



CITY OF PORTLAND ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ■ Sam Adams, Commissioner ■ Dean Marriott, Director

TECHNICAL MEMORANDUM No. OFM1-2

Outfall Basin M-1

Sediment Trap Solids Investigation

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DATE: September 4, 2008

SUBJECT: Portland Harbor Source Investigation

Introduction

This technical memorandum summarizes the results of the City of Portland BES source investigation of inline solids within the Outfall Basin M-1 stormwater conveyance system. In the spring of 2007, the Lower Willamette Group (LWG) installed inline sediment traps in the northeastern branch of Basin M-1 (see Figure 1) to evaluate stormwater discharges from industrial land uses. This branch includes the Freightliner Truck Manufacturing Plant (TMP). The City installed additional sediment traps at one location upstream of the TMP connection to evaluate whether there are potential contaminant sources in the upper portion of this Basin M-1 branch. Deployment periods for the LWG and City sediment traps were concurrent to allow for a comparison of the two data sets.

It was anticipated that additional source tracing might be warranted if concentrations were elevated in the upstream trap as compared to the downstream results from the LWG samples. Due to limited solids availability, the LWG samples were not analyzed for a broad suite of contaminants, impeding a comparison between the two locations. Therefore, the City's M-1 sediment trap results were also compared to LWG sediment trap results from Basin M-2 which has comparable land uses and more complete sample results. The subbasins evaluated in Basins M-1 and M-2 primarily consist of transportation-related activities, including trucking and warehousing. Also, both areas were developed relatively recently (after 1980) so legacy contamination is less likely.

For those compounds analyzed in both the City and the LWG M-1 samples (pesticides and PCB congeners), the concentrations are relatively low and similar in magnitude. The detected total PCB concentration in the City M-1 sample is approximately half that detected in the LWG M-1

sample, and more similar to the Basin M-2 sample, indicating that these two sampling locations may be representative of PCB concentrations in light industrial land use areas.

The investigation results also indicate that metals and semivolatile organic compounds (SVOCs) are being discharged to the northeastern branch of Basin M-1, upstream of the TMP lateral. PAH concentrations are elevated, and further source investigation may be warranted following a review of recent basin stormwater data collected by the City and the LWG. Zinc was also slightly elevated. Sediment trap data indicate that significant uncontrolled sources of remaining constituents (e.g., PCBs, pesticides, additional metals, and other SVOCs) do not appear to be present in this branch of Basin M-1.

This investigation is part of the City's ongoing source control program associated with the Portland Harbor City of Portland Outfalls Project. These investigation results are submitted pursuant to the August 13, 2003, Intergovernmental Agreement between DEQ and the City.

Basin M-1 Configuration and Background

Outfall M-1 discharges to the Swan Island Lagoon on the east side of the Willamette River at approximately river mile 8.5. Figure 1 provides an overview of the Basin M-1 stormwater conveyance system. The system consists of three main branches (northwestern, northeastern, and southeastern) that converge at the intersection of N. Ensign Street and N. Basin Avenue. Flows drain from this junction to Outfall M-1 via a 60-inch-diameter line. Current land use in Basin M-1 is predominantly light industrial, with some heavy industrial operations at the TMP site. The northeastern subbasin encompasses approximately 50 percent of the basin area, and includes drainage from industrial facilities along N. Ensign Street, N. Cutter Circle, and the eastern half of the Freightliner TMP facility.

Four facilities within the northeastern subbasin have National Pollution Discharge Elimination System (NPDES) stormwater permits including: Freightliner TMP (transportation equipment manufacturing), Maletis Beverage (transportation and distribution facility), Columbia Distributing Inc. (transportation facility), and Roadway Express (transportation facility). Freightliner TMP and Roadway Express are also DEQ cleanup sites. Contaminants detected at the TMP site include metals, phthalates, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs). Contaminants detected at the Roadway Express site include PAHs and metals (DEQ, 2008). Stormwater permittees and the DEQ cleanup sites are displayed on Figure 1.

As part of a pilot project in 2003, the City collected inline solids samples from Basin M-1 to evaluate the feasibility of using inline solids as a source investigation tool and to identify basins where additional source investigation may be warranted (CH2M HILL, 2003). Representative stormwater solids were not found in the northeastern subbasin. In 2004, the City designated Basin M-1 as a Priority 1 basin for source investigation based on elevated concentrations of phthalates, PCBs and metals detected in surface sediment samples collected by the City near Outfall M-1 in 2002 (CH2M HILL, 2004). Priority 1 designations were assigned to basins where significantly elevated contaminant concentrations had been detected in sediment near the outfall and further investigation efforts are needed to identify significant upland contaminant sources. Additionally, based on in-river sediment data, the Swan Island Lagoon has been identified by EPA as an area of potential concern for tributyltin (TBT), PCBs, zinc, copper, lead, mercury, PAHs and phthalates (EPA, 2005), and for PCBs alone by LWG (Integral, 2007).

Sampling Activities

LWG Sampling Activities

Basin M-1

The LWG installed two sediment traps in the northeastern branch of Basin M-1 immediately downstream of manhole AAJ933 as shown on Figure 1. The sampling location was chosen because it was representative of the light industrial land use. It is distinguished from the City's location by the inclusion of discharges from the eastern portion of the TMP site. The sediment traps were installed on March 8, 2007 and removed on June 6, 2007. Approximately 1.8 inches of solids had accumulated in the sediment traps at the time of removal (Anchor and Integral, 2007). Because the sample volume was not sufficient to conduct all desired analyses, the sample was analyzed only for pesticides, PCB congeners, and total organic carbon (TOC).¹

Basin M-2

The LWG installed two sediment traps in Basin M-2, at a location downstream of the majority of basin discharges. The sampling location was downstream of manhole AAM179, and is depicted on Figure 1. Sediment traps were installed on March 8, 2007 and removed on June 6, 2007. Approximately 1.9 inches of solids had accumulated in the traps at the time of removal (Anchor and Integral, 2007). The sample was analyzed for pesticides, PCB congeners, PAHs, phthalates, SVOCs, and TOC.

City Sampling Activities. The City's sampling activities were completed in accordance with the sampling and analysis plan (SAP) submitted to DEQ (BES, 2007) that was intended to mirror the sampling and analytical procedures being implemented by the LWG at the manhole AAJ933 location. The City installed two inline sediment traps immediately downstream of manhole AAJ994 on March 13, 2007. The traps were inspected monthly and were removed on June 18, 2007. Approximately one inch of solids had accumulated in each of the trap bottles at the time of removal. Sample bottle contents were filtered at the City's Water Pollution Control Laboratory to generate a solids sample for chemical analysis. Photographs of the sediment trap bottles and solids processing are provided in Attachment A. Field notes for the trap installation, monitoring and removal activities are provided in Attachment B.

The solids sample was submitted to Columbia Analytical Services Inc. (CAS) of Kelso, Washington for chemical analyses of metals, pesticides, PCBs (Aroclors and congeners), PAHs, phthalates, a full SVOC scan, and TOC.

Summary of Results and Data Evaluation

Table 1 summarizes analytical results for the City and the LWG sediment trap samples from Basins M-1 and M-2 and the Portland Harbor Joint Source Control Strategy (JSCS) screening level values (SLVs) for bioaccumulation and toxicity (DEQ/EPA, 2005). The PCB congener data are provided separately in Table 2. Laboratory analytical results and the data review memorandum for the City solids sample are provided in Attachment C.

City sediment trap data from Basin M-1 were compared to concentrations in the LWG samples from Basins M-1 and M-2. The results of the comparisons are summarized as follows:

¹ Samples were also intended for PAH and phthalate analyses. These tests were not run due to unforeseen sample volume limitations.

- **Organochlorine Pesticides:** In the City's M-1 sample, 4-4'DDE was detected at low concentrations. The concentration of 4-4'DDE was slightly higher in the LWG's M-1 sample, but was still low. DDTs were not detected in Basin M-2.
- **PCBs:** The total PCBs concentration in the City's M-1 sample was approximately half the concentration detected in the LWG's M-1 sample and was similar to the total PCBs concentration detected in the LWG's M-2 sample. All three concentrations were low.
- **PAHs:** The LWG's M-1 sample was not analyzed for PAHs. The total PAH concentration in the City's M-1 sample was more than twice the total PAHs detected in the LWG M-2 sample and is considered elevated.
- **Phthalates:** The LWG's M-1 sample was not analyzed for phthalates. In both the City's M-1 and the LWG's M-2 samples, bis(2-ethylhexyl) phthalate (BEHP) was detected at similar relatively low concentrations.
- **Metals:** Metals were not analyzed in either of the LWG samples.

Based on these comparisons, further source investigation in the northeastern branch of Basin M-1 does not appear warranted at this time for pesticides, PCBs, and phthalates. Detected concentrations of pesticides and PCBs are below JSCS toxicity SLVs. Though BEHP exceeds the toxicity SLV, the concentration is similar to that observed in industrial stormwater solids in M-2 and at industrial sites throughout the harbor. LWG has not identified BEHP as a contaminant of interest in the Swan Island Lagoon, though the significance of phthalates in river sediment has yet to be determined.

Zinc was the only metal detected in the City sample above the toxicity SLV, and the concentration was within an order-of-magnitude. PAH concentrations were elevated in respect to the LWG's M-2 sample and in comparison to SLVs, and further investigation may be warranted.

Conclusions and Next Steps

The City M-1 and LWG M-2 sediment trap samples represent discharges from light industrial land use while the LWG M-1 sample includes a portion of heavy industrial land use. Though total PCBs concentrations at all three locations were low, the higher concentration in the LWG's M-1 sample may be associated with the heavy industrial land use component. However, additional data are not available for other parameters (e.g., metals) that could assist with this evaluation.

While investigation results do not indicate the presence of significant uncontrolled pesticides, PCBs, phthalates, or metals sources in the northeastern portion of Basin M-1, PAH concentrations were slightly elevated in the City's sample.

Three transportation facilities discharge to this portion of the northeastern branch, including the Roadway Express site. In May of 2007, BES conducted a stormwater inspection at the Roadway Express site, and observed areas where operations may be contributing contaminants to site stormwater discharges. Since the sediment trap deployment period in Basin M-1, the City has provided technical assistance to assist with the identification and implementation of additional Best Management Practices (BMPs) at this site. In a follow-up inspection in May 2008, the City noted that the site is maintaining excellent documentation of training, discharge from the tank farm, and housekeeping procedures completed and that the site appeared well-maintained (BES,

2008). Stormwater source controls at this site will continue to be evaluated during routine inspections.

Additional data have been collected that will inform the City's conceptual model for Basin M-1. In the fall and winter of 2007, the City collected stormwater samples in Basin M-1 at a location closer to the outfall that represents the majority of the drainage basin, including the northeastern branch. The LWG also collected stormwater samples from its sediment trap location in the northeastern branch, concurrently with the trap deployments. These stormwater data, the sediment trap results presented in this memorandum, and the results of the ongoing stormwater evaluation at the TMP facility will be evaluated collectively to determine whether additional source investigation and controls are warranted in the northeastern branch of Basin M-1.

References

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Tables

Table 1 - *Summary of Chemical Analytical Results, Inline Sediment Trap Solids Samples, Outfall Basins M-1 and M-2*

Table 2 – *Summary of Polychlorinated Biphenyl Congener Analytical Results, Inline Sediment Trap Solids Samples, Outfall Basins M-1 and M-2*

Figure

Figure 1 – *2007 Sediment Trap Locations, Basins M-1 and M-2*

Attachments

Attachment A – *Field Photographs*

Attachment B – *Field Notes*

Attachment C – *Laboratory Results*

Table 1
Summary of Chemical Analytical Results
Inline Sediment Trap Solids Samples
Outfall Basins M-1 and M-2

		City Sediment Trap Solids		LWG Sediment Trap Solids		JSCS ⁽¹⁾	
		Downstream of Manhole AAJ994		Basin M-1 Downstream of Manhole AAJ933		Basin M-2 Downstream of Manhole AAM179	Screening Level Value
Class	Analyte	Units	6/18/2007	6/7/2007		7/2/2007	(Toxicity) (Bioaccumulation)
Total Organic Carbon (ASTM D4129-82M)							
	TOC	%	11.1	3.34		4.25	-- --
Total Solids (EPA 160.3M)							
	TS	%	37.9	21.3		31.4	-- --
Metals (EPA 6000 and 7000 Series)							
	Aluminum	mg/kg	9260	NA		NA	-- --
	Antimony	mg/kg	2.9	NA		NA	64 --
	Arsenic	mg/kg	6.90	NA		NA	33 7
	Cadmium	mg/kg	3.27	NA		NA	4.98 1
	Chromium	mg/kg	39.8	NA		NA	111 --
	Copper	mg/kg	140	NA		NA	149 --
	Lead	mg/kg	92.1	NA		NA	128 17
	Manganese	mg/kg	685	NA		NA	1100 --
	Mercury	mg/kg	0.050	NA		NA	1.06 0.07
	Nickel	mg/kg	22.5	NA		NA	48.6 --
	Silver	mg/kg	0.22	NA		NA	5 --
	Zinc	mg/kg	1060	NA		NA	459 --
Organochlorine Pesticides (EPA 8081A)							
	2,4'-DDD	ug/Kg	NA	4.3 U		3.3 U	-- --
	2,4'-DDE	ug/Kg	NA	3.4 U		0.93 U	-- --
	2,4'-DDT	ug/Kg	NA	1.5 U		4.1 U	-- --
	4,4'-DDD ⁽²⁾	ug/Kg	1.4 U	1.8 U		1.5 U	28 --
	4,4'-DDE ⁽²⁾	ug/Kg	3.6 P	9.1		4.1 U	31.3 --
	4,4'-DDT ⁽²⁾	ug/Kg	5.3 Ui	6 U		4.8 U	62.9 --
	Estimated Total DDT ⁽³⁾	ug/Kg	3.6 P	9.1		ND	-- 0.33
	Aldrin	ug/Kg	2.5 Ui	3 U		2.5 U	40 --
	alpha-BHC	ug/Kg	1.4 U	2.4 U		2 U	-- --
	beta-BHC	ug/Kg	1.4 U	3.5 U		11 U	-- --
	delta-BHC	ug/Kg	1.4 U	2.9 U		2.3 U	-- --
	gamma-BHC (Lindane)	ug/Kg	1.4 U	6.2 U		7.7 U	4.99 --
	alpha-Chlordane ⁽⁴⁾	ug/Kg	2.5 Ui	0.76 U		0.63 U	-- --
	beta-Chlordane ⁽⁴⁾	ug/Kg	1.4 U	2.6 U		4.1 U	-- --
	Oxychlordane	ug/Kg	NA	1.5 U		4.1 U	-- --
	cis-Nonachlor	ug/Kg	NA	2.2 U		4.5 U	-- --
	trans-Nonachlor	ug/Kg	NA	13 NJ		18 NJ	-- --
	Total Chlordane ⁽⁵⁾	ug/Kg	ND	13		18	17.6 0.37
	Dieldrin	ug/Kg	4 Ui	4.9 U		3.6 U	61.8 0.0081
	Endosulfan I	ug/Kg	2.6	7.4 U		9.6 U	-- --
	Endosulfan II	ug/Kg	3.7 P	11 U		13 U	-- --
	Endosulfan sulfate	ug/Kg	1.6 Ui	8.5 U		1.2 U	-- --
	Endrin	ug/Kg	2.2 Ui	1.8 U		1.5 U	207 --
	Endrin aldehyde	ug/Kg	1.4 U	7.4 J		8.6 U	-- --
	Endrin ketone	ug/Kg	1.4 U	0.71 U		5.2 NJ	-- --
	Heptachlor	ug/Kg	1.4 U	9.1 NJ		1.6 U	10 --
	Heptachlor epoxide	ug/Kg	2.5	8.6 U		4.1 U	16 --
	Methoxychlor	ug/Kg	1.4 U	4.9 U		1.6 U	-- --
	Mirex	ug/Kg	NA	3 U		2.5 U	-- --
	Toxaphene	ug/Kg	270 Ui	550 U		240 U	-- --
Polychlorinated Biphenyls (PCBs) (EPA 8082)							
	Aroclor 1016	ug/Kg	20 Ui	NA		NA	530 --
	Aroclor 1221	ug/Kg	30 Ui	NA		NA	-- --
	Aroclor 1232	ug/Kg	14 U	NA		NA	-- --
	Aroclor 1242	ug/Kg	16 Ui	NA		NA	-- --
	Aroclor 1248	ug/Kg	14 U	NA		NA	1500 --
	Aroclor 1254	ug/Kg	15 Ui	NA		NA	300 --
	Aroclor 1260	ug/Kg	19 Ui	NA		NA	200 --
	Aroclor 1262	ug/Kg	23 Ui	NA		NA	-- --
	Aroclor 1268	ug/Kg	14 U	NA		NA	-- --
	Total PCBs	ug/Kg	ND	NA		NA	676 0.39
Polynuclear Aromatic Hydrocarbons (EPA 8270C SIM)							
	2-Methylnaphthalene	ug/Kg	200	NA		51 U	200 --
	Acenaphthene	ug/Kg	56	NA		33 U	300 --

Table 1
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Inline Sediment Trap Solids Samples
Outfall Basins M-1 and M-2

