140	0.001540085	0.002718745
PCB 141	0.008592046	0.018238623
PCB 142	0.000242783	0.00037829
PCB 143	0.000478414	0.00081154
PCB 144	0.004283596	0.007919814
PCB 145	0.000281035	0.000257768
PCB 146	0.006998969	0.012805468
PCB 147/149	0.079568573	0.161017547
PCB 148	0.000354262	0.000843169
PCB 150	0.001591641	0.003477616
PCB 152	0.001212138	0.003105571
PCB 153/168	0.030013837	0.064370143
PCB 154	0.001751946	0.003303454
PCB 155	0.000521328	0.000751089
PCB 156/157	0.001029243	0.002156622
PCB 158	0.00214543	0.004579772
PCB 159	0	0.001082082
PCB 160	8.05746E-05	0.000321662
PCB 161	4.01419E-05	0
PCB 162	0	0
PCB 164	0.001743806	0.003418098
PCB 165	8.89858E-05	0.000208979
PCB 167	0.000559716	0.001086527
PCB 169	0.000464389	0
PCB 170	0.005592374	0.010294103
PCB 171/173	0.004314936	0.006851664
PCB 172	0.001888065	0.003400389
PCB 174	0.011795998	0.021696821
PCB 175	0.00042767	0.000635239
PCB 176	0.003918259	0.007210542
PCB 177	0.007976698	0.013064938
PCB 178	0.002424477	0.004224835
PCB 179	0.015852278	0.029691736
PCB 193/180	0.011325207	0.019497405

PCB 181	0.001037124	0
PCB 182	0.000412685	0.000475256
PCB 183	0.005809565	0.009352763
PCB 184	0.000987445	0.001066353
PCB 185	0.000996748	0.002252744
PCB 186	6.93936E-05	0
PCB 187	0.01319437	0.021668103
PCB 188	0.000521359	0.000539624
PCB 189	0	0
PCB 190	0.001608066	0.002573107
PCB 191	0.000509968	0
PCB 192	0	0
PCB 194	0.00138427	0.001519731
PCB 195	0.001477806	0.001667264
PCB 196	0.00159343	0.001685674
PCB 197	0.000404297	0
PCB 198/199	0.00317833	0.00377635
PCB 200	0.001849132	0.001382849
PCB 201	0.000622768	0.000645369
PCB 202	0.002718652	0.003324638
PCB 203	0.001807573	0.002040068
PCB 205	0	0
PCB 206	0.00054984	0.000666188
PCB 207	0.000338458	0.000351224
PCB 208	0.000481949	0.00067445
PCB 209	0.000636165	0.000962
Sum	21.23995205	32.40371935

**Batch Sample ID:**

Location

Species

PCB 1

PCB 2

PCB 3

PCB 4

**PW\_CSSC06\_072814**

Lockport

Cfiber (ng/L)

0.047787371

0.126712797

0.060861389

0.319145877

**PW\_CSSC07\_072814**

Near Lockport

Cfiber (ng/L)

0.068203526

0.128555581

0.050397618

2.133535534

PCB 5	0.021113996	0.028822223
PCB 6	0.034640074	0.220230035
PCB 7	0.024645229	0.033373033
PCB 8	0.048209032	0.323871153
PCB 9	0.018428972	0.038812092
PCB 10	0.016201286	0.050730715
PCB 11	0.078057078	0.145678418
PCB 13/12	0	0.093592091
PCB 15	0.061932421	0.124634514
PCB 16	0.093836806	0.533078802
PCB 17	0.125358331	1.036129973
PCB 30/18	0.100335685	1.446308418
PCB 19	0.075280657	0.601750397
PCB 28/20	0.075707484	0.836180474
PCB 21/33	0.080025537	0.234085981
PCB 22	0.103250461	0.259337834
PCB 23	0.094552148	0.311655929
PCB 24	0.019369143	0.029702561
PCB 25	0.043243095	0.253805231
PCB 29/26	0.031527393	0.168016454
PCB 27	0.02343802	0.143095432
PCB 31	0.06764245	0.763509902
PCB 32	0.074303126	0.549595448
PCB 34	0.077883075	0.227566573
PCB 35	0.054848533	0.028170466
PCB 36	0.03019277	0.0166043
PCB 37	0.062953734	0.058619997
PCB 38	0.034617442	0.023797659
PCB 39	0.026434217	0.013146582
PCB 71/40	0.021966917	0.310693108
PCB 41	0.008200362	0.0588716
PCB 42	0.031090526	0.374869147
PCB 43	0.006978457	0.081623573
PCB 65/47/44	0.105951935	1.328199112
PCB 45	0.014935206	0.367833945