Class	Analyte	Units	City Sediment Trap Solids		LWG Sediment Trap Solids		JSCS ⁽¹⁾	
			Downstream of Manhole AAJ994		Downstream of Manhole AAJ933		Screening Level Value	
			6/18/2007	6/7/2007	6/7/2007	7/2/2007	(Toxicity)	(Bioaccumulation)
	Acenaphthylene	ug/Kg	49	NA	53 J	200	--	--
	Anthracene	ug/Kg	200	NA	120 J	845	--	--
	Benzo(a)anthracene	ug/Kg	1700	NA	540	1050	--	--
	Benzo(a)pyrene	ug/Kg	2100	NA	870	1450	--	--
	Benzo(b)fluoranthene	ug/Kg	4300	NA	1300	--	--	--
	Benzo(g,h,i)perylene	ug/Kg	3000	NA	1200	300	--	--
	Benzo(k)fluoranthene	ug/Kg	1300	NA	540	13000	--	--
	Chrysene	ug/Kg	3700	NA	1300	1290	--	--
	Dibenzo(a,h)anthracene	ug/Kg	570	NA	35 U	1300	--	--
	Dibenzofuran	ug/Kg	84	NA	37 J	--	--	--
	Fluoranthene	ug/Kg	6200	NA	1600	2230	37000	--
	Fluorene	ug/Kg	170	NA	56 J	536	--	--
	Indeno(1,2,3-cd)pyrene	ug/Kg	3200	NA	940	100	--	--
	Naphthalene	ug/Kg	1500	NA	81 J	561	--	--
	Phenanthrene	ug/Kg	1400	NA	760	1170	--	--
	Pyrene	ug/Kg	4200	NA	3000	1520	1900	--
	Total PAHs	ug/Kg	33929	NA	12397	--	--	--
Phthalates (EPA 8270C)								
	Bis(2-ethylhexyl) phthalate	ug/Kg	18000	NA	12000	800	330	--
	Butyl Benzyl Phthalate	ug/Kg	640	NA	900	--	--	--
	Diethyl phthalate	ug/Kg	530 U	NA	97 J	600	--	--
	Dimethyl phthalate	ug/Kg	530 U	NA	54 J	--	--	--
	Di-n-butyl phthalate	ug/Kg	530 U	NA	400 J	100	60	--
	Di-n-octyl phthalate	ug/Kg	530 U	NA	40 U	--	--	--
Semi-Volatile Organic Compounds (EPA 8270C)								
	1,2,4-Trichlorobenzene	ug/Kg	530 U	NA	NA	9200	--	--
	1,2-Dichlorobenzene	ug/Kg	530 U	NA	NA	1700	--	--
	1,3-Dichlorobenzene	ug/Kg	530 U	NA	NA	300	--	--
	1,4-Dichlorobenzene	ug/Kg	530 U	NA	NA	300	--	--
	2,4,5-Trichlorophenol	ug/Kg	530 U	NA	NA	--	--	--
	2,4,6-Trichlorophenol	ug/Kg	530 U	NA	NA	--	--	--
	2,4-Dichlorophenol	ug/Kg	530 U	NA	NA	--	--	--
	2,4-Dimethylphenol	ug/Kg	2700 U	NA	NA	--	--	--
	2,4-Dinitrophenol	ug/Kg	11000 U	NA	NA	--	--	--
	2,4-Dinitrotoluene	ug/Kg	530 U	NA	NA	--	--	--
	2,6-Dinitrotoluene	ug/Kg	530 U	NA	NA	--	--	--
	2-Chloronaphthalene	ug/Kg	530 U	NA	NA	--	--	--
	2-Chlorophenol	ug/Kg	530 U	NA	NA	--	--	--
	2-Methyl-4,6-dinitrophenol	ug/Kg	5300 U	NA	NA	--	--	--
	2-Methylphenol	ug/Kg	530 U	NA	NA	--	--	--
	2-Nitroaniline	ug/Kg	1100 U	NA	NA	--	--	--
	2-Nitrophenol	ug/Kg	530 U	NA	NA	--	--	--
	3,3'-Dichlorobenzidine	ug/Kg	5300 U	NA	NA	--	--	--
	3-Nitroaniline	ug/Kg	1100 U	NA	NA	--	--	--
	4-Bromophenylphenyl ether	ug/Kg	530 U	NA	NA	--	--	--
	4-Chloro-3-methylphenol	ug/Kg	530 U	NA	NA	--	--	--
	4-Chloroaniline	ug/Kg	530 U	NA	NA	--	--	--
	4-Chlorophenyl phenyl ether	ug/Kg	530 U	NA	NA	--	--	--
	4-Methylphenol ⁽⁶⁾	ug/Kg	850	NA	NA	--	--	--
	4-Nitroaniline	ug/Kg	1100 U	NA	NA	--	--	--
	4-Nitrophenol	ug/Kg	5300 U	NA	NA	--	--	--
	Benzoic acid	ug/Kg	11000 U	NA	NA	--	--	--
	Benzyl alcohol	ug/Kg	1100 U	NA	NA	--	--	--
	Bis(2-chloroethoxy) methane	ug/Kg	530 U	NA	NA	--	--	--
	Bis(2-chloroethyl) ether	ug/Kg	530 U	NA	NA	--	--	--
	Bis(2-chloroisopropyl) ether	ug/Kg	530 U	NA	NA	--	--	--
	Hexachlorobenzene ⁽⁷⁾	ug/Kg	530 U	4.9 U	1.4 U	100	19	--
	Hexachlorobutadiene ⁽⁷⁾	ug/Kg	530 U	3.5 U	4.5 U	600	--	--
	Hexachlorocyclopentadiene	ug/Kg	2700 U	NA	NA	400	--	--
	Hexachloroethane ⁽⁷⁾	ug/Kg	530 U	4 U	3.3 U	--	--	--
	Isophorone	ug/Kg	2300	NA	NA	--	--	--
	Nitrobenzene	ug/Kg	530 U	NA	NA	--	--	--
	N-Nitrosodi-n-propylamine	ug/Kg	530 U	NA	NA	--	--	--
	N-Nitrosodiphenylamine	ug/Kg	530 U	NA	NA	--	--	--
	Pentachlorophenol	ug/Kg	5300 U	NA	NA	1000	250	--

Table 1
Summary of Chemical Analytical Results
Inline Sediment Trap Solids Samples
Outfall Basins M-1 and M-2

Class	Analyte	Units	City Sediment Trap Solids	LWG Sediment Trap Solids		JSCS ⁽¹⁾	
			Downstream of Manhole AAJ994	Basin M-1 Downstream of Manhole AAJ933	Basin M-2 Downstream of Manhole AAM179	Screening Level Value	
			6/18/2007	6/7/2007	7/2/2007	(Toxicity)	(Bioaccumulation)
	Phenol	ug/Kg	1600 U	NA	NA	50	--

Notes:

i = The MRL/MDL has been elevated due to a matrix interference.

J = Estimated value.

N = Presumptive evidence of a compound.

P = The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).

U = The analyte was not detected above the reported sample quantification limit.

NA = Not analyzed.

ND = Not detected.

-- No JSCS screening level available.

ug/Kg = Micrograms per kilogram.

mg/Kg = Milligrams per kilogram.

⁽¹⁾ JSCS - Portland Harbor Joint Source Control Strategy (DEQ/EPA Final December 2005, Amended July 2007).

⁽²⁾ The toxicity SLV value represents the sum of the 2,4' and 4,4' isomers.

⁽³⁾ Estimated Total DDT is the sum of DDE, DDD and DDT.

⁽⁴⁾ Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane.

⁽⁵⁾ Total Chlordane is the sum of alpha-, beta-, oxy- isomers and cis-, trans-nonachlors.

⁽⁶⁾ This analyte cannot be separated from 3-Methylphenol.

⁽⁷⁾ LWG Sediment trap solids were analyzed for these SVOCs by EPA 8081A.

 = concentration exceeds JSCS Toxicity Screening Level Value

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table 2
Summary of Polychlorinated Biphenyl Congener Analytical Results
Inline Sediment Trap Solids Samples
Outfall Basins M-1 and M-2

IUPAC Number ⁽¹⁾	Chemical Name	Units	City Sediment Trap	LWG Sediment Trap Solids		JSCS ⁽²⁾	
			Solids	Basin M-1	Basin M-2	Screening Level Value	
			Downstream of Manhole	Downstream of Manhole	Downstream of Manhole	(Toxicity)	(Bioaccumulation)
			AAJ994 (Sample I.D. FO 070804)	AAJ933 6/18/2007	AAM179 7/2/2007		
Chlorinated Biphenyl Congeners (EPA 1668A)							
PCB 1	2-MoCB	ug/Kg	0.0361 U	0.0815 U	0.122 U	--	--
PCB 2	3-MoCB	ug/Kg	0.0137 U	0.0815 U	0.122 U	--	--
PCB 3	4-MoCB	ug/Kg	0.051 U	0.0815 U	0.03 J	--	--
PCB 4	2,2'-DiCB	ug/Kg	0 U	NA	NA	--	--
PCB 4/10	2,2'-DiCB + 2,6-DiCB	ug/Kg	NA	0.247	0.245 U	--	--
PCB 5	2,3-DiCB	ug/Kg	0.0685 U	NA	NA	--	--
PCB 5/8	2,3-DiCB + 2,4'-DiCB	ug/Kg	NA	0.207 UJ	0.245 U	--	--
PCB 6	2,3'-DiCB	ug/Kg	0.0685 U	0.163 U	0.245 U	--	--
PCB 7	2,4-DiCB	ug/Kg	0.0685 U	NA	NA	--	--
PCB 7/9	2,4-DiCB + 2,5-DiCB	ug/Kg	NA	0.163 U	0.245 U	--	--
PCB 8	2,4'-DiCB	ug/Kg	0.685 U	NA	NA	--	--
PCB 9	2,5-DiCB	ug/Kg	0.0685 U	NA	NA	--	--
PCB 10	2,6-DiCB	ug/Kg	0.0685 U	NA	NA	--	--
PCB 11	3,3'-DiCB	ug/Kg	0 U	1.93	1.94	--	--
PCB 12/13	3,4-DiCB + 3,4'-DiCB	ug/Kg	0.274 U	0.163 U	0.245 U	--	--
PCB 14	3,5-DiCB	ug/Kg	0.137 U	0.163 U	0.245 U	--	--
PCB 15	4,4'-DiCB	ug/Kg	0.685 U	0.163 U	0.245 U	--	--
PCB 16	2,2',3-TriCB	ug/Kg	0.137 U	NA	NA	--	--
PCB 16/32	2,2',3-TriCB + 2,4',6-TriCB	ug/Kg	NA	0.546	0.429	--	--
PCB 17	2,2',4-TriCB	ug/Kg	0.176 U	0.212 UJ	0.262	--	--
PCB 18	2,2',5-TriCB	ug/Kg	NA	0.364	0.673	--	--
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	ug/Kg	0.614 JK	NA	NA	--	--
PCB 19	2,2',6-TriCB	ug/Kg	0.137 U	0.274	0.0925 J	--	--
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	ug/Kg	0.527 J	NA	NA	--	--
PCB 20/21/33	2,3,3'-TriCB + 2,3,4-TriCB + 2',3,4-TriCB	ug/Kg	NA	0.251	0.392	--	--
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	ug/Kg	0.31 J	NA	NA	--	--
PCB 22	2,3,4'-TriCB	ug/Kg	0.203 J	0.164	0.231	--	--
PCB 23	2,3,5-TriCB	ug/Kg	0.208 U	0.0815 U	0.122 U	--	--
PCB 24/27	2,3,6-TriCB + 2,3',6-TriCB	ug/Kg	0.125 U	0.0815 U	0.122 U	--	--
PCB 25	2',3,4-TriCB	ug/Kg	0.194 U	0.0815 U	0.0912 J	--	--
PCB 26	2',3,5-TriCB	ug/Kg	NA	0.0815 U	0.122 J	--	--
PCB 26/29	2',3,5-TriCB + 2,4,5-TriCB	ug/Kg	0.184 U	NA	NA	--	--
PCB 28	2,4,4'-TriCB	ug/Kg	NA	0.231	0.569	--	--
PCB 29	2,4,5-TriCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 30	2,4,6-TriCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 31	2,4',5-TriCB	ug/Kg	0.726	0.287	0.511	--	--
PCB 32	2,4',6-TriCB	ug/Kg	0.22 J	NA	NA	--	--
PCB 34	2',3,5-TriCB	ug/Kg	0.0989 U	0.0815 U	0.122 U	--	--
PCB 35	3',3',4-TriCB	ug/Kg	0.163 U	0.0815 U	0.0453 J	--	--
PCB 36	3',3',5-TriCB	ug/Kg	0.15 U	0.0815 U	0.122 U	--	--
PCB 37	3,4,4'-TriCB	ug/Kg	0.243 J	0.141	0.277	--	--
PCB 38	3,4,5-TriCB	ug/Kg	0.156 U	0.0815 U	0.122 U	--	--
PCB 39	3,4',5-TriCB	ug/Kg	0.138 U	0.0815 U	0.122 U	--	--
PCB 40	2,2',3,3'-TeCB	ug/Kg	NA	0.131	0.122 U	--	--
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4'-TeCB + 2,3',4',6'-TeCB	ug/Kg	0.204 J	NA	NA	--	--
PCB 41/64/71/72	2,2',3,4'-TeCB + 2,3,4',6'-TeCB + 2,3',4',6'-TeCB + 2,3',5,5'-TeCB	ug/Kg	NA	0.527	0.492	--	--
PCB 42	2,2',3,4'-TeCB	ug/Kg	0.0346 U	NA	NA	--	--
PCB 42/59	2,2',3,4'-TeCB + 2,3,3',6'-TeCB	ug/Kg	NA	0.168	0.19	--	--
PCB 43/49	2,2',3,5'-TeCB + 2,2',4,5'-TeCB	ug/Kg	NA	0.908	0.478	--	--
PCB 43/52/73	2,2',3,5'-TeCB + 2,2',5,5'-TeCB + 2,3',5',6'-TeCB	ug/Kg	0.791 J	NA	NA	--	--
PCB 44	2,2',3,5'-TeCB	ug/Kg	NA	0.981	0.67	--	--
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6'-TeCB	ug/Kg	0.21 JK	NA	NA	--	--
PCB 45	2,2',3,6'-TeCB	ug/Kg	NA	0.0801 J	0.0866 J	--	--
PCB 45/51	2,2',3,6'-TeCB + 2,2',4,6'-TeCB	ug/Kg	0.104 JK	NA	NA	--	--
PCB 46	2,2',3,6'-TeCB	ug/Kg	0.0272 U	0.0815 U	0.0697 J	--	--
PCB 47	2,2',4,4'-TeCB	ug/Kg	NA	0.596	0.164	--	--
PCB 48	2,2',4,5'-TeCB	ug/Kg	0.0276 J	NA	NA	--	--
PCB 48/75	2,2',4,5'-TeCB + 2,4,4',6'-TeCB	ug/Kg	NA	0.0815 U	0.105 J	--	--
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6'-TeCB	ug/Kg	0.281 J	NA	NA	--	--
PCB 50	2,2',4,6'-TeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 50/53	2,2',4,6'-TeCB + 2,2',5,6'-TeCB	ug/Kg	0.175 J	NA	NA	--	--
PCB 51	2,2',4,6'-TeCB	ug/Kg	NA	0.338	0.122 U	--	--
PCB 52/69	2,2',5,5'-TeCB + 2,3',4,6'-TeCB	ug/Kg	NA	1.66	0.705	--	--
PCB 53	2,2',5,6'-TeCB	ug/Kg	NA	0.594	0.11 J	--	--
PCB 54	2,2',6,6'-TeCB	ug/Kg	0.0323 U	0.0815 U	0.122 U	--	--
PCB 55	2,3,3',4'-TeCB	ug/Kg	0.0512 U	0.0815 U	0.0162 J	--	--
PCB 56	2,3,3',4'-TeCB	ug/Kg	0.183 JK	NA	NA	--	--
PCB 56/60	2,3,3',4'-TeCB + 2,3,4,4'-TeCB	ug/Kg	NA	0.456	0.435	--	--
PCB 57	2,3,3',5'-TeCB	ug/Kg	0.0497 U	0.0815 U	0.122 U	--	--
PCB 58	2,3,3',5'-TeCB	ug/Kg	0.035 U	0.0815 U	0.122 U	--	--
PCB 59/62/75	2,3,3',6'-TeCB + 2,3,4,6'-TeCB + 2,4,4',6'-TeCB	ug/Kg	0.132 JK	NA	NA	--	--
PCB 60	2,3,4,4'-TeCB	ug/Kg	0.0926 J	NA	NA	--	--
PCB 61/70	2,3,4,5'-TeCB + 2,3',4',5'-TeCB	ug/Kg	NA	1.16	0.767	--	--
PCB 61/70/74/76	2,3,4,5'-TeCB + 2,3',4',5'-TeCB + 2,4,4',5'-TeCB + 2',3,4,5'-TeCB	ug/Kg	0.909 J	NA	NA	--	--
PCB 62	2,3,4,6'-TeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 63	2,3,4',5'-TeCB	ug/Kg	0.0463 U	0.0815 U	0.122 U	--	--
PCB 64	2,3,4',6'-TeCB	ug/Kg	0.487	NA	NA	--	--
PCB 65	2,3,5,6'-TeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 66	2,3',4,4'-TeCB	ug/Kg	0.355 J	NA	NA	--	--
PCB 66/76	2,3',4,4'-TeCB + 2',3,4,5'-TeCB	ug/Kg	NA	0.88	0.567	--	--
PCB 67	2,3',4,5'-TeCB	ug/Kg	0.0608 U	0.0815 U	0.122 U	--	--
PCB 68	2,3',4,5'-TeCB	ug/Kg	0.0438 U	0.0815 U	0.122 U	--	--
PCB 72	2,3',5,5'-TeCB	ug/Kg	0.0475 U	NA	NA	--	--
PCB 73	2,3',5,6'-TeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 74	2,4,4',5'-TeCB	ug/Kg	NA	0.294	0.287	--	--
PCB 77	3',3',4,4'-TeCB	ug/Kg	0.0424 U	0.0915	0.099 J	--	0.052
PCB 78	3',3',4,5'-TeCB	ug/Kg	0.048 U	0.0815 U	0.122 U	--	--
PCB 79	3',3',4,5'-TeCB	ug/Kg	0.0439 U	0.0815 U	0.122 U	--	--
PCB 80	3',3',5,5'-TeCB	ug/Kg	0.0403 U	0.0815 U	0.122 U	--	--
PCB 81	3,4,4',5'-TeCB	ug/Kg	0.0427 U	0.0544 U	0.0296 U	--	0.017
PCB 82	2,2',3,3',4-PeCB	ug/Kg	0.0677 U	0.74	0.218	--	--