PCB 46	0.019100071	0.220500071
PCB 48	0.013076127	0.201492854
PCB 69/49	0.072101149	0.8117479
PCB 50/53	0.21689592	0.651566519
PCB 51	0.026982977	0.267497197
PCB 52	0.073560939	1.330913108
PCB 54	0.009043893	0.064712584
PCB 55	0.014615097	0.009412401
PCB 56	0.018812512	0.108273901
PCB 57	0.005991316	0.005921114
PCB 58	0.005095201	0.005349208
PCB 62/75/59	0.010277056	0.067686939
PCB 60	0.012443727	0.034186423
PCB 61/70/76/74	0.029818995	0.373835765
PCB 63	0.00939646	0.027262041
PCB 64	0.026318271	0.330128474
PCB 66	0.015885987	0.163333495
PCB 67	0.006634617	0.013547969
PCB 68	0.018756652	0.020141858
PCB 72	0.001739054	0.005029064
PCB 73	0.005136472	0.010024809
PCB 77	0	0.012564688
PCB 78	0	0.008780602
PCB 79	0	0.005949844
PCB 80	0.010356781	0
PCB 81	0	0.009205012
PCB 82	0	0.039941626
PCB 83	0.002714707	0.015617825
PCB 84	0.011120527	0.169802057
PCB 116/85	0.000809373	0.019786018
PCB 119/109/86/97	0.004245435	0.066295735
PCB 125/87	0.006948589	0.069195168
PCB 88	0.000793581	0
PCB 89	0.002160664	0.014951575
PCB 113/90/101	0.011587434	0.202902772



PCB 91	0.00392647	0.049181811
PCB 92	0.004153766	0.02461154
PCB 100/93	0.000587571	0.008146643
PCB 94	0.018966729	0.3793397
PCB 95	0.001624853	0.022555264
PCB 96	0.000531626	0.004040413
PCB 98	0.005118938	0.081847765
PCB 99	0.004642599	0.079561559
PCB 102	0.001175596	0.021452664
PCB 103	0.001498307	0.009270159
PCB 104	0.00143253	0.00481562
PCB 105	0	0.015204999
PCB 106	0	0
PCB 107	0	0.005530853
PCB 108/124	0	0.002893431
PCB 110	0.010263513	0.155200945
PCB 111	0	0
PCB 112	0.000358819	0.000893481
PCB 114	0.002831491	0.00377646
PCB 115	0.004283344	0.004956745
PCB 117	0.059090988	0.06681923
PCB 118	0.003724589	0.037784552
PCB 120	0	0
PCB 121	0.000262187	0
PCB 122	0	0.002640089
PCB 123	0	0.001585187
PCB 126	0.022316113	0.023943382
PCB 127	0	0
PCB 138/163/129	0.003399504	0.056267275
PCB 130	0	0.004093958
PCB 131	0.000225666	0.002109505
PCB 132	0.002546623	0.042731997
PCB 133	0	0.001458904
PCB 134	0.00025812	0.012246186
PCB 151/135	0.003062068	0.051114064

PCB 136	0.002979002	0.057410734
PCB 137	0.000203621	0.002456681
PCB 139/140	0.000380503	0.002344923
PCB 141	0.000870767	0.011766655
PCB 142	0.000402733	0
PCB 143	0.000594456	0.000188508
PCB 144	0.000416621	0.006023107
PCB 145	0.000244606	0.000380653
PCB 146	0.000527543	0.008837351
PCB 147/149	0.005251386	0.101979903
PCB 148	0.000208945	0.000538142
PCB 150	0.000144713	0.001123285
PCB 152	0.000323001	0.001389324
PCB 153/168	0.002430995	0.040895225
PCB 154	0.000213052	0.002088486
PCB 155	0.000398711	0.000471012
PCB 156/157	0	0.001659984
PCB 158	0	0.003137148
PCB 159	0	0.000610414
PCB 160	0	0.000279588
PCB 161	0	0
PCB 162	0	0
PCB 164	0.000309444	0.002210912
PCB 165	0	0
PCB 167	0	0.000612922
PCB 169	0	0.000406816
PCB 170	0	0.007710293
PCB 171/173	0	0.00580521
PCB 172	0	0.00299167
PCB 174	0.001794436	0.014435028
PCB 175	8.095E-05	0.000448936
PCB 176	0.00024353	0.004411205
PCB 177	0	0.00940026
PCB 178	0.000222035	0.002567377
PCB 179	0.00107345	0.018826205

PCB 193/180	0.001566118	0.012208424
PCB 181	0	0
PCB 182	0.00047708	0.000653904
PCB 183	0.001590337	0.006300934
PCB 184	0.00122272	0.001186553
PCB 185	0.001026038	0.001868047
PCB 186	0.000193307	0.000179266
PCB 187	0.000881315	0.013161351
PCB 188	0.000433798	0.000607773
PCB 189	0	0
PCB 190	0.001239378	0.002139859
PCB 191	0	0
PCB 192	0	0
PCB 194	0	0.001148255
PCB 195	0	0.001554831
PCB 196	0	0.001425766
PCB 197	0	0
PCB 198/199	0	0.002587315
PCB 200	0	0.000455756
PCB 201	0	0.000455888
PCB 202	0.000719786	0.002618953
PCB 203	0	0.001579788
PCB 205	0	0
PCB 206	3.73008E-05	0.000645271
PCB 207	0	0.000323387
PCB 208	0	0.000604492
PCB 209	0.000574718	0.000930263
Sum	3.189637021	20.39636046

**Batch Sample ID:**

Location

Species

PCB 1

PCB 2

PCB 3

**PW\_CSSC08\_072814**

Citgo Refinery

Cfiber (ng/L)

0.053425591

0.10731327

0.041713846

**PW\_CSSC09\_072814**

Cal-Sag River Junction

Cfiber (ng/L)

0.040975034

0.139798717

0.047475471

PCB 4	1.758095358	1.100222744
PCB 5	0.028321796	0.015966777
PCB 6	0.11797892	0.076722009
PCB 7	0.028649934	0.020133457
PCB 8	0.221352143	0.12550281
PCB 9	0.024635983	0.015064084
PCB 10	0.035889916	0.02716385
PCB 11	0.102795073	0.168477207
PCB 13/12	0.043711495	0.132450441
PCB 15	0.118049564	0.140878852
PCB 16	0.462670239	0.282062569
PCB 17	1.064263867	0.545729147
PCB 30/18	1.233599807	0.708525599
PCB 19	0.539701862	0.337074687
PCB 28/20	0.718176493	0.37175393
PCB 21/33	0.200664567	0.117200593
PCB 22	0.219611026	0.125446597
PCB 23	0.507145862	0.215053409
PCB 24	0.017287959	0.00887504
PCB 25	0.174064297	0.099845468
PCB 29/26	0.157097075	0.08341916
PCB 27	0.123100269	0.068491554
PCB 31	0.688497948	0.343212453
PCB 32	0.570816968	0.29972868
PCB 34	0.394214014	0.170229464
PCB 35	0.019650323	0.011419719
PCB 36	0.019254174	0.004079105
PCB 37	0.051480226	0.022636087
PCB 38	0.014525846	0.007994929
PCB 39	0.014492928	0.004034755
PCB 71/40	0.357531259	0.158956621
PCB 41	0.068145277	0.031503289
PCB 42	0.418834697	0.194360155
PCB 43	0.087421706	0.044581603
PCB 65/47/44	1.565370001	0.698026437