Table 2
Summary of Polychlorinated Biphenyl Congener Analytical Results
Inline Sediment Trap Solids Samples
Outfall Basins M-1 and M-2

IUPAC Number ⁽¹⁾	Chemical Name	Units	City Sediment Trap	LWG Sediment Trap Solids		JSCS ⁽²⁾	
			Solids	Basin M-1 Downstream of Manhole AAJ994 (Sample I.D. FO 070804)	Basin M-2 Downstream of Manhole AAM179	Screening Level Value	
			Downstream of Manhole				
			(Sample I.D. FO 070804)				
6/18/2007	6/7/2007	7/2/2007	(Toxicity)	(Bioaccumulation)			
Chlorinated Biphenyl Congeners (EPA 1668A)							
PCB 83	2,2',3,3',5-PeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 83/99	2,2',3,3',5-PeCB + 2,2',4,4',5-PeCB	ug/Kg	0.413 J	NA	NA	--	--
PCB 84	2,2',3,3',6-PeCB	ug/Kg	0.0494 U	NA	NA	--	--
PCB 84/92	2,2',3,3',6-PeCB + 2,2',3,5,5'-PeCB	ug/Kg	NA	2.34	0.568	--	--
PCB 85/116	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB	ug/Kg	NA	0.51	0.169	--	--
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6-PeCB	ug/Kg	0.129 JK	NA	NA	--	--
PCB 86	2,2',3,4,5-PeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 86/87/97/108/119/125	2,2',3,4,5-PeCB + 2,2',3,4,5'-PeCB + 2,2',3',4,5-PeCB + 2,3,3',4,5'-PeCB + 2,3',4,4',6-PeCB + 2',3,4,5,6'-PeCB	ug/Kg	1.22 J	NA	NA	--	--
PCB 87/117/125	2,2',3,4,5'-PeCB + 2,3,4',5,6-PeCB + 2',3,4,5,6'-PeCB	ug/Kg	NA	0.974	0.436	--	--
PCB 88/91	2,2',3,4,6-PeCB + 2,2',3,4',6-PeCB	ug/Kg	0.044 U	0.817	0.197	--	--
PCB 89	2,2',3,4,6'-PeCB	ug/Kg	0.207 J	0.0815 U	0.122 U	--	--
PCB 90/101	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB	ug/Kg	NA	9.12 UJ	1.31	--	--
PCB 90/101/113	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6-PeCB	ug/Kg	1.38 J	NA	NA	--	--
PCB 92	2,2',3,5,5'-PeCB	ug/Kg	0.223 J	NA	NA	--	--
PCB 93	2,2',3,5,6-PeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 93/95/100	2,2',3,5,6-PeCB + 2,2',3,5',6-PeCB + 2,2',4,4',6-PeCB	ug/Kg	1.35 J	NA	NA	--	--
PCB 94	2,2',3,5,6'-PeCB	ug/Kg	0.0467 U	0.0815 U	0.122 U	--	--
PCB 95/98/102	2,2',3,5',6-PeCB + 2,2',3',4,6-PeCB + 2,2',4,5,6'-PeCB	ug/Kg	NA	4.47	1.02	--	--
PCB 96	2,2',3,6,6'-PeCB	ug/Kg	0.0133 U	0.0815 U	0.122 U	--	--
PCB 97	2,2',3',4,5-PeCB	ug/Kg	NA	0.0815 U	0.37	--	--
PCB 98/102	2,2',3',4,6-PeCB + 2,2',4,5,6'-PeCB	ug/Kg	0.0391 U	NA	NA	--	--
PCB 99	2,2',4,4',5-PeCB	ug/Kg	NA	1.54	0.527	--	--
PCB 100	2,2',4,4',6-PeCB	ug/Kg	NA	0.107 UJ	0.122 U	--	--
PCB 103	2,2',4,5',6-PeCB	ug/Kg	0.0428 U	0.0815 U	0.0293 J	--	--
PCB 104	2,2',4,6,6'-PeCB	ug/Kg	0.015 U	0.0815 U	0.122 U	--	--
PCB 105	2,3,3',4,4'-PeCB	ug/Kg	0.301	1.16	0.582	--	0.17
PCB 106	2,3,3',4,5-PeCB	ug/Kg	0.0831 U	NA	NA	--	--
PCB 106/118	2,3,3',4,5-PeCB + 2,3',4,4',5-PeCB	ug/Kg	NA	3.15	1.07	--	--
PCB 107/109	2,3,3',4',5-PeCB + 2,3,3',4,6-PeCB	ug/Kg	NA	0.201	0.0878 J	--	--
PCB 107/124	2,3,3',4',5-PeCB + 2',3,4,5,5'-PeCB	ug/Kg	0.0534 U	NA	NA	--	--
PCB 108/112	2,3,3',4,5'-PeCB + 2,3,3',5,6-PeCB	ug/Kg	NA	0.2	0.049 J	--	--
PCB 109	2,3,3',4,6-PeCB	ug/Kg	0.0411 U	NA	NA	--	--
PCB 110	2,3,3',4',6-PeCB	ug/Kg	NA	5.35	1.5	--	--
PCB 110/115	2,3,3',4',6-PeCB + 2,3,4,4',6-PeCB	ug/Kg	1.51 J	NA	NA	--	--
PCB 111	2,3,3',5,5'-PeCB	ug/Kg	0.0296 U	NA	NA	--	--
PCB 111/115	2,3,3',5,5'-PeCB + 2,3,4,4',6-PeCB	ug/Kg	NA	1.47	0.122 U	--	--
PCB 112	2,3,3',5,6-PeCB	ug/Kg	0.0479 U	NA	NA	--	--
PCB 113	2,3,3',5',6-PeCB	ug/Kg	NA	1.25 UJ	0.122 U	--	--
PCB 114	2,3,4,4',5-PeCB	ug/Kg	0.0669 U	0.0843 U	0.046 U	--	0.17
PCB 118	2,3',4,4',5-PeCB	ug/Kg	0.701	NA	NA	--	0.12
PCB 119	2,3',4,4',6-PeCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 120	2,3',4,5,5'-PeCB	ug/Kg	0.0296 U	0.0815 U	0.122 U	--	--
PCB 121	2,3',4,5',6-PeCB	ug/Kg	0.177 J	0.0815 U	0.122 U	--	--
PCB 122	2,3',3',4,5-PeCB	ug/Kg	0.0482 U	0.0815 U	0.122 U	--	--
PCB 123	2,3,4,4',5-PeCB	ug/Kg	0.0521 U	0.0278 J	0.0292 U	--	0.21
PCB 124	2',3,4,5,5'-PeCB	ug/Kg	NA	0.207	0.067 J	--	--
PCB 126	3,3',4,4',5-PeCB	ug/Kg	0.0535 U	0.107 U	0.0265 J	--	0.00005
PCB 127	3,3',4,5,5'-PeCB	ug/Kg	0.0543 U	0.0815 U	0.122 U	--	--
PCB 128/162	2,2',3,3',4,4'-HxCB + 2,3,3',4',5,5'-HxCB	ug/Kg	NA	0.657	0.27	--	--
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	ug/Kg	0.115 J	NA	NA	--	--
PCB 129	2,2',3,3',4,5-HxCB	ug/Kg	NA	0.152	0.122 U	--	--
PCB 129/138/160/163	2,2',3,3',4,5-HxCB + 2,2',3,4,4',5'-HxCB + 2,3,3',4,5,6-HxCB + 2,3,3',4',5,6-HxCB	ug/Kg	1.57 J	NA	NA	--	--
PCB 130	2,2',3,3',4,5'-HxCB	ug/Kg	0.0558 U	0.238 UJ	0.118 J	--	--
PCB 131	2,2',3,3',4,6-HxCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 131/142	2,2',3,3',4,6-HxCB + 2,2',3,4,5,6-HxCB	ug/Kg	0.065 U	NA	NA	--	--
PCB 132	2,2',3,3',4,6'-HxCB	ug/Kg	0.0593 U	NA	NA	--	--
PCB 132/161	2,2',3,3',4,6'-HxCB + 2,3,3',4,5',6-HxCB	ug/Kg	NA	1.34	0.475	--	--
PCB 133	2,2',3,3',5,5'-HxCB	ug/Kg	0.486 J	NA	NA	--	--
PCB 133/142	2,2',3,3',5,5'-HxCB + 2,2',3,4,5,6-HxCB	ug/Kg	NA	0.159	0.0651 J	--	--
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	ug/Kg	NA	0.305	0.0902 J	--	--
PCB 134/147/149	2,2',3,3',5,6-HxCB + 2,2',3,4',5,6-HxCB + 2,2',3,4',5',6-HxCB	ug/Kg	0.074 U	NA	NA	--	--
PCB 135	2,2',3,3',5,6'-HxCB	ug/Kg	NA	0.551	0.22	--	--
PCB 135/151/154	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6-HxCB + 2,2',4,4',5,6'-HxCB	ug/Kg	0.677 J	NA	NA	--	--
PCB 136	2,2',3,3',6,6'-HxCB	ug/Kg	0.00899 U	0.664 UJ	0.23	--	--
PCB 137	2,2',3,4,4',5-HxCB	ug/Kg	0.0409 U	0.272	0.0635 J	--	--
PCB 138/163/164	2,2',3,4,4',5'-HxCB + 2,3,3',4',5,6-HxCB + 2,3,3',4',5',6-HxCB	ug/Kg	NA	3.62	1.52	--	--
PCB 139/140	2,2',3,4,4',6-HxCB + 2,2',3,4,4',6'-HxCB	ug/Kg	0.0486 U	NA	NA	--	--
PCB 139/149	2,2',3,4,4',6-HxCB + 2,2',3,4',5',6-HxCB	ug/Kg	NA	2.72	1.33	--	--
PCB 140	2,2',3,4,4',6'-HxCB	ug/Kg	NA	0.0815 U	0.0151 J	--	--
PCB 141	2,2',3,4,5,5'-HxCB	ug/Kg	0.365	0.88	0.403	--	--
PCB 143	2,2',3,4,5,6'-HxCB	ug/Kg	0.954	NA	NA	--	--
PCB 144	2,2',3,4,5',6-HxCB	ug/Kg	0.00965 U	0.126 UJ	0.0679 J	--	--
PCB 145	2,2',3,4,6,6'-HxCB	ug/Kg	0.187 J	0.0815 U	0.122 U	--	--
PCB 146	2,2',3,4',5,5'-HxCB	ug/Kg	0.0333 U	NA	NA	--	--
PCB 146/165	2,2',3,4',5,5'-HxCB + 2,3,3',5,5',6-HxCB	ug/Kg	NA	0.521	0.246	--	--
PCB 147	2,2',3,4',5,6-HxCB	ug/Kg	NA	0.126	0.122 U	--	--
PCB 148	2,2',3,4',5,6'-HxCB	ug/Kg	0.00943 U	0.0815 U	0.122 U	--	--
PCB 150	2,2',3,4',6,6'-HxCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 150/152	2,2',3,4',6,6'-HxCB + 2,2',3,5,6,6'-HxCB	ug/Kg	0.00675 U	NA	NA	--	--
PCB 151	2,2',3,5,5',6-HxCB	ug/Kg	NA	0.953	0.438	--	--
PCB 152	2,2',3,5,6,6'-HxCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 153	2,2',4,4',5,5'-HxCB	ug/Kg	NA	3.63	1.8	--	--
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6-HxCB	ug/Kg	1.49	NA	NA	--	--
PCB 154	2,2',4,4',5,6'-HxCB	ug/Kg	NA	0.0815 U	0.021 J	--	--
PCB 155	2,2',4,4',6,6'-HxCB	ug/Kg	0.00727 U	0.0815 U	0.122 U	--	--
PCB 156	2,3,3',4,4',5-HxCB	ug/Kg	NA	0.335	0.187	--	0.21
PCB 156/157 ⁽³⁾	2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	ug/Kg	0.138 J	NA	NA	--	0.21
PCB 157	2,3,3',4,4',5'-HxCB	ug/Kg	NA	0.0598 U	0.04 J	--	0.21
PCB 158	2,3,3',4,4',6-HxCB	ug/Kg	0.11 JK	NA	NA	--	--
PCB 158/160	2,3,3',4,4',6-HxCB + 2,3,3',4,5,6-HxCB	ug/Kg	NA	0.395	0.181	--	--
PCB 159	2,3,3',4,5,5'-HxCB	ug/Kg	0.0322 U	0.0815 U	0.0268 J	--	--

Table 2
Summary of Polychlorinated Biphenyl Congener Analytical Results
Inline Sediment Trap Solids Samples
Outfall Basins M-1 and M-2

IUPAC Number ⁽¹⁾	Chemical Name	Units	City Sediment Trap Solids	LWG Sediment Trap Solids		JSCS ⁽²⁾	
			Downstream of Manhole	Basin M-1	Basin M-2	Screening Level Value	
			AAJ994	Downstream of Manhole	Downstream of Manhole	(Toxicity)	(Bioaccumulation)
			(Sample I.D. FO 070804)	AAJ933	AAM179		
			6/18/2007	6/7/2007	7/2/2007		
Chlorinated Biphenyl Congeners (EPA 1668A)							
PCB 161	2,3,3',4,5',6-HxCB	ug/Kg	0.0715 U	NA	NA	--	--
PCB 162	2,3,3',4',5,5'-HxCB	ug/Kg	0.0316 U	NA	NA	--	--
PCB 164	2,3,3',4',5',6-HxCB	ug/Kg	0.11 J	NA	NA	--	--
PCB 165	2,3,3',5,5',6-HxCB	ug/Kg	0.159 J	NA	NA	--	--
PCB 166	2,3,4',4',5,6-HxCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 167	2,3',4,4',5,5'-HxCB	ug/Kg	0.0311 U	0.127	0.0838 J	--	0.21
PCB 168	2,3',4,4',5',6-HxCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 169	3,3',4,4',5,5'-HxCB	ug/Kg	0.0318 U	0.08 U	0.0207 U	--	0.00021
PCB 170	2,2',3,3',4,4',5-HpCB	ug/Kg	0.419 J	1.12	0.589	--	--
PCB 171	2,2',3,3',4,4',6-HpCB	ug/Kg	NA	0.258	0.142	--	--
PCB 171/173	2,2',3,3',4,4',6-HpCB + 2,2',3,3',4,5,6-HpCB	ug/Kg	0.143 J	NA	NA	--	--
PCB 172	2,2',3,3',4,5,5'-HpCB	ug/Kg	0.0761 J	0.159	0.122 U	--	--
PCB 173	2,2',3,3',4,5,6-HpCB	ug/Kg	NA	0.0815 U	0.122 U	--	--
PCB 174	2,2',3,3',4,5,6'-HpCB	ug/Kg	0.682 J	1.15	0.693	--	--
PCB 175	2,2',3,3',4,5',6-HpCB	ug/Kg	0.0438 U	0.0815 U	0.122 U	--	--
PCB 176	2,2',3,3',4,6,6'-HpCB	ug/Kg	0.117 JK	0.144	0.0751 J	--	--
PCB 177	2,2',3,3',4',5,6-HpCB	ug/Kg	0.964	0.763	0.412	--	--
PCB 178	2,2',3,3',5,5',6-HpCB	ug/Kg	0.458 JK	0.237	0.147	--	--
PCB 179	2,2',3,3',5,6,6'-HpCB	ug/Kg	0.475 JK	0.531	0.295	--	--
PCB 180	2,2',3,4,4',5,5'-HpCB	ug/Kg	NA	2.53	1.59	--	--
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	ug/Kg	1.67	NA	NA	--	--
PCB 181	2,2',3,4,4',5,6-HpCB	ug/Kg	0.319 J	0.0815 U	0.122 U	--	--
PCB 182	2,2',3,4,4',5,6'-HpCB	ug/Kg	7.35	NA	NA	--	--
PCB 182/187	2,2',3,4,4',5,6'-HpCB + 2,2',3,4',5,5',6-HpCB	ug/Kg	NA	1.69	0.914	--	--
PCB 183	2,2',3,4,4',5',6-HpCB	ug/Kg	0.0283 U	0.75	0.406	--	--
PCB 184	2,2',3,4,4',6,6'-HpCB	ug/Kg	0.00917 U	0.0815 U	0.122 U	--	--
PCB 185	2,2',3,4,5,5',6-HpCB	ug/Kg	0.0516 U	0.108 UJ	0.0829 J	--	--
PCB 186	2,2',3,4,5,6,6'-HpCB	ug/Kg	0.00995 U	0.0815 U	0.122 U	--	--
PCB 187	2,2',3,4',5,5',6-HpCB	ug/Kg	0.0321 U	0.0815 U	0.122 U	--	--
PCB 188	2,2',3,4',5,6,6'-HpCB	ug/Kg	0.012 U	0.0638 J	0.0229 J	--	--
PCB 189	2,3,3',4,4',5,5'-HpCB	ug/Kg	0.0349 U	0.187 UJ	0.129	--	1.2
PCB 190	2,3,3',4,4',5,6-HpCB	ug/Kg	0.151 J	0.0815 U	0.0262 J	--	--
PCB 191	2,3,3',4,4',5',6-HpCB	ug/Kg	0.036 U	0.0815 U	0.122 U	--	--
PCB 192	2,3,3',4,5,5',6-HpCB	ug/Kg	0.036 U	0.0967 UJ	0.07 J	--	--
PCB 194	2,2',3,3',4,4',5,5'-OcCB	ug/Kg	0.417 J	0.399	0.509	--	--
PCB 195	2,2',3,3',4,4',5,6-OcCB	ug/Kg	0.161 J	0.24	0.192	--	--
PCB 196	2,2',3,3',4,4',5,6'-OcCB	ug/Kg	0.284 J	NA	NA	--	--
PCB 196/203	2,2',3,3',4,4',5,6'-OcCB + 2,2',3,4,4',5,5',6-OcCB	ug/Kg	NA	0.61	0.493	--	--
PCB 197	2,2',3,3',4,4',6,6'-OcCB	ug/Kg	NA	0.0815 U	0.0186 J	--	--
PCB 197/200	2,2',3,3',4,4',6,6'-OcCB + 2,2',3,3',4,5,6,6'-OcCB	ug/Kg	0.148 J	NA	NA	--	--
PCB 198	2,2',3,3',4,5,5',6-OcCB	ug/Kg	NA	0.0986	0.122 U	--	--
PCB 198/199	2,2',3,3',4,5,5',6-OcCB + 2,2',3,3',4,5,5',6'-OcCB	ug/Kg	0.879 J	NA	NA	--	--
PCB 199	2,2',3,3',4,5,5',6'-OcCB	ug/Kg	NA	0.64	0.584	--	--
PCB 200	2,2',3,3',4,5,6,6'-OcCB	ug/Kg	NA	0.109	0.0666 J	--	--
PCB 201	2,2',3,3',4,5',6,6'-OcCB	ug/Kg	0.16 JK	0.0815 U	0.122 U	--	--
PCB 202	2,2',3,3',5,5',6,6'-OcCB	ug/Kg	0.277 JK	0.149	0.0997 J	--	--
PCB 203	2,2',3,4,4',5,5',6-OcCB	ug/Kg	0.608 JK	NA	NA	--	--
PCB 204	2,2',3,4,4',5,6,6'-OcCB	ug/Kg	0.0232 JK	0.0815 U	0.122 U	--	--
PCB 205	2,3,3',4,4',5,5',6-OcCB	ug/Kg	0.00726 U	0.0815 U	0.0233 J	--	--
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	ug/Kg	0.232 J	0.212	0.393	--	--
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	ug/Kg	0.0432 J	0.0815 U	0.122 U	--	--
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	ug/Kg	0.113 J	0.0815 U	0.0859 J	--	--
PCB 209	Decachlorobiphenyl	ug/Kg	0.0758 J	0.168	0.0754 J	--	--
	Total Monochlorobiphenyls	ug/Kg	ND	ND	0.03	--	--
	Total Dichlorobiphenyls	ug/Kg	ND	2.177	1.94	--	--
	Total Trichlorobiphenyls	ug/Kg	2.84329	2.258	3.695	--	--
	Total Tetrachlorobiphenyls	ug/Kg	3.95127	8.8646	5.2415	--	--
	Total Pentachlorobiphenyls	ug/Kg	7.60498	23.1568	8.2266	--	--
	Total Hexachlorobiphenyls	ug/Kg	6.36197	16.743	7.8914	--	--
	Total Heptachlorobiphenyls	ug/Kg	12.82845	9.3958	5.5941	--	--
	Total Octachlorobiphenyls	ug/Kg	2.95627	2.2456	1.9862	--	--
	Total Nonachlorobiphenyls	ug/Kg	0.38822	0.212	0.4789	--	--
	Total Decachlorobiphenyls	ug/Kg	0.07584	0.168	0.0754	--	--
	Total PCBs	ug/Kg	37.01029	65.2208	35.1591	676	0.39

Notes:

MoCB = Monochlorobiphenyl

DiCB = Dichlorobiphenyl

TriCB = Trichlorobiphenyl

TeCB = Tetrachlorobiphenyl

PeCB = Pentachlorobiphenyl

HeCB = Hexachlorobiphenyl

HpCB = Heptachlorobiphenyl

OcCB = Octachlorobiphenyl

NoCB = Nonachlorobiphenyl

J = Estimated Result

K = Estimated maximum possible concentration because ion abundance ratios are outside QC limit

U = The analyte was not detected above the reported sample quantification limit

NA = Not analyzed.

ND = Not detected.

SLV = Screening level value

-- No JSCS screening level available

ug/Kg = Micrograms per kilogram

⁽¹⁾IUPAC - International Union of Pure and Applied Chemistry

⁽²⁾JSCS - Portland Harbor Joint Source Control Strategy (DEQ/EPA Final December 2005, Amended July 2007).

⁽³⁾SLV is 0.21 ug/Kg for the individual congeners 156 and 157; a SLV for the combination 156/157 is not available.

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Attachment A
Field Photographs



Photo 1 (March 2007). Sediment trap installation downstream of manhole AAJ994, looking downstream.



Photo 2 (June 2007). City sediment trap bottles removed from Basin M-1.



Photo 3 (June 2007). Laboratory setup showing transfer of filtered solids to the sample jar for analytical testing.

Attachment B
Field Notes



CITY OF PORTLAND
ENVIRONMENTAL SERVICES
FIELD OPERATIONS



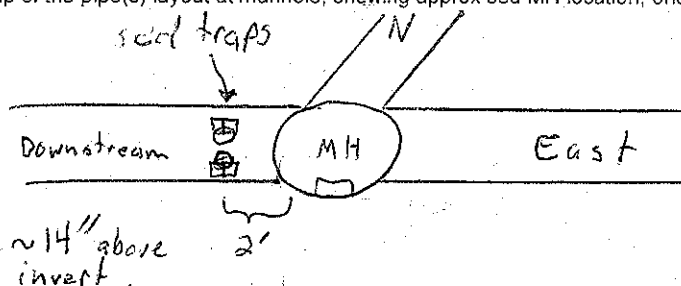
SEDIMENT TRAP FIELD DATA SHEET

SECTION 1 - INSTALLATION INFORMATION

Project Name: <u>Portland Harbor SW</u>	Project No. <u>1020.005</u>	Date: <u>3/13/07</u>	By: <u>MJS, LAP</u>
Site Address:	Describe Traffic Control and site access concerns: <u>Access site from N Ensign, proceed across RR tracks to Freightliner guard shack gate. Report that need Gate 6 to be opened to access MH directly East of shack across RR tracks.</u>		
PI Code: <u>MI-ST1</u>	Hansen ID: <u>AAJ994</u>		
Sed trap location (pipe size, distance from node, etc.) - <u>Upon crossing tracks proceed through Gate 6 and take a right immediately before tracks. Proceed until even with guard shack. MH is ~40' to East across RR tracks.</u>			

Flow conditions and depth at time of install, sediment in pipe, etc? Approx. 6" depth.
Flow is generally stagnant, w/ some baseflow contributions from both EAST & NORTH lines. EAST line has a good amount of accumulated sediment.

Sed Trap Sketch Map (Sketch map of the pipe(s) layout at manhole, showing approx sed MH location, orient drawing using the top of the page as north):



SECTION 2 - MONTHLY CHECK INFORMATION

Date: <u>4/5/07</u>	By: <u>JXB/DJH</u>	Sed depth per bottle (%): <u>South Bottle ~20%</u> <u>North Bottle ~5%</u>	Bottles removed and replaced?: <u>NO</u>
Comments: <u>BOTTLES FULL W/ ORANGE-COLORED WATER</u>			
Date: <u>5/14/07</u>	By: <u>MJS, JXB</u>	Sed depth per bottle (%): <u>South bottle ~5%</u> <u>North bottle ~5%</u>	Bottles removed and replaced?: <u>NO</u>
Comments:			
Date: <u>6/18/07</u>	By: <u>MJS, ECH</u>	Sed depth per bottle (%): <u>South ~10%</u> <u>North ~10%</u>	Bottles removed and replaced?: <u>yes for end of study</u>
Comments:			
Date:	By:	Sed depth per bottle (%):	Bottles removed and replaced?:
Comments:			
Date:	By:	Sed depth per bottle (%):	Bottles removed and replaced?:
Comments:			



Page 1 of 1

Project PDX Harbor Stormwater Sampling

Project No. 1020.005

Location MI-ST1

Date 3-14-07

Subject _____

By MJS, LAP

Visual inspection of line:

- Approx. 6" water in pipe.
- Not apparent if water is backed-up from river or if it is due to a sag in the pipe.
- Upstream of MH (EAST) has ~~UP~~ line has a good amount of accumulated sediment.
- Water is generally stagnant, w/ a good amount of iron-oxidizing bacteria present. There is some baseflow, however, from both lines (EAST & NORTH).
- No significant rainfall in the recent past.
- Sheen present.

Attachments



Page 1 of 2

Project PORTLAND HARBOR STORMWTR

Project No. 1020 005

Location SIX SED TRAPS

Date 4/5/07

Subject FIRST CHECK OF SED TRAPS

By DJH/JXB

BACKGROUND - JXB/DJH WILL PERFORM
FIRST CHECK OF SEDIMENT TRAPS
INSTALLED ~ 3 WKS AGO

M-1ST1 AAS994 ARRIVE 0830

0845 - DJH enters M1-ST1 to assess sed. traps and bottles.
Bottles completely full with water from storm events upon
inspection. Bottles full of orange-colored water

0855 - South bottle @ M1-ST1 had <2% sediment depth of
North bottle ~5% sediment depth. DJH reinstalled ^{original} north/south
bottles back into sed. traps. Bottles not removed.

0905 - Left M1-ST1

18-ST1 AAT565 - ARRIVE 0930. BOTH
BOTTLES FULL OF WATER. EAST BOTTLE ~ <2% SED,
WEST BOTTLE ~ <1% SED. BOTTLES NOT REMOVED.
0950 - OFFSITE

18-ST2 AAT557 ARRIVE AT 1000. JXB
ENTERS. DOWNSTREAM BOTTLE = <1% - APPEARS
TO BE MOSTLY SUSPENDED SEDIMENT OR BIOFILM/ORGANIC
MATERIAL. UPSIDEAM <2% = SLIGHTLY MORE SED
AT BOTTOM, ALSO HAS FLOATING ORGANIC PARTICLES ^{10% organic}
Attachments SED TRAP FOX (6X)



Page 1 of 2

Project Portland Harbor Stormwater
Location SIX PROJECT LOCATIONS
Subject Sed trap check NO. 2

Project No. 1020-005
Date 5/14/07
By MJS, JXB

M1-ST1 - AAT994 : On site @ 1050
JXB inspects sed traps & bottles
South bottle : Full of water, w/ orange film on surface
bottle is ~ 5% full of dark sediment, reinstalled
North bottle : Full of water, w/ orange surface film.
Bottle is ~ 5% full of dark sediment that appears to be
of low density & easily resuspended by moving bottle.
Reinstalled bottle in holder.

18-ST1 - AAT565 : on site @ 1139
JXB inspects sed traps & bottles
Both bottles are filled w/ clear water with a small
amount of dense sediment on the bottom of the
bottle. dark west sed trap has a lot of debris
trapped in it but is not obstructing the bottle mouth

18 STA - AAT 557 on site @ 1205
JXB inspects sed traps & bottles
Both bottles are filled w/ water and contain ~ 3%
sediment on the bottom.

16-ST4 - AAT466 on site @ 1240
MJS inspects sed traps & bottles
Both bottles are full of water. Upstream bottle neck obstructed by
rag. Removed rag. Both bottles contain < 3% accumulated
sediment on the bottom of the sample bottles.

Attachments



1806
R08

Page 1 of 1

Project Portland Harbor SW
Location M1-ST1
Subject Sample bottle removal for end of year

Project No. 1020.005
Date 6/18/07
By NJS, ECA

1040 - on site to pull sample bottles, both are ~10% full w/ very fine unconsolidated material. There is currently no flow but ~6" of standing water in the pipe. There is a pronounced petroleum like sheen on the water surface. There is no sediment in the vicinity of the sed traps - only what appears to be iron oxidizing bacteria settled on the walls of the pipe.

1230 - on site @ 19-ST1 - pulled 2 ~~bottles~~ bottles w/ water and only ~1% sediment each. There was a trace of flow in the pipe. No sediment accumulated in pipe.

1400 - on site @ 18-ST1 - pulled bottles, large amount of trash accumulated upstream of sed traps - small amount of sediment but not possible to separate from trash.

1430 on site @ 18-ST3 - blocked by a flat truck will move on to other sites.

1435 on site @ 18-ST2 - pulled bottles. There was a thin layer of sediment present on sed traps and upstream of sed traps where particles (fine/very fine) had accreted to the pipe. This material was difficult to collect b/c tended to wash away in the flow - but was able to fill an 8-oz jar. There is more sediment further upstream.

Attachments



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave.,
Portland, OR 97203-5452



INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

Project Name: Portland Harbor Stormwater Samp.

Project Number: 1020.005

Sample Processing Conducted By:

JXB/DJH

Pt. Code:

M1-ST1

Removal Date:

6/18/07

Processing Date:

6/18/07 @ 1313

Basin: BASIN-M1

Hansen ID:

AAJ994

Subbasin:

Sediment Trap Location Description/Address:

6936 N. FATHOM ST. (DS OF MH) ACROSS FROM FREIGHTLINER PROPERTY.

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

Filter Equipment/Method

90 mm stainless steel filter support w/ conical glass microfiltration assembly and negative air pressure (suction/vacuum).

Filter Size & Type:

Fisher brand, qualitative P5, Celulose 110mm (5-10 micron) filter.

Sediment Trap Bottle ID: M1-ST1-BOTTLE 1-NORTH

Sediment Trap Bottle ID: M1-ST1-BOTTLE 1-SOUTH

Total Depth of Accumulated Sed in bottle (inches): 0.9"

Total Depth of Accumulated Sed in bottle (inches): 1.0"

Sample Processing Start
Time: 1313

Sample Processing End
Time: 1412

Sample Processing Start
Time: 1416

Sample Processing End
Time: 1500

Number of Filters Used: 11 filters (eleven)

Number of Filters Used: 7 filters

Number of Ultra Pure DI
Rinses/est. total volume in
mL: 4 rinses / ≈ 800 mL

Number of Ultra Pure DI
Rinses/est. total volume in
mL: 2 rinses / ≈ 200 mL

Dewatered/Filtered Sed. Weight (grams): 53.7g

Dewatered/Filtered Sed. Weight (grams): 57.3g

Sample Processing Notes/Comments:

Sample Processing Notes/Comments:

Composite Time:

1503

Total Dewatered/Filtered Sed. Weight:

111g

Sample Jars Collected (number, size, full or partial): 1-8oz half full sed. jar.

Lab ID:

Duplicate sample collected? Y(N) Dupe ID

Duplicate sample identification # on COC:

Any deviations from standard procedures:

Attachment C
Laboratory Reports



55 SW Yamhill Street, Suite 400 Portland, OR 97204
P: 503.239.8799 F: 503.239.8940
info@gsiwatersolutions.com www.gsiwatersolutions.com

Laboratory Data QA/QC Review Upland Source Control Investigation City Outfall Basin M-1

To: Linda Scheffler, City of Portland BES
From: Julia Fowler, GSI
Date: May 29, 2008

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control investigation sampling and analyses recently conducted by the City of Portland (City) in Outfall Basin M-1. The results of the sampling and analysis are presented in Technical Memorandum No. OF M1-2.