PCB 45	0.411859562	0.188000653
PCB 46	0.242990754	0.112184826
PCB 48	0.218359705	0.103764117
PCB 69/49	0.910203241	0.410495489
PCB 50/53	0.715982207	0.404668868
PCB 51	0.318786855	0.163056979
PCB 52	1.403895952	0.64907104
PCB 54	0.089956701	0.041318836
PCB 55	0.01349709	0.00508794
PCB 56	0.113001882	0.050073739
PCB 57	0.004784257	0.001814522
PCB 58	0.004186652	0.001721016
PCB 62/75/59	0.070464847	0.037000256
PCB 60	0.04289614	0.020364648
PCB 61/70/76/74	0.402281023	0.169413624
PCB 63	0.029976829	0.010611188
PCB 64	0.364762916	0.162783247
PCB 66	0.186119278	0.074954532
PCB 67	0.011218139	0.006021468
PCB 68	0.01972044	0.015466505
PCB 72	0.004294595	0.002478647
PCB 73	0.011569468	0.007171769
PCB 77	0.010529261	0.004643612
PCB 78	0	0.003125686
PCB 79	0	0.00171794
PCB 80	0	0
PCB 81	0	0
PCB 82	0.0331587	0.015854429
PCB 83	0.016359177	0.005761431
PCB 84	0.158620389	0.081205885
PCB 116/85	0.026420746	0.008837901
PCB 119/109/86/97	0.059893635	0.025030182
PCB 125/87	0.080529506	0.041578727
PCB 88	0	0.002834616
PCB 89	0.011603057	0.005246106

PCB 113/90/101	0.193863817	0.092707479
PCB 91	0.049078146	0.023395232
PCB 92	0.03226847	0.013295978
PCB 100/93	0.011776519	0.004059242
PCB 94	0.355240556	0.183627786
PCB 95	0.026807201	0.011511525
PCB 96	0.003618063	0.000756621
PCB 98	0.090444311	0.038913591
PCB 99	0.082537615	0.038253498
PCB 102	0.023128078	0.012048832
PCB 103	0.009828634	0.004863249
PCB 104	0.006631131	0.003934331
PCB 105	0.015938045	0.007431946
PCB 106	0	0.000697809
PCB 107	0.004476664	0.001948098
PCB 108/124	0.002545209	0.000957137
PCB 110	0.15199649	0.075896867
PCB 111	0	0
PCB 112	0.001551336	0.000489245
PCB 114	0.004008306	0.002220985
PCB 115	0.006193604	0.003398278
PCB 117	0.062163226	0.058144126
PCB 118	0.036985179	0.016725625
PCB 120	0	0
PCB 121	0.000785531	0.000194556
PCB 122	0.003036593	0.00082934
PCB 123	0.001494644	0.000596259
PCB 126	0.024880283	0.021175305
PCB 127	0	0
PCB 138/163/129	0.05530195	0.025217287
PCB 130	0.003675714	0.00199099
PCB 131	0.001857346	0.001176602
PCB 132	0.037527935	0.019333114
PCB 133	0.001592185	0.000553138
PCB 134	0.010525329	0.004727134