The laboratory analyses of the Basin M-1 sediment trap solids sample (sample number FO070804) were completed by Columbia Analytical Services, Inc. (CAS). The CAS laboratory in Kelso, Washington conducted all analyses except for the PCB Congener analysis which was completed by the CAS laboratory in Houston, Texas. The following analyses were conducted:

- Total Solids (EPA 160.3M)
- Total Organic Carbon (ASTM D1429-82M)
- Total Metals (EPA 6000 and 7000 Series)
- Organochlorine Pesticides (EPA 8081A)
- Polychlorinated Biphenyls (PCB Aroclors) (EPA 8082)
- PCB Congeners (EPA 1668A)
- Polynuclear Aromatic Hydrocarbons (PAHs) (EPA 8270C-SIM)
- Phthalates and other Semi-volatile Organic Compounds (SVOCs) (EPA 8270C).

The laboratory data reports are included along with this QA/QC review in Attachment C to Technical Memorandum No. OF M1-2. CAS received a batch of samples related to several BES sampling projects, including the sample from Basin M-1. The attached laboratory reports include data for all samples submitted to CAS in this batch. The sample name and laboratory code for the Basin M-1 sample are FO070804 and K0705409-002, respectively.

This QA/QC review of the analytical data, based on the available documentation supplied by the laboratory, consisted of reviewing the following:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within accuracy control limits
- If applicable, laboratory control sample and duplicate laboratory control sample recoveries within control limits
- Matrix spike and matrix spike duplicate results within control limits

The results of the laboratory report QA/QC review are presented below.

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures were adequate and sample integrity was maintained through the sample collection and delivery process.

The CAS chain-of-custody for sample FO 070804 indicates a request for analysis of herbicides by EPA Method 8151; however, this analysis was not performed due to insufficient sample volume. This change in analysis was coordinated between the City and CAS. The chain-of-custody also includes a request to analyze for PAHs and phthalates by low-level methods (EPA 8270C-SIM). The low-level analysis was completed for PAHs alone; phthalates were analyzed by EPA Method 8270C because of insufficient sample volume.

Analysis Holding Times

The laboratory reported that the sample was extracted and analyzed within the required holding times.

Method Blanks

Method blanks were processed during the laboratory analysis of metals, organochlorine pesticides, PCB Aroclors, PCB congeners, SVOCs, phthalates, and PAHs. Aluminum was reported slightly above the method reporting limit (MRL) of 10 mg/kg in the method blank. The concentration detected in the field sample is greater than 10 times the blank, and therefore no data are qualified. Twenty congeners were detected in the method blank. Sixteen of the congeners detected in the method blank were also found in the associated field sample. Because the concentrations detected in the field sample are greater than 10 times the blank; the laboratory did not qualify the data.

Surrogate Recoveries

Surrogate recoveries were completed during the laboratory analysis of organochlorine pesticides, PCB aroclors, SVOCs and phthalates, and PAHs. The available surrogate recovery data indicate the results were within laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

CAS reports there was insufficient volume to perform a matrix spike/matrix spike duplicate analysis; a laboratory control sample/duplicate laboratory control sample was analyzed in lieu of the MS/MSD for this sample.

Laboratory Control /Laboratory Control Duplicate

Laboratory control/laboratory control duplicate samples were processed during the laboratory analyses of pesticides. The laboratory control sample recoveries were within laboratory control limit. The relative percent difference of the laboratory control sample and laboratory control sample duplicate was within laboratory control limits.

Other

Organochlorine Pesticides: Continuing calibration verification exceptions were noted for some parameters and alternative EPA method-specific evaluations were performed using average percent recoveries. This resulted in qualification (“P” flag) of the results for 4-4’DDE and Endosulfan II. MRL values were elevated for some compounds due to matrix interference and these data were also qualified (“i” flag) by CAS.

PCB Aroclors: MRL values were elevated due to matrix interference and these data were qualified (“i” flag) by CAS. The elevated MRLs could result in a low bias being reported for total PCBs.

SVOCs: Initial calibration exceptions were noted for some compounds and alternative EPA method-specific evaluations were performed using the mean Relative Standard Deviation (RSD). The RSD value was 7.9% and reported to be within the alternative evaluation criteria. The Relative Percent Difference (RPD) for benzoic acid in the replicate LCS was outside control criteria; however, spike recoveries in the MS, MSD and replicate LCS/DLCS values were reported to be within acceptable limits. The compound was not detected in the field sample.. MRLs were elevated due to less than optimal sample mass in the initial extractions and these data were qualified (“i” flag) by CAS. Sample dilutions also were required due to matrix interference and the data were qualified (“D” flag) by CAS.

PAHs: MRLs were elevated because the sample contained low percent solids preventing extraction of a volume sufficient necessary to achieve target MRLs.

Equipment Blank Data: BES Field Operations staff collected an equipment (rinsate) blank on laboratory filtration equipment used to extract solids from the inline sediment trap bottles. A detection of bis (2-ethylhexyl)phthalate (BEHP) in the equipment blank lead to further sampling of rinsate from filtration equipment parts to identify the potential source of BEHP. It was subsequently determined that a rubber stopper used in the microfiltration procedure was the

likely source of the BEHP detected. However, because the stopper was not in contact with the sediment or with deionized water used to enhance solids extraction in the microfiltration process, the sediment samples were deemed not affected and no qualification of the sediment data was necessary (City, 2007).

References

City. 2007. Evaluation of Microfiltration Equipment for Phthalates. Memorandum from Jeremiah Bawden, Field Operations, City of Portland BES to Portland Harbor Stormwater Sampling, EID 1020.005, September 18, 2007.



City of Portland
Chain-of-Custody
Bureau of Environmental Services

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

Date: 6/21/07
Page: 1 of 1
Collected By: JXB/DJH/
AJA/TECH

Project Name: PORTLAND HARBOR STORMWATER SAMP
File Number: 1020.005 Matrix: SEDIMENT

All Analyses to be performed at CAS
If insufficient sample volume, analyses should be performed by priority list below:
PCB Congeners, PCB Aroclors, TOC, TS, Pesticides, PAH + Phthalates, Metals, Herbicides
Sediment traps installed: 3/13 - 3/15/07; removed: 6/18 - 6/19/07

WPCL Sample I.D. Location Point Code Sample Date Sample Time Sample Type

FO 070804

ST-M1-AAJ944-0607
6936 N FATHOM ST

M1_ST1

6/18/07

1503

C

FO 070805

ST-18-AAT555-0607
NW 35TH & YEON

18_ST1

6/19/07

1148

C

FO 070806

ST-18-AAT557-0607
3950 NW YEON AVE

18_ST2

6/19/07

1602

C

FO 070807

IL-18-AAT557-0607
3950 NW YEON AVE

18_10

6/19/07

1435

G

FO 070808

ST-18-AND535-0607
4033 NW YEON AVE

18_ST3

6/20/07

915

C

FO 070809

ST-18-AAT465-0607
4033 NW YEON AVE

18_ST4

6/20/07

1258

C

* per PHA 6/25/07, CAS will run only first sample for Congeners, Other analyses on duplicate volumetric samples. Request 6/26/07

Relinquished By: 1. Signature: [Signature] Time: 1058 Date: 6/21/07
Printed Name: Peter Abrams
Received By: 1. Signature: [Signature] Time: 1058 Date: 6/21/07
Printed Name: Kary Dennis
Relinquished By: 2. Signature: [Signature] Time: 1058 Date: 6/21/07
Printed Name: Kary Dennis
Relinquished By: 3. Signature: [Signature] Time: 1058 Date: 6/21/07
Printed Name: Kary Dennis
Relinquished By: 4. Signature: [Signature] Time: 1058 Date: 6/21/07
Printed Name: Kary Dennis

Requested Analyses

General				Metals		Comments
PCB Congeners (All 209)	PCB Aroclors	TOC	TS	Organochlorine Pesticides	PAH + Phthalates (Low-level)	
☒	☒	☒	☒	☒	☒	All samples logged in for "POINTS-DELTA" to reference all analyses done @ CAS. Data will not be entered in LADWORKS. - RJC 6/26/07
☒	☒	☒	☒	☒	☒	
☒	☒	☒	☒	☒	☒	
☒	☒	☒	☒	☒	☒	
☒	☒	☒	☒	☒	☒	
☒	☒	☒	☒	☒	☒	111g (sufficient volume to run all analyses)
☒	☒	☒	☒	☒	☒	
☒	☒	☒	☒	☒	☒	10.8 g (x if possible)
☒	☒	☒	☒	☒	☒	44.5 g (x if possible)
☒	☒	☒	☒	☒	☒	Inline sample collected at Sediment Trap Installation
☒	☒	☒	☒	☒	☒	15.8 g (x if possible)
☒	☒	☒	☒	☒	☒	73.1 g (x if possible)
☒	☒	☒	☒	☒	☒	
☒	☒	☒	☒	☒	☒	Swatched to Archival
☒	☒	☒	☒	☒	☒	Other analyses on duplicate volumetric samples. Request 6/26/07



City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



LABORATORY ANALYSIS REPORT

Sample ID: FO070804

Sample Collected: 06/18/07 15:03
Sample Received: 06/21/07

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-M1-AAJ944-0607
6936 N FATHOM ST / DS OF MANHOLE
Sample Point Code: M1_ST1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AL05845
EID File # : 1020.005
LocCode: PORTHASW
Collected By: JXB/DJH

Comments:

All analyses were performed by Columbia Analytical Services, Inc. (CAS). Refer CAS report for results.

Test Parameter	Result	Units	MRL	Method	Analysis Date
OUTSIDE ANALYSIS					
OUTSIDE LABORATORY ANALYSIS					
Refer to Contract Report	Completed				06/22/07

End of Report for Sample ID: FO070804

Report Date: 09/27/07

Validated By:

August 7, 2007

Analytical Report for Service Request No: K0705409

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 600
Portland, OR 97204

RE: Portland Harbor Inline Samp

Dear Jennifer:

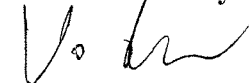
Enclosed are the results of the sample(s) submitted to our laboratory on June 22, 2007. For your reference, these analyses have been assigned our service request number K0705409.

All analyses were performed according to our laboratory's quality assurance program. Where applicable, the methods cited conform to the Methods Update Rule (effective 4/11/2007), which relates to the use of analytical methods for the drinking water and waste water programs. The test results meet requirements of the NELAC standards. Exceptions are noted in the case narrative report where applicable. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at LVo@kelso.caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.



Loan Vo, Ph.D.
Project Chemist

LV/lb

Page 1 of

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client: City of Portland
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request No.: K0705409
Date Received: 06/22/2007

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier I data deliverables. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight sediment samples were received for analysis at Columbia Analytical Services on 06/22/2007. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for Decachlorobiphenyl in CCV 0716F018; for Toxaphene in CCVs 0719F005, 0719F022, 0726F020; and for Endrin Ketone, Toxaphene in CCV0726F038. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

Results for Decachlorobiphenyl in samples KWG0707330-4MB, KWG0707161-5LCS/6DLCS, and FO 070804 have been reported from a column using average percent recovery of all analytes in the verification standard.

Sample Confirmation Notes:

The confirmation comparison criterion of 40% difference for at least one analyte in a few samples. The higher of the two values was reported when both peaks were within the expected retention time window for this analysis and Gaussian in shape. The lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

Elevated Method Reporting Limits:

Samples 0070806 and FO 070809 required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.

Approved by _____ W Date 9/6/07

The reporting limit is elevated, or further elevated, for several analytes in a few samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the reporting limit. The results are flagged to indicate the matrix interference.

PCB Aroclors by EPA Method 8082

The primary evaluation criterion was exceeded for Aroclor 1016 in CCV 0723F016 and for Aroclor 1260 in CCV 0724F004. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

The confirmation comparison criterion of 40% difference for Aroclor 1248 was exceeded in sample FO 070806. The higher of the two values was reported when both peaks were within the expected retention time window for this analysis and Gaussian in shape.

The reporting limits are elevated for at least one analyte in most of the samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the reporting limits. The results are flagged to indicate the matrix interference.

Aroclor 1248, Aroclor 1260, and Aroclor 1268 were identified in several samples. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1248, 1260, and 1268 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

Chlorophenoxy Herbicides by EPA Method 8151

The primary evaluation criterion was exceeded for a few analytes in CCV 0730F026, 0730F043. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

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The analysis of Chlorinated Herbicides by EPA 8151 requires the use of dual column confirmation. When the CCV criteria is met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for MCPA in sample KWG0707265-3MB. The results are reported from the column with an acceptable CCV. The data quality is not affected. No further corrective action was necessary.

Matrix Spike Recovery Exceptions:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Elevated Method Reporting Limits:

The reporting limit is elevated for all analytes in samples FO 070807. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The result is flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C

Initial Calibration (ICAL) Exceptions:

The primary evaluation criterion was exceeded for Di-n-octyl Phthalate in ICAL ID CAL6370. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) for Benzoic Acid in the replicate Laboratory Control Sample (LCS) analyses (KWG0707313-3 and KWG0707313-4) was outside control criteria. All spike recoveries in the MS, DMS, and associated replicate Laboratory Control Sample (LCS/DLCS) analyses were within acceptance limits, indicating the analytical batch was in control. The analyte in question was not detected in the associated field sample. The data quality is not significantly affected. No further corrective action was appropriate.

Elevated Method Reporting Limits:

The Method Reporting Limits (MRL) for most samples were elevated due to less than optimal sample mass extracted for analysis. The sample contained low percent solids which prevented extraction of the sample mass necessary to achieve target MRLs. Additionally, all samples required dilutions due to the presence of elevated levels of target analytes and non-target compounds. The reporting limits are adjusted to reflect the dilutions.

No other anomalies associated with the analysis of these samples were observed.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Elevated Method Reporting Limits:

The Method Reporting Limits (MRL) for sample FO 070807 were elevated due to less than optimal sample mass extracted for analysis. The sample contained low percent solids which prevented extraction of the sample mass necessary to achieve target MRLs.

Sample Notes and Discussion

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by W Date 9/6/07

PCB Congeners by EPA Method 1668A

PCB Congeners analysis by EPA Method 1668A was performed at Columbia Analytical Services laboratory in Houston, TX. The narrative for this analysis can be found in the corresponding section of this data package.

Approved by _____  Date 9/6/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inli
Sample Matrix: Sediment

Service Request: K0705409

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
FO 070803	K0705409-001	06/21/2007	06/22/2007	06/25/2007	42.8	
FO 070804	K0705409-002	06/18/2007	06/22/2007	06/25/2007	37.9	
FO 070805	K0705409-003	06/19/2007	06/22/2007	06/25/2007	54.7	
FO 070806	K0705409-004	06/19/2007	06/22/2007	06/25/2007	54.0	
FO 070807	K0705409-005	06/19/2007	06/22/2007	06/25/2007	7.18	
FO 070808	K0705409-006	06/20/2007	06/22/2007	06/25/2007	59.1	
FO 070809	K0705409-007	06/20/2007	06/22/2007	06/25/2007	66.3	
FO 070810	K0705409-008	06/19/2007	06/22/2007	06/25/2007	51.3	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Portland, City of
Project Name : Portland Harbor Inline Samp
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K0705409
Date Collected : 06/18-20/07
Date Received : 06/22/07

Carbon, Total Organic

Prep Method : SOP
Analysis Method : ASTM D4129-82M
Test Notes :

Units : Percent
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
FO 070804	K0705409-002	0.05	0.02	1	6/28/2007	07/19/07	11.1	
FO 070806	K0705409-004	0.05	0.02	1	6/28/2007	07/19/07	10.6	
FO 070807	K0705409-005	0.05	0.02	1	6/28/2007	07/19/07	9.11	
FO 070808	K0705409-006	0.05	0.02	1	6/28/2007	07/19/07	3.56	
FO 070809	K0705409-007	0.05	0.02	1	6/28/2007	07/19/07	5.61	
Method Blank	K0705409-MB	0.05	0.02	1	6/28/2007	07/19/07	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

- Cover Page -

INORGANIC ANALYSIS DATA PACKAGE

Client : Portland, City of
Project Name : Portland Harbor Inline Samp
Project No. : NA

Service Request : K0705409

Sample Name :

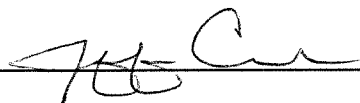
FO 070804
FO 070807
FO 070809
Method Blank

Lab Code :

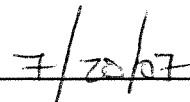
K0705409-002
K0705409-005
K0705409-007
K0705409-MB

Comments:

Approved By: _____



Date: _____



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Portland, City of
Project Name : Portland Harbor Inline Samp
Project No. : NA
Matrix : Sediment

Service Request : K0705409
Date Collected : 06/18/07
Date Received : 06/22/07
Date Extracted : 06/27-07/06/07

Total Metals

Sample Name : FO 070804
Lab Code : K0705409-002

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Date Analyzed	Sample Result	Result Notes
Aluminum	6010B	10	07/13/07	9260	
Antimony	6020	0.05	06/29/07	2.90	
Arsenic	6020	0.5	07/13/07	6.9	
Cadmium	6020	0.02	07/13/07	3.27	
Chromium	6020	0.2	07/13/07	39.8	
Copper	6020	0.1	07/13/07	140	
Lead	6020	0.05	07/13/07	92.1	
Manganese	6010B	0.97	07/13/07	685	
Mercury	7471A	0.02	07/09/07	0.05	
Nickel	6020	0.2	07/13/07	22.5	
Silver	6020	0.02	06/29/07	0.22	
Zinc	6010B	2	07/13/07	1060	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Portland, City of
Project Name : Portland Harbor Inline Samp
Project No. : NA
Matrix : Sediment

Service Request : K0705409
Date Collected : NA
Date Received : NA
Date Extracted : 06/27-07/06/07

Total Metals

Sample Name : Method Blank
Lab Code : K0705409-MB

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Date Analyzed	Sample Result	Result Notes
Aluminum	6010B	10	07/13/07	10.6	
Antimony	6020	0.05	06/29/07	ND	
Arsenic	6020	0.5	07/13/07	ND	
Cadmium	6020	0.02	07/13/07	ND	
Chromium	6020	0.2	07/13/07	ND	
Copper	6020	0.1	07/13/07	ND	
Lead	6020	0.05	07/13/07	ND	
Manganese	6010B	1	07/13/07	ND	
Mercury	7471A	0.02	07/09/07	ND	
Nickel	6020	0.2	07/13/07	ND	
Silver	6020	0.02	06/29/07	ND	
Zinc	6010B	2	07/13/07	ND	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Organochlorine Pesticides

Sample Name: FO 070804
Lab Code: K0705409-002
Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
beta-BHC	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
gamma-BHC (Lindane)	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
delta-BHC	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Heptachlor	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Aldrin	ND	Ui	2.5	1	07/02/07	07/16/07	KWG0707161	
Heptachlor Epoxide	2.5		1.4	1	07/02/07	07/16/07	KWG0707161	
gamma-Chlordane†	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Endosulfan I	2.6		1.4	1	07/02/07	07/16/07	KWG0707161	
alpha-Chlordane	ND	Ui	2.5	1	07/02/07	07/16/07	KWG0707161	
Dieldrin	ND	Ui	4.0	1	07/02/07	07/16/07	KWG0707161	
4,4'-DDE	3.6	P	1.4	1	07/02/07	07/16/07	KWG0707161	
Endrin	ND	Ui	2.2	1	07/02/07	07/16/07	KWG0707161	
Endosulfan II	3.7	P	1.4	1	07/02/07	07/16/07	KWG0707161	
4,4'-DDD	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Endrin Aldehyde	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Endosulfan Sulfate	ND	Ui	1.6	1	07/02/07	07/16/07	KWG0707161	
4,4'-DDT	ND	Ui	5.3	1	07/02/07	07/16/07	KWG0707161	
Endrin Ketone	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Methoxychlor	ND	U	1.4	1	07/02/07	07/16/07	KWG0707161	
Toxaphene	ND	Ui	270	1	07/02/07	07/16/07	KWG0707161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	38	32-138	07/16/07	Acceptable
Decachlorobiphenyl	64	23-162	07/16/07	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG0707161-4
 Extraction Method: EPA 3540C
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.26	1	07/02/07	07/16/07	KWG0707161	
beta-BHC	ND	U	0.78	1	07/02/07	07/16/07	KWG0707161	
gamma-BHC (Lindane)	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
delta-BHC	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Heptachlor	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Aldrin	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Heptachlor Epoxide	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
gamma-Chlordane†	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Endosulfan I	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
alpha-Chlordane	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Dieldrin	ND	U	0.29	1	07/02/07	07/16/07	KWG0707161	
4,4'-DDE	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Endrin	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Endosulfan II	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
4,4'-DDD	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Endrin Aldehyde	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Endosulfan Sulfate	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
4,4'-DDT	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Endrin Ketone	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Methoxychlor	ND	U	0.25	1	07/02/07	07/16/07	KWG0707161	
Toxaphene	ND	U	13	1	07/02/07	07/16/07	KWG0707161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	67	32-138	07/16/07	Acceptable
Decachlorobiphenyl	85	23-162	07/16/07	Acceptable

† Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: _____

**See Revised Laboratory Report (attached) for PCB
Aroclors**

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409
 Date Collected: 06/18/2007
 Date Received: 06/22/2007

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 070804
 Lab Code: K0705409-002
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Phenol	ND	U	1600	20	07/02/07	07/10/07	KWG0707313	
2-Chlorophenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
1,3-Dichlorobenzene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
1,4-Dichlorobenzene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
1,2-Dichlorobenzene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Benzyl Alcohol	ND	U	1100	20	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroisopropyl) Ether	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2-Methylphenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Hexachloroethane	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
N-Nitrosodi-n-propylamine	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Methylphenol†	850	D	530	20	07/02/07	07/10/07	KWG0707313	
Nitrobenzene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Isophorone	2300	D	530	20	07/02/07	07/10/07	KWG0707313	
2-Nitrophenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2,4-Dimethylphenol	ND	U	2700	20	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroethoxy)methane	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2,4-Dichlorophenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Benzoic Acid	ND	U	11000	20	07/02/07	07/10/07	KWG0707313	
1,2,4-Trichlorobenzene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Naphthalene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Chloroaniline	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Hexachlorobutadiene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Chloro-3-methylphenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2-Methylnaphthalene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Hexachlorocyclopentadiene	ND	U	2700	20	07/02/07	07/10/07	KWG0707313	
2,4,6-Trichlorophenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2,4,5-Trichlorophenol	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2-Chloronaphthalene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2-Nitroaniline	ND	U	1100	20	07/02/07	07/10/07	KWG0707313	
Acenaphthylene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Dimethyl Phthalate	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
2,6-Dinitrotoluene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409
 Date Collected: 06/18/2007
 Date Received: 06/22/2007

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 070804
 Lab Code: K0705409-002
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
3-Nitroaniline	ND	U	1100	20	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrophenol	ND	U	11000	20	07/02/07	07/10/07	KWG0707313	
Dibenzofuran	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Nitrophenol	ND	U	5300	20	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrotoluene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Fluorene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Chlorophenyl Phenyl Ether	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Diethyl Phthalate	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Nitroaniline	ND	U	1100	20	07/02/07	07/10/07	KWG0707313	
2-Methyl-4,6-dinitrophenol	ND	U	5300	20	07/02/07	07/10/07	KWG0707313	
N-Nitrosodiphenylamine	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
4-Bromophenyl Phenyl Ether	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Hexachlorobenzene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Pentachlorophenol	ND	U	5300	20	07/02/07	07/10/07	KWG0707313	
Phenanthrene	1100	D	530	20	07/02/07	07/10/07	KWG0707313	
Anthracene	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Di-n-butyl Phthalate	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Fluoranthene	4500	D	530	20	07/02/07	07/10/07	KWG0707313	
Pyrene	4400	D	530	20	07/02/07	07/10/07	KWG0707313	
Butyl Benzyl Phthalate	640	D	530	20	07/02/07	07/10/07	KWG0707313	
3,3'-Dichlorobenzidine	ND	U	5300	20	07/02/07	07/10/07	KWG0707313	
Benz(a)anthracene	1700	D	530	20	07/02/07	07/10/07	KWG0707313	
Chrysene	3700	D	530	20	07/02/07	07/10/07	KWG0707313	
Bis(2-ethylhexyl) Phthalate	18000	D	5300	20	07/02/07	07/10/07	KWG0707313	
Di-n-octyl Phthalate	ND	U	530	20	07/02/07	07/10/07	KWG0707313	
Benzo(b)fluoranthene	4700	D	530	20	07/02/07	07/10/07	KWG0707313	
Benzo(k)fluoranthene	1400	D	530	20	07/02/07	07/10/07	KWG0707313	
Benzo(a)pyrene	2200	D	530	20	07/02/07	07/10/07	KWG0707313	
Indeno(1,2,3-cd)pyrene	2800	D	530	20	07/02/07	07/10/07	KWG0707313	
Dibenz(a,h)anthracene	530	D	530	20	07/02/07	07/10/07	KWG0707313	
Benzo(g,h,i)perylene	2700	D	530	20	07/02/07	07/10/07	KWG0707313	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	58	10-86	07/10/07	Acceptable
Phenol-d6	67	17-101	07/10/07	Acceptable
Nitrobenzene-d5	67	10-108	07/10/07	Acceptable
2-Fluorobiphenyl	74	10-108	07/10/07	Acceptable
2,4,6-Tribromophenol	75	21-110	07/10/07	Acceptable
Terphenyl-d14	77	26-122	07/10/07	Acceptable

† Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0707313-5
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Phenol	ND	U	15	1	07/02/07	07/10/07	KWG0707313	
2-Chlorophenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
1,3-Dichlorobenzene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
1,4-Dichlorobenzene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
1,2-Dichlorobenzene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Benzyl Alcohol	ND	U	9.9	1	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroisopropyl) Ether	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2-Methylphenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Hexachloroethane	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
N-Nitrosodi-n-propylamine	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Methylphenol†	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Nitrobenzene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Isophorone	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2-Nitrophenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2,4-Dimethylphenol	ND	U	25	1	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroethoxy)methane	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2,4-Dichlorophenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Benzoic Acid	ND	U	99	1	07/02/07	07/10/07	KWG0707313	
1,2,4-Trichlorobenzene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Naphthalene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Chloroaniline	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Hexachlorobutadiene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Chloro-3-methylphenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2-Methylnaphthalene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Hexachlorocyclopentadiene	ND	U	29	1	07/02/07	07/10/07	KWG0707313	
2,4,6-Trichlorophenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2,4,5-Trichlorophenol	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2-Chloronaphthalene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2-Nitroaniline	ND	U	9.9	1	07/02/07	07/10/07	KWG0707313	
Acenaphthylene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Dimethyl Phthalate	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
2,6-Dinitrotoluene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0707313-5
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
3-Nitroaniline	ND	U	9.9	1	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrophenol	ND	U	99	1	07/02/07	07/10/07	KWG0707313	
Dibenzofuran	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Nitrophenol	ND	U	50	1	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrotoluene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Fluorene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Chlorophenyl Phenyl Ether	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Diethyl Phthalate	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Nitroaniline	ND	U	9.9	1	07/02/07	07/10/07	KWG0707313	
2-Methyl-4,6-dinitrophenol	ND	U	50	1	07/02/07	07/10/07	KWG0707313	
N-Nitrosodiphenylamine	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
4-Bromophenyl Phenyl Ether	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Hexachlorobenzene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Pentachlorophenol	ND	U	50	1	07/02/07	07/10/07	KWG0707313	
Phenanthrene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Anthracene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Di-n-butyl Phthalate	ND	U	7.9	1	07/02/07	07/10/07	KWG0707313	
Fluoranthene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Pyrene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Butyl Benzyl Phthalate	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
3,3'-Dichlorobenzidine	ND	U	50	1	07/02/07	07/10/07	KWG0707313	
Benz(a)anthracene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Chrysene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Bis(2-ethylhexyl) Phthalate	ND	U	50	1	07/02/07	07/10/07	KWG0707313	
Di-n-octyl Phthalate	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Benzo(b)fluoranthene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Benzo(k)fluoranthene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Benzo(a)pyrene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Dibenz(a,h)anthracene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	
Benzo(g,h,i)perylene	ND	U	5.0	1	07/02/07	07/10/07	KWG0707313	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0707313-5

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	28	10-86	07/10/07	Acceptable
Phenol-d6	40	17-101	07/10/07	Acceptable
Nitrobenzene-d5	30	10-108	07/10/07	Acceptable
2-Fluorobiphenyl	44	10-108	07/10/07	Acceptable
2,4,6-Tribromophenol	58	21-110	07/10/07	Acceptable
Terphenyl-d14	69	26-122	07/10/07	Acceptable

† Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409
 Date Collected: 06/18/2007
 Date Received: 06/22/2007

Polynuclear Aromatic Hydrocarbons

Sample Name: FO 070804
 Lab Code: K0705409-002
 Extraction Method: EPA 3541
 Analysis Method: 8270C SIM

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	1500	D	33	5	07/02/07	07/16/07	KWG0707314	
2-Methylnaphthalene	200	D	33	5	07/02/07	07/16/07	KWG0707314	
Acenaphthylene	49	D	33	5	07/02/07	07/16/07	KWG0707314	
Acenaphthene	56	D	33	5	07/02/07	07/16/07	KWG0707314	
Fluorene	170	D	33	5	07/02/07	07/16/07	KWG0707314	
Dibenzofuran	84	D	33	5	07/02/07	07/16/07	KWG0707314	
Phenanthrene	1400	D	33	5	07/02/07	07/16/07	KWG0707314	
Anthracene	200	D	33	5	07/02/07	07/16/07	KWG0707314	
Fluoranthene	6200	D	33	5	07/02/07	07/16/07	KWG0707314	
Pyrene	4200	D	140	20	07/02/07	07/14/07	KWG0707314	
Benzo(b)fluoranthene	4300	D	33	5	07/02/07	07/16/07	KWG0707314	
Benzo(k)fluoranthene	1300	D	33	5	07/02/07	07/16/07	KWG0707314	
Benz(a)anthracene	1700	D	33	5	07/02/07	07/16/07	KWG0707314	
Chrysene	3700	D	33	5	07/02/07	07/16/07	KWG0707314	
Benzo(a)pyrene	2100	D	33	5	07/02/07	07/16/07	KWG0707314	
Indeno(1,2,3-cd)pyrene	3200	D	140	20	07/02/07	07/14/07	KWG0707314	
Dibenz(a,h)anthracene	570	D	140	20	07/02/07	07/14/07	KWG0707314	
Benzo(g,h,i)perylene	3000	D	140	20	07/02/07	07/14/07	KWG0707314	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	10-123	07/16/07	Acceptable
Fluoranthene-d10	100	10-136	07/16/07	Acceptable
Terphenyl-d14	81	32-123	07/16/07	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0707314-3
Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
2-Methylnaphthalene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Acenaphthylene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Acenaphthene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Fluorene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Dibenzofuran	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Phenanthrene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Anthracene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Fluoranthene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Pyrene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Benzo(b)fluoranthene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Benzo(k)fluoranthene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Benz(a)anthracene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Chrysene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Benzo(a)pyrene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Indeno(1,2,3-cd)pyrene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Dibenz(a,h)anthracene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	
Benzo(g,h,i)perylene	ND	U	1.3	1	07/02/07	07/14/07	KWG0707314	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	10-123	07/14/07	Acceptable
Fluoranthene-d10	82	10-136	07/14/07	Acceptable
Terphenyl-d14	82	32-123	07/14/07	Acceptable

Comments: _____

USEPA - CLP
Form3
PCB TOTAL HOMOLOGOUS CONCENTRATION

CLIENT ID.

METHOD BLANK

Lab Name: Columbia Analytical Services
Lab Code: CAS Case No.:
Client Name:
Matrix(Solid/Aqueous/Waste/Ash):
Sample Receipt Date:
Ext. Date
Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0
Analysis Date: 12-Sep-07
Dilution Factor: 1
CONCENTRATION UNITS: (pg/L or ng/Kg)

Contract:
Lab ID: EQ0700300-01
Sample Wt/Vol: 10.000 g
Initial Calibration Date: 09/25/06
Instrument ID: AutoSpec-Ultima
GC Column ID: SPB-OCTYL
Sample Date Filename: U211737
Blank Data Filename: U211737
Cal. Ver. Date Filename: U211736
ng/Kg %Moisture

TARGET ANALYTE	CONCENTRATION
Tot MoCB	0.00
Tot DiCB	0.00
Tot TriCB	15.35
Tot TeCB	45.13
Tot PeCB	39.15
Tot HxCB	114.90
Tot HpCB	50.63
Tot OcCB	1.34
Tot NoCB	0.00
Tot DeCB	0.00
Total PCB	266.50

USEPA - CLP
Form3
PCB TOTAL HOMOLOGOUS CONCENTRATION

CLIENT ID.

FO 070804

Lab Name: Columbia Analytical Services	Contract:
Lab Code: CAS	Lab ID: K0705409-002RE
Case No.: CITY OF PORTLAND	Sample Wt/Vol: 1.926 g
Client Name:	Initial Calibration Date: 09/25/06
Matrix(Solid/Aqueous/Waste/Ash): solid	Instrument ID: AutoSpec-Ultima
Sample Receipt Date: 6/27/2007	GC Column ID: SPB-OCTYL
Ext. Date: 8/21/2007	Sample Date Filename: U211749
Ext. Vol(ul): 20.0	Blank Data Filename: U211737
Inj. Vol(ul): 1.0	Cal. Ver. Date Filename: U211747
Analysis Date: 13-Sep-07	
Dilution Factor: 1	
CONCENTRATION UNITS: (pg/L or ng/Kg)	ng/Kg %Moisture 62.1

TARGET ANALYTE	CONCENTRATION
Tot MoCB	0.00
Tot DiCB	0.00
Tot TriCB	2843.29
Tot TeCB	3951.27
Tot PeCB	7604.98
Tot HxCB	6361.97
Tot HpCB	12828.45
Tot OcCB	2956.27
Tot NoCB	388.22
Tot DeCB	75.84
Total PCB	37010.29



CHAIN OF CUSTODY

Sediment and Tissue Chemistry

SR#:

An Employee-Owned Company

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • FAX (360) 636-1068

PAGE 1 OF 1

COC #

PROJECT NAME **PORTLAND HARBOR INLINE SAMP**

PROJECT NUMBER

PROJECT MANAGER

COMPANY/ADDRESS

JENNIFER SHACKELFORD
W PCL - CITY OF PORTLAND

PHONE #

6543 N BURLINGTON AVE, PORTLAND, OR 97225

FAX #

SAMPLER'S SIGNATURE

SAMPLE I.D.