PCB 151/135	0.051905074	0.02292101
PCB 136	0.055753694	0.026602869
PCB 137	0.002366856	0.001140571
PCB 139/140	0.001891336	0.000942868
PCB 141	0.012429003	0.005353617
PCB 142	0.00027847	0.00039902
PCB 143	0.000352358	0
PCB 144	0.005621642	0.002247358
PCB 145	0.000413405	0.0002385
PCB 146	0.008684737	0.003886568
PCB 147/149	0.103597046	0.045765327
PCB 148	0.000474704	0.00019303
PCB 150	0.001847537	0.000513976
PCB 152	0.001932363	0.00074261
PCB 153/168	0.041019123	0.017339185
PCB 154	0.002134565	0.000770898
PCB 155	0.000588856	0.000432268
PCB 156/157	0.00148443	0.000732555
PCB 158	0.002799493	0.00142478
PCB 159	7.67704E-05	0
PCB 160	9.25005E-05	0
PCB 161	0	0
PCB 162	0.000121724	0
PCB 164	0.002144111	0.000971579
PCB 165	0	3.90286E-05
PCB 167	0.000688736	0.000426527
PCB 169	0.000366775	0
PCB 170	0.007058839	0.003355548
PCB 171/173	0.004597446	0.002204534
PCB 172	0.002334391	0.001684335
PCB 174	0.013947317	0.005889251
PCB 175	0.00040715	0.000201346
PCB 176	0.004459355	0.001847462
PCB 177	0.008639144	0.004332325
PCB 178	0.002649145	0.001005292

PCB 179	0.018410459	0.006832063
PCB 193/180	0.011953741	0.00488415
PCB 181	0	0
PCB 182	0.000381009	0.000473706
PCB 183	0.006264969	0.002637078
PCB 184	0.001164989	0.001387634
PCB 185	0.001250628	0.000947454
PCB 186	0.000142551	0.000231892
PCB 187	0.013040997	0.005010804
PCB 188	0.000442369	0.00054954
PCB 189	0.001014757	0
PCB 190	0.00197464	0.00092052
PCB 191	0.000733703	0.000390389
PCB 192	0	0
PCB 194	0.001278704	0.000558314
PCB 195	0.001316478	0.000348758
PCB 196	0.001112415	0.000245946
PCB 197	0	0
PCB 198/199	0.002552977	0.000909971
PCB 200	0.000321367	0
PCB 201	0.000459913	0.000194668
PCB 202	0.002609859	0.001330457
PCB 203	0.001375848	0.000618871
PCB 205	0.000208834	0
PCB 206	0.000672	0.000231963
PCB 207	0.000297653	0.000124408
PCB 208	0.00066452	0.000259512
PCB 209	0.001110402	0.000595536
Sum	20.08314657	10.692792

**Batch Sample ID:**

**PW\_CSSC10\_072814**

Location

Cal-Sag River

Species

C<sub>fiber</sub> (ng/L)

PCB 1

0.525070328

PCB 2

0.169864164



PCB 3	0.123520635
PCB 4	22.94359956
PCB 5	0.105977601
PCB 6	1.351567891
PCB 7	0.177487282
PCB 8	5.343091473
PCB 9	0.405947495
PCB 10	1.204708177
PCB 11	0.176972368
PCB 13/12	0.235646886
PCB 15	1.39908845
PCB 16	6.796166955
PCB 17	6.925238663
PCB 30/18	16.08256466
PCB 19	7.29880215
PCB 28/20	4.287977843
PCB 21/33	2.160810288
PCB 22	1.572899392
PCB 23	0.041183367
PCB 24	0.224984539
PCB 25	0.40266174
PCB 29/26	0.815058807
PCB 27	1.117385746
PCB 31	4.185373962
PCB 32	3.75423851
PCB 34	0.035261266
PCB 35	0.020113827
PCB 36	0.016745721
PCB 37	0.309266843
PCB 38	0.018245382
PCB 39	0.016246707
PCB 71/40	1.655953677
PCB 41	0.51027192
PCB 42	2.149385681
PCB 43	0.340225569