DATE

TIME

LAB I.D.

MATRIX

NUMBER OF CONTAINERS
Metals (list below) **Al, Sb, As, Cd, Cr, Cu, Pb, Mn, Ni, Ag, Zn, Hg**
☐ Total Volatile Solids
☒ Total Solids
☐ Lipids

TOC (ASTM D4129M)

Grain size - PSEP / ASTM D422
Sulfide
☐ Total (9030M) ☐ Water Soluble

AVS / SEM

Ammonia
☐ Total (350.1m) ☐ Pore water
Pesticides (8081)

PCBs (8082)
☒ Aroclors ☒ Congeners (ALL 209)
Semivolatiles (GC/MS SIM)
☐ PAHs ☐ Phthalates ☐ Phenols ☐ PSEP

Organotin - Sediment
☐ Mono ☐ Di ☐ Tri ☐ Tetra
Organotin - Pore water
☐ Mono ☐ Di ☐ Tri ☐ Tetra
Volatiles (8260)

TRPH 8015 / 418.1

SVOCs EPA 8270 c
PAH + Phthalates EPA 8270 c
HERBICIDES EPA 8151

REMARKS

REPORT REQUIREMENTS

I. Routine Report: Method Blank, Surrogate, as required

II. Report Dup., MS, MSD as required

III. Data Validation Report (includes all raw data)

IV. CLP Deliverable Report

V. EDD

INVOICE INFORMATION

P.O. #

Bill To:

TURNAROUND REQUIREMENTS

24 hr. 48 hr.

5 Day

Standard (10-15 working days)

Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

SMS Metals: As Cd Cr Cu Pb Hg Ag Zn
CA Metals: As Cd Cr Cu Pb Hg Ni Pb Se Zn

SPECIAL INSTRUCTIONS/COMMENTS:

PLEASE RUN ALL 209 CONGENERS
SEE ATTACHED LOGS FOR ANALYSIS PRESENCE LIST

RELINQUISHED BY:

Signature **Krista Olivas** Date/Time **6/22/07 08:50**
Printed Name **Krista Olivas** Firm **Aurion**

RECEIVED BY:

Signature **Bruce** Date/Time **6-22-07 8:50**
Printed Name **Bruce** Firm **Aurion**

RELINQUISHED BY:

Signature **Bruce** Date/Time **6-22-07 1:00**
Printed Name **Bruce** Firm **Aurion**

RECEIVED BY:

Signature **A. G. Hill** Date/Time **6/22/07 1:00**
Printed Name **A. G. Hill** Firm **Aurion**

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696



City of Portland
Chain-of-Custody
Bureau of Environmental Services



Date: 6/21/07
Page: 1 of 1
Collected By: JXB/DSH/
ASA/TECH

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: SEDIMENT

Requested Analyses

All Analyses to be performed at CAS

If insufficient sample volume, analyses should be performed by priority list below:

PCB Congeners, PCB Aroclors, TOC, TS, Pesticides, PAH + Phthalates, Metals, Herbicides
Sediment traps installed: 3/13 - 3/15/07; removed: 6/18 - 6/19/07

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General						Metals		Comments	
						PCB Congeners (All 209)	PCB Aroclors	TOC	TS	Organo-chlorine Pesticides	PAH + Phthalates (Low-level)	Herbicides	Total Metals (Al, Sb, As, Cd Cr Cu, Pb, Mn, Ni, Ag, Zn) + Hg		
FO 070804	ST-M1-AAJ944-0607 6936 N FATHOM ST	M1_ST1	6/18/07	1503	C	●	●	●	●	●	●	●	●	111g (sufficient volume to run all analyses)	
FO 070805	ST-18-AA1565-0607 NW 35TH & YEON	18_ST1	6/19/07	1148	C	●	✓	●	●	●	●	●	●	10.8 g (x if possible)	
FO 070806	ST-18-AA1557-0607 3950 NW YEON AVE	18_ST2	6/19/07	1602	C	●	✓	●	●	●	●	●	●	44.5 g (x if possible)	
FO 070807	IL-18-AA1557-0607 3950 NW YEON AVE	18_10	6/19/07	1435	G	●	●	●	●	●	●	●	●	Inline sample collected at Sediment Trap Installation	
FO 070808	ST-18-AND535-0607 4033 NW YEON AVE	18_ST3	6/20/07	915	C	●	✓	●	●	●	●	●	●	15.8 g (x if possible)	
FO 070809	ST-18-AA1466-0607 4033 NW YEON AVE	18_ST4	6/20/07	1258	C	●	●	●	●	●	●	●	●	73.1 g (x if possible)	
Relinquished By: 1. <u>[Signature]</u> Time: <u>1058</u>						Relinquished By: 2. <u>[Signature]</u> Time: <u> </u>						Relinquished By: 3. <u>[Signature]</u> Time: <u> </u>		Relinquished By: 4. <u>[Signature]</u> Time: <u> </u>	
Received By: 1. <u>Peter Abrams</u> Date: <u>6/21/07</u>						Received By: 2. <u> </u> Date: <u> </u>						Received By: 3. <u> </u> Date: <u> </u>		Received By: 4. <u> </u> Date: <u> </u>	
Signature: <u> </u> Time: <u> </u>						Signature: <u> </u> Time: <u> </u>						Signature: <u> </u> Time: <u> </u>		Signature: <u> </u> Time: <u> </u>	
Printed Name: <u> </u> Date: <u> </u>						Printed Name: <u> </u> Date: <u> </u>						Printed Name: <u> </u> Date: <u> </u>		Printed Name: <u> </u> Date: <u> </u>	

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC CV

Client / Project: CITY OF PORTLAND Service Request K07 5409
Received: 6/22/07 Opened: 6/22/07 By: AL

1. Samples were received via? US Mail Fed Ex UPS DHL GH GS PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N
4. Is shipper's air-bill filed? If not, record air-bill number: NA Y N
5. Temperature of cooler(s) upon receipt (°C): _____
Temperature Blank (°C): N/A
6. If applicable, list Chain of Custody Numbers: _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Packing material used. Inserts Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? Y N
11. Did all sample labels and tags agree with custody papers? Indicate in the table below Y N
12. Were the correct types of bottles used for the tests indicated? NA Y N
13. Were all of the preserved bottles received at the lab with the appropriate pH? Indicate in the table below, NA Y N
14. Were VOA vials and 1631 Mercury bottles checked for absence of air bubbles? Indicate in the table below. NA Y N
15. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? NA Y N
16. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broken	pH	Reagent	Volume added	Reagent Lot Number	Initials

Additional Notes, Discrepancies, & Resolutions: _____

Revised Laboratory Report for PCB Aroclors

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Polychlorinated Biphenyls (PCBs)

Sample Name: FO 070804
Lab Code: K0705409-002
Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	20	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1221	ND	Ui	30	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1232	ND	U	14	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1242	ND	Ui	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1248	ND	U	14	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1254	ND	Ui	15	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1260	ND	Ui	19	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1262	ND	Ui	23	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1268	ND	U	14	1	07/02/07	07/24/07	KWG0707164	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	94	33-141	07/24/07	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0707164-4
Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1221	ND	U	5.0	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1232	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1242	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1248	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1254	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1260	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1262	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1268	ND	U	2.5	1	07/02/07	07/24/07	KWG0707164	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	33-141	07/24/07	Acceptable

Comments:

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/18/2007	Receive Date:	06/22/2007

Analysis Lot:	KWG0708010	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613931	Prep Date:	07/02/2007		

Quant Method:	\\CASH1\ACQU\DATA\GC09\DATA\072407.B\072007_F.M	Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)	Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D	Method ID:	MJ150
		Quant based on Report List	

Data File #1:	J:\GC09\DATA\072407.B\0724F009.D	Instrument:	GC09.i
Data File #2:	\\cash1\acq\data\GC09\data\072407_r.b\0724R009.D	Vial:	7
Acqu Date:	07/24/2007 15:12	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-002	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.59 ^{+0.02}	20.19 ^{+0.00}	605621	300143m	93.78	60.92			94OK ✓
%Recovery =					94OK	61OK	Limits =	33-141	

Target Compounds

										Final Conc. Units: ug/Kg Dry Weight
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt	
Aroclor 1016			0	0	74.89	125.54	20Ui	34Ui	20Ui	✓
Aroclor 1016 {1}	6.72 ^{-0.01}	6.70 ^{-0.05} c	17341m	10245m	121.19	117.20	4.5Ui	4.5Ui		
Aroclor 1016 {2}	7.36 ^{+0.07} c	7.70 ^{-0.07} c	0m	13992m	0.0000	78.34	4.5Ui	4.5Ui		
Aroclor 1016 {3}	7.70 ^{+0.00} c	8.08 ^{+0.08} c	4895m	19578m	35.08	164.33	4.5Ui	4.5Ui		
Aroclor 1016 {4}	8.17 ^{+0.03} c	8.33 ^{+0.04} c	12885m	15906m	69.02	142.29	4.5Ui	4.5Ui		
Aroclor 1016 {5}	8.45 ^{+0.00} c	8.50 ^{-0.09} c	10102m	0m	74.27	0.0000	4.5Ui	4.5Ui		
Aroclor 1221			0	0	126.44	111.95	34Ui	30Ui	30Ui	✓
Aroclor 1221 {1}	4.06	4.32	1008m	3129m	15.42	65.34	4.5Ui	4.5Ui		
Aroclor 1221 {2}	5.01	5.24	7138m	0m	188.93	0.0000	4.5Ui	4.5Ui		
Aroclor 1221 {3}	5.23	5.77	3523m	7857m	42.32	150.29	4.5Ui	4.5Ui		
Aroclor 1221 {4}	5.44	5.84	14000m	4314m	259.07	120.21	4.5Ui	4.5Ui		
Aroclor 1232			0	0	32.25	110.27	8.6Ui	30Ui	8.6Ui	✓
Aroclor 1232 {1}	5.54	6.04	5381m	4926m	31.15	44.42	4.5Ui	4.5Ui		
Aroclor 1232 {2}	6.26 ^c	6.70 ^c	0m	10245m	0.0000	219.23	4.5Ui	4.5Ui		
Aroclor 1232 {3}	7.10 ^c	7.00 ^c	8818m	2413m	33.35	35.89	4.5Ui	4.5Ui		
Aroclor 1232 {4}	7.36 ^c	7.70 ^c	0m	13992m	0.0000	141.55	4.5Ui	4.5Ui		
Aroclor 1242			0	0	57.69	124.27	16Ui	33Ui	16Ui	✓
Aroclor 1242 {1}	6.26 ^c	6.70 ^c	0m	10245m	0.0000	116.35	4.5Ui	4.5Ui		
Aroclor 1242 {2}	7.10 ^c	7.00 ^c	8818m	2413m	18.60	23.75	4.5Ui	4.5Ui		
Aroclor 1242 {3}	7.36 ^c	7.70 ^c	0m	13992m	0.0000	104.52	4.5Ui	4.5Ui		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072407.B\0724F009.D	Instrument:	GC09.i
Data File #2:	\\cash1\acqdata\GC09\data\072407_r.b\0724R009.D	Vial:	7
Acqu Date:	07/24/2007 15:12	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-002	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}	7.61	8.08	c	10539m	19578m	63.70	212.14	4.5Ui	4.5Ui
Aroclor 1242 {5}	8.17	c	8.19	12885m	11879m	90.76	164.61	4.5Ui	4.5Ui
Aroclor 1248				0	0	47.65	66.29	13Ui	18Ui
Aroclor 1248 {1}	7.70	c	8.33	c	4895m	15906m	31.04	126.59	4.5Ui
Aroclor 1248 {2}	8.17	c	8.50	c	12885m	0m	58.71	0.0000	4.5Ui
Aroclor 1248 {3}	8.45	c	9.42		10102m	9272m	52.51	32.83	4.5Ui
Aroclor 1248 {4}	8.82		9.56		11328m	7569m	40.30	39.45	4.5Ui
Aroclor 1248 {5}	8.92		9.83	c	19764m	0m	55.68	0.0000	4.5Ui
Aroclor 1254					0	0	55.55	524.11	15Ui
Aroclor 1254 {1}	9.17		9.83	c	11651m	0m	37.65	0.0000	4.5Ui
Aroclor 1254 {2}	9.87		10.35		0m	116467m	0.0000	939.32	4.5Ui
Aroclor 1254 {3}	10.13		10.64		35637m	29221m	71.44	115.42	4.5Ui
Aroclor 1254 {4}	10.53		11.02	c	22274m	0m	57.57	0.0000	4.5Ui
Aroclor 1254 {5}	10.76	c	11.21		0m	105703m	0.0000	517.60	4.5Ui
Aroclor 1260					0	0	70.93	74.95	19Ui
Aroclor 1260 {1}	10.43	^{+0.00}	11.02	^{+0.03} c	20199m	0m	51.94	0.0000	4.5Ui
Aroclor 1260 {2}	10.76	^{+0.01} c	11.53	^{+0.00}	0m	25247m	0.0000	95.16	4.5Ui
Aroclor 1260 {3}	11.55	c	12.21	^{0.00}	50903m	30600m	118.53	92.62	4.5Ui
Aroclor 1260 {4}	12.34	^{-0.01} c	12.43	c	19670m	6261m	69.75	35.28	4.5Ui
Aroclor 1260 {5}	12.89	c	13.89	^{-0.01} c	25752m	31391m	43.50	76.75	4.5Ui
Aroclor 1262					0	0	85.05	92.65	24
Aroclor 1262 {1}	11.55	c	12.43	c	50903m	6261m	118.28	22.91	31
Aroclor 1262 {2}	12.34	c	13.02		19670m	23147m	58.58	110.50	15
Aroclor 1262 {3}	12.89	c	13.89	c	25752m	31391m	38.53	66.43	10J
Aroclor 1262 {4}	13.82		14.90		36361m	57192m	124.81	160.54	33
Aroclor 1262 {5}	14.06	c	15.15	c	0m	25476m	0.0000	102.89	4.5U
Aroclor 1268					0	0	30.74	36.67	8.1J
Aroclor 1268 {1}	14.06	c	15.15	c	0m	25476m	0.0000	42.35	4.5U
Aroclor 1268 {2}	14.78		16.00		225m	3194m	0.3440	6.52	4.5U
Aroclor 1268 {3}	15.25		16.41		7866m	8422m	47.40	62.38	13J
Aroclor 1268 {4}	15.88		17.25		12706m	7459m	44.46	35.41	12J
Aroclor 1268 {5}			18.83		0m	0m	0.0000	0.0000	4.5U

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount:	20.00 g	Dilution:	1.0
Prep Final Vol:	2 ml	Unit Factor:	1
Solids:	37.9 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/19/2007	Receive Date:	06/22/2007

Analysis Lot:	KWG0708010	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613932	Prep Date:	07/02/2007		

Quant Method:	\\CASH1\ACQU\DATA\GC09\DATA\072407.B\072007_F.M	Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)	Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D	Method ID:	MJ150
		Quant based on Report List	

Data File #1:	J:\GC09\DATA\072407.B\0724F010.D	Instrument:	GC09.i
Data File #2:	\\cash1\acq\data\GC09\data\072407_r.b\0724R010.D	Vial:	8
Acqu Date:	07/24/2007 15:38	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-003	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2				Rpt
Decachlorobiphenyl	18.58 ^{+0.01}	20.19 ^{0.00}	327557m	178453	50.72	36.22				51OK ✓
%Recovery =					51OK	36OK	Limits =	33-141		