PCB 65/47/44	6.410613376
PCB 45	4.455123621
PCB 46	1.754586975
PCB 48	1.214312793
PCB 69/49	3.412494193
PCB 50/53	3.061691807
PCB 51	0.657660233
PCB 52	6.99831038
PCB 54	0.145324987
PCB 55	0.023262347
PCB 56	0.480356886
PCB 57	0.007391124
PCB 58	0.01003891
PCB 62/75/59	0.389280618
PCB 60	0.175254242
PCB 61/70/76/74	1.468857858
PCB 63	0.040709519
PCB 64	1.615842288
PCB 66	0.753363245
PCB 67	0.032812443
PCB 68	0.018230242
PCB 72	0.008719776
PCB 73	0.014907639
PCB 77	0.028724787
PCB 78	0
PCB 79	0.004964995
PCB 80	0
PCB 81	0.007004681
PCB 82	0.149058311
PCB 83	0.054381223
PCB 84	0.817553177
PCB 116/85	0.127031053
PCB 119/109/86/97	0.221744984
PCB 125/87	0.374550644
PCB 88	0

PCB 89	0.049980259
PCB 113/90/101	0.669403326
PCB 91	0.143770692
PCB 92	0.031376033
PCB 100/93	0.01464136
PCB 94	1.622073424
PCB 95	0.092086512
PCB 96	0.005539724
PCB 98	0.262493917
PCB 99	0.270102223
PCB 102	0.077280598
PCB 103	0.011054249
PCB 104	0.002091536
PCB 105	0.046692745
PCB 106	0
PCB 107	0.010027898
PCB 108/124	0.005742592
PCB 110	0.587673773
PCB 111	0
PCB 112	0
PCB 114	0.004766524
PCB 115	0
PCB 117	0.062279983
PCB 118	0.117164664
PCB 120	0.000518759
PCB 121	0
PCB 122	0.002915261
PCB 123	0.003081942
PCB 126	0.023244702
PCB 127	0
PCB 138/163/129	0.108298007
PCB 130	0.00718947
PCB 131	0.005564112
PCB 132	0.098992658
PCB 133	0.001492111

PCB 134	0.024802146
PCB 151/135	0.075445422
PCB 136	0.116651451
PCB 137	0.004681286
PCB 139/140	0.003240717
PCB 141	0.020670371
PCB 142	0.000349265
PCB 143	0.000439756
PCB 144	0.01040654
PCB 145	0.00042581
PCB 146	0.012467361
PCB 147/149	0.171247147
PCB 148	0.000149823
PCB 150	0.000498838
PCB 152	0.001017947
PCB 153/168	0.060797224
PCB 154	0.001206143
PCB 155	0.000236226
PCB 156/157	0.002693051
PCB 158	0.006258629
PCB 159	0
PCB 160	0.000200688
PCB 161	2.52898E-05
PCB 162	0.000273607
PCB 164	0.004519239
PCB 165	2.65963E-05
PCB 167	0.00097892
PCB 169	0.000133467
PCB 170	0.003905632
PCB 171/173	0.002855185
PCB 172	0.001112448
PCB 174	0.009483219
PCB 175	0.00025786
PCB 176	0.002852092
PCB 177	0.005156596

PCB 178	0.001506581
PCB 179	0.011399599
PCB 193/180	0.007252912
PCB 181	0
PCB 182	0.000442389
PCB 183	0.003663308
PCB 184	0.001341429
PCB 185	0.00052344
PCB 186	0.000124255
PCB 187	0.007051684
PCB 188	0.000575567
PCB 189	0
PCB 190	0.000868738
PCB 191	0.000185674
PCB 192	0
PCB 194	0.000563138
PCB 195	0.000478709
PCB 196	0.000291792
PCB 197	0
PCB 198/199	0.00073102
PCB 200	0
PCB 201	0.000113604
PCB 202	0.00107477
PCB 203	0.000565804
PCB 205	0
PCB 206	0.000191876
PCB 207	0.000130941
PCB 208	0.000173432
PCB 209	0.00050212
Sum of mass of PCBs	134.7565227