Target Compounds

Target Compounds					Final Conc. Units:		ug/Kg Dry Weight			
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt	
Aroclor 1016			0	0	33.62	40.76	36Ui	44Ui	36Ui ✓	
Aroclor 1016 {1}	6.82 ^{+0.09}	6.68 ^{-0.06} c	0m	2122m	0.0000	24.28	9.1Ui	9.1Ui		
Aroclor 1016 {2}	7.37 ^{+0.08} c	7.78 ^{+0.01} c	0m	7913m	0.0000	44.31	9.1Ui	9.1Ui		
Aroclor 1016 {3}	7.70 ^{0.00} c	8.09 ^{+0.08} c	2638m	0m	18.91	0.0000	9.1Ui	9.1Ui		
Aroclor 1016 {4}	8.15 ^{+0.01} c	8.29 ^{0.00} c	8663m	6000m	46.40	53.68	9.1Ui	9.1Ui		
Aroclor 1016 {5}	8.45 ^{+0.01} c	8.50 ^{-0.09} c	4835m	0m	35.55	0.0000	9.1Ui	9.1Ui		
Aroclor 1221			0	0	125.66	207.60	140Ui	220Ui	140Ui ✓	
Aroclor 1221 {1}		4.32	0	8087	0.0000	168.87	9.1Ui	9.1Ui		
Aroclor 1221 {2}	4.94	5.26	3734	6980	98.82	300.53	9.1Ui	9.1Ui		
Aroclor 1221 {3}	5.24	5.65	21718	18747	260.83	358.60	9.1Ui	9.1Ui		
Aroclor 1221 {4}	5.43	5.84	936	86	17.32	2.40	9.1Ui	9.1Ui		
Aroclor 1232			0	0	95.32	93.67	110Ui	100Ui		100Ui ✓
Aroclor 1232 {1}	5.55	6.04	10915m	1707m	63.19	15.39	9.1Ui	9.1Ui		
Aroclor 1232 {2}	6.31 ^c	6.68 ^c	0m	2122m	0.0000	45.42	9.1Ui	9.1Ui		
Aroclor 1232 {3}	7.16 ^c	7.02 ^c	33706m	13543m	127.46	201.43	9.1Ui	9.1Ui		
Aroclor 1232 {4}	7.37 ^c	7.70	0m	11113m	0.0000	112.42	9.1Ui	9.1Ui		
Aroclor 1242			0	0	66.05	72.16	70Ui	77Ui		70Ui ✓
Aroclor 1242 {1}	6.31 ^c	6.68 ^c	0m	2122m	0.0000	24.11	9.1Ui	9.1Ui		
Aroclor 1242 {2}	7.16 ^c	7.02 ^c	33706m	13543m	71.08	133.28	9.1Ui	9.1Ui		
Aroclor 1242 {3}	7.37 ^c	7.78 ^c	0m	7913m	0.0000	59.11	9.1Ui	9.1Ui		

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072407.B\0724F010.D	Instrument:	GC09.i
Data File #2:	\\cash1\acquadata\GC09\data\072407_r.b\0724R010.D	Vial:	8
Acqu Date:	07/24/2007 15:38	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-003	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}		7.92	0m	0m	0.0000	0.0000	9.1Ui	9.1Ui	
Aroclor 1242 {5}	8.15	c 8.09	c 8663m	0m	61.02	0.0000	9.1Ui	9.1Ui	
Aroclor 1248			0	0	47.72	145.05	51Ui	160Ui	51Ui ✓
Aroclor 1248 {1}	7.70	c 8.29	c 2638m	6000m	16.73	47.76	9.1Ui	9.1Ui	
Aroclor 1248 {2}	8.15	c 8.50	c 8663m	0m	39.48	0.0000	9.1Ui	9.1Ui	
Aroclor 1248 {3}	8.45	c 9.48	4835m	37264m	25.13	131.94	9.1Ui	9.1Ui	
Aroclor 1248 {4}	8.83		24719m	0m	87.93	0.0000	9.1Ui	9.1Ui	
Aroclor 1248 {5}	8.92	9.85	c 24608m	36476m	69.33	255.47	9.1Ui	9.1Ui	
Aroclor 1254			0	0	89.26	137.47	95Ui	150Ui	95Ui ✓
Aroclor 1254 {1}	9.17	9.85	c 15696m	36476m	50.72	151.43	9.1Ui	9.1Ui	
Aroclor 1254 {2}	9.90	10.35	0m	0m	0.0000	0.0000	9.1Ui	9.1Ui	
Aroclor 1254 {3}	10.13	10.64	30759m	18471m	61.66	72.96	9.1Ui	9.1Ui	
Aroclor 1254 {4}	10.53	10.99	c 20491m	17358m	52.96	150.48	9.1Ui	9.1Ui	
Aroclor 1254 {5}	10.75	c 11.25	36106m	35741m	191.70	175.01	9.1Ui	9.1Ui	
Aroclor 1260			0	0	72.98	107.22	78Ui	120Ui	78Ui ✓
Aroclor 1260 {1}	10.43	^{+0.00} 10.99	^{+0.00} c 23055m	17358m	59.28	73.68	9.1Ui	9.1Ui	
Aroclor 1260 {2}	10.75	^{+0.00} c 11.53	^{+0.00} 36106m	31422m	81.28	118.44	9.1Ui	9.1Ui	
Aroclor 1260 {3}	11.55	^{-0.01} c 12.21	^{-0.01} 0m	51320m	0.0000	155.33	9.1Ui	9.1Ui	
Aroclor 1260 {4}	12.35	^{0.00} c 12.42	^{0.00} c 19040m	12929m	67.52	72.85	9.1Ui	9.1Ui	
Aroclor 1260 {5}	12.89	^{0.00} c 13.89	^{-0.01} c 49619m	47372m	83.82	115.82	9.1Ui	9.1Ui	
Aroclor 1262			0	0	107.99	94.68	110	100 <i>i</i>	110
Aroclor 1262 {1}	11.55	c 12.42	c 0m	12929m	0.0000	47.31	9.1U	50J	
Aroclor 1262 {2}	12.35	c 13.02	19040m	25159m	56.70	120.11	60	130	
Aroclor 1262 {3}	12.89	c 13.89	c 49619m	47372m	74.23	100.25	79	110	
Aroclor 1262 {4}	13.86	14.88	36043m	50668m	123.72	142.23	130	150	
Aroclor 1262 {5}	14.06	c 15.15	c 92511m	15722m	177.32	63.49	190	67	
Aroclor 1268			0	0	85.88	63.29	91	67 <i>i</i>	91
Aroclor 1268 {1}	14.06	c 15.15	c 92511m	15722m	113.03	26.14	120	28J	RPD
Aroclor 1268 {2}	14.77		871m	0m	1.33	0.0000	9.1U	9.1U	
Aroclor 1268 {3}	15.25	16.40	20351m	16649m	122.64	123.31	130	130	
Aroclor 1268 {4}	15.78	17.24	53626m	11262m	187.64	53.47	200	57	RPD
Aroclor 1268 {5}	17.24	18.82	9065m	72228m	4.76	50.25	9.1U	53	

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount: 8.63 g Dilution: 1.0
 Prep Final Vol: 5 ml Unit Factor: 1
 Solids: 54.7 %

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
 J: Analyte detected above MDL, but below MRL
 B: Hit above MRL also found in Method Blank
 E: Analyte concentration above high point of ICAL
 N: Presumptive evidence of compound

D: Result from dilution
 m: Manual integration performed
 d: Compound manually deleted
 NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
 #: Acceptance criteria not applicable
 ?: Insufficient information to determine acceptance
 e: Result >= MRL, but MRL less than low point of ICAL
 c: check for co-elution

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/19/2007	Receive Date:	06/22/2007

Analysis Lot:	KWG0708132	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613933	Prep Date:	07/02/2007		

Quant Method:	\\CASH1\ACQU\DATA\GC09\DATA\072607.B\072007_F.M	Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)	Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D	Method ID:	MJ150
		Quant based on Report List	

Data File #1:	J:\GC09\DATA\072607.B\0726F009.D	Instrument:	GC09.i
Data File #2:	\\Cash1\Acqudata\GC09\data\072607_r.b\0726R009.D	Vial:	5
Acqu Date:	07/26/2007 20:37	Quant Date:	07/31/2007 13:47
Run Type:	SMPL	Dilution:	10.0
Lab ID:	K0705409-004	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.57 ^{+0.01}	20.18 ^{0.00}	91294	46573	14.14	9.45			141OK ✓
%Recovery =					141OK	95OK	Limits =	33-141	

Target Compounds

				Final Conc. Units:		ug/Kg Dry Weight			
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1016 {1}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1016 {2}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1016 {3}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1016 {4}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1016 {5}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1221			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1221 {1}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1221 {2}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1221 {3}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1221 {4}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1232			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1232 {1}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1232 {2}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1232 {3}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1232 {4}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1242			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1242 {1}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1242 {2}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1242 {3}			0d	0d	0.0000	0.0000	32U	32U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072607.B\0726F009.D	Instrument:	GC09.i
Data File #2:	\\Cash1\Acqudata\GC09\data\072607_r.b\0726R009.D	Vial:	5
Acqu Date:	07/26/2007 20:37	Quant Date:	07/31/2007 13:47
Run Type:	SMPL	Dilution:	10.0
Lab ID:	K0705409-004	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1242 {5}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1248			0	0	302.11	432.71	560D	800D	800D ✓
Aroclor 1248 {1}	7.70	8.29	46526m	47005	294.99	374.08	550D	690D	
Aroclor 1248 {2}	8.14	8.59	63481m	75981	289.26	591.26	530D	1100D	
Aroclor 1248 {3}	8.44	9.45	48816m	122258	253.72	432.88	470D	800D	
Aroclor 1248 {4}	8.82	9.56	83844m	63811	298.26	332.60	550D	620D	
Aroclor 1248 {5}	8.92	9.85	132870m	0	374.30	0.0000	690D	32U	
Aroclor 1254			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1254 {1}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1254 {2}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1254 {3}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1254 {4}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1254 {5}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1260			0	0	216.54	218.58	400D	400D	400D ✓
Aroclor 1260 {1}	10.43 ^{+0.00}	10.99	78989m	50524	203.11	214.46	380D	400D	
Aroclor 1260 {2}	10.75	11.53	111706m	62246	251.46	234.61	460D	430D	
Aroclor 1260 {3}	11.55	12.21 ^{0.00}	109689m	77678	255.41	235.11	470D	430D	
Aroclor 1260 {4}	12.34 ^{-0.01}	12.42	49324m	38050	174.90	214.39	320D	400D	
Aroclor 1260 {5}	12.89	13.89	117104m	79474	197.82	194.31	370D	360D	
Aroclor 1262			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1262 {1}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1262 {2}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1262 {3}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1262 {4}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1262 {5}			0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1268			0	0	59.59	98.04	110D	180D	180PD ✓
Aroclor 1268 {1}	14.04	15.15	0	73376	0.0000	121.98	32U	230D	
Aroclor 1268 {2}	14.86	16.02	22983	24470	35.14	49.95	65JD	92JD	
Aroclor 1268 {3}	15.23	16.40	13487	19976	81.28	147.96	150D	270D	
Aroclor 1268 {4}	15.87	17.24	0	0	0.0000	0.0000	32U	32U	
Aroclor 1268 {5}	17.24	18.78	118776	103877	62.34	72.27	120D	130D	

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount:	20.03 g	Dilution:	10.0
Prep Final Vol:	2 ml	Unit Factor:	1
Solids:	54.0 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

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#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/19/2007	Receive Date:	06/22/2007

Analysis Lot:	KWG0708010	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613934	Prep Date:	07/02/2007		

Quant Method:	\\CASH1\ACQU\DATA\GC09\DATA\072407.B\072007_F.M	Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)	Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D	Method ID:	MJ150
		Quant based on Report List	

Data File #1:	J:\GC09\DATA\072407.B\0724F011.D	Instrument:	GC09.i
Data File #2:	\\cash1\acq\data\GC09\data\072407_r.b\0724R011.D	Vial:	9
Acqu Date:	07/24/2007 16:05	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-005	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2	Rpt	
Decachlorobiphenyl	18.57	20.19 ^{0.00}	424692	264042	65.76	53.59	66OK	✓
%Recovery =					66OK	54OK	Limits =	33-141

Target Compounds

Final Conc. Units: ug/Kg Dry Weight									
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016			0	0	95.63	145.61	67Ui	110Ui	67Ui ✓
Aroclor 1016 {1}	6.82 ^{+0.09}	6.77 ^{+0.02}	0m	14132m	0.0000	161.68	24Ui	24Ui	
Aroclor 1016 {2}	7.29 ^c	7.71 ^{-0.07c}	14450m	10277m	51.76	57.55	24Ui	24Ui	
Aroclor 1016 {3}	7.70 ^{0.00c}	7.94 ^{-0.07c}	12106m	0m	86.74	0.0000	24Ui	24Ui	
Aroclor 1016 {4}	8.14 ^c	8.29 ^{0.00c}	24846m	27791m	133.08	248.62	24Ui	24Ui	
Aroclor 1016 {5}	8.44 ^c	8.68 ^{+0.09}	15092m	11543m	110.95	114.59	24Ui	24Ui	
Aroclor 1221			0	0	228.94	132.63	160Ui	93Ui	93Ui ✓
Aroclor 1221 {1}	4.01	4.37	581	975m	8.89	20.36	24Ui	24Ui	
Aroclor 1221 {2}	5.02	5.27	12184	5562m	322.46	239.47	24Ui	24Ui	
Aroclor 1221 {3}	5.24	5.79	0	7217m	0.0000	138.05	24Ui	24Ui	
Aroclor 1221 {4}	5.45		19211	0m	355.49	0.0000	24Ui	24Ui	
Aroclor 1232			0	0	363.05	268.69	260Ui	190Ui	190Ui ✓
Aroclor 1232 {1}	5.66	6.04	0m	13989m	0.0000	126.14	24Ui	24Ui	
Aroclor 1232 {2}	6.25 ^c	6.64 ^c	13727m	26915m	93.46	575.97	24Ui	24Ui	
Aroclor 1232 {3}	7.16 ^c	7.02 ^c	229512m	0m	867.89	0.0000	24Ui	24Ui	
Aroclor 1232 {4}	7.29 ^c	7.71 ^c	14450m	10277m	127.81	103.97	24Ui	24Ui	
Aroclor 1242			0	0	195.84	191.22	140Ui	140Ui	140Ui ✓
Aroclor 1242 {1}	6.25 ^c	6.64 ^c	13727m	26915m	54.39	305.67	24Ui	24Ui	
Aroclor 1242 {2}	7.16 ^c	7.02 ^c	229512m	0m	484.01	0.0000	24Ui	24Ui	
Aroclor 1242 {3}	7.29 ^c	7.71 ^c	14450m	10277m	69.96	76.77	24Ui	24Ui	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072407.B\0724F011.D	Instrument:	GC09.i
Data File #2:	\\cash1\acquadata\GC09\data\072407_r.b\0724R011.D	Vial:	9
Acqu Date:	07/24/2007 16:05	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-005	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}		7.94	c	0m	0m	0.0000	0.0000	24Ui	24Ui
Aroclor 1242 {5}	8.14	c	8.09	24846m	0m	175.01	0.0000	24Ui	24Ui
Aroclor 1248				0	0	122.09	564.89	86Ui	400Ui
Aroclor 1248 {1}	7.70	c	8.29	c	12106m	27791m	76.76	221.18	24Ui
Aroclor 1248 {2}	8.14	c	8.50	24846m	173346m	113.22	1,349	24Ui	24Ui
Aroclor 1248 {3}	8.44	c	9.44	15092m	66712m	78.44	236.21	24Ui	24Ui
Aroclor 1248 {4}	8.82		9.56	43452m	29131m	154.57	151.84	24Ui	24Ui
Aroclor 1248 {5}	8.92		9.85	c	66539m	123696m	187.45	866.31	24Ui
Aroclor 1254				0	0	243.87	365.74	170	250
Aroclor 1254 {1}	9.18		9.85	c	47771m	123696m	154.37	513.53	110
Aroclor 1254 {2}	9.89		10.39		100473m	0m	493.61	0.0000	340
Aroclor 1254 {3}	10.13		10.63		93350m	94432m	187.13	372.99	130
Aroclor 1254 {4}	10.53		10.99	c	52728m	33581m	136.27	291.11	95
Aroclor 1254 {5}	10.75	c	11.25		46699m	58267m	247.94	285.32	170
Aroclor 1260				0	0	97.06 ^{CCV}	133.51	68	93
Aroclor 1260 {1}	10.43	^{+0.00}	10.99	c	31232m	33581m	80.31	142.55	56
Aroclor 1260 {2}	10.75	c	11.53		46699m	45426m	105.13	171.22	73
Aroclor 1260 {3}	11.55	c	12.21	^{-0.01}	65838m	54274m	153.30	164.27	110
Aroclor 1260 {4}	12.35	^{0.00}	12.42	^{0.00} c	18345m	17250m	65.05	97.19	45
Aroclor 1260 {5}	12.89	c	13.89	^{0.00} c	48240m	37759m	81.49	92.32	57
Aroclor 1262				0	0	88.71	90.69	62	63
Aroclor 1262 {1}	11.55	c	12.42	c	65838m	17250m	152.98	63.12	110
Aroclor 1262 {2}	12.35	c	13.01		18345m	30178m	54.63	144.07	38
Aroclor 1262 {3}	12.89	c	13.89	c	48240m	37759m	72.17	79.90	50
Aroclor 1262 {4}	13.83		14.89		18298m	33451m	62.81	93.90	44
Aroclor 1262 {5}	14.05	c	15.15	c	52666m	17946m	100.95	72.48	70
Aroclor 1268				0	0	37.21	50.96	26J	35
Aroclor 1268 {1}	14.05	c	15.15	c	52666	17946m	64.35	29.83	45
Aroclor 1268 {2}	14.86		15.96		6044	0m	9.24	0.0000	24U
Aroclor 1268 {3}	15.26		16.43		5491	8135m	33.09	60.25	24U
Aroclor 1268 {4}	15.87		17.24		15396	19651m	53.87	93.30	38
Aroclor 1268 {5}	17.24		18.80		48537	29391m	25.48	20.45	24U

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount:	40.00 g	Dilution:	1.0
Prep Final Vol:	2 ml	Unit Factor:	1
Solids:	7.18 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
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E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/20/2007	Receive Date:	06/22/2007
Analysis Lot:	KWG0708010	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613935	Prep Date:	07/02/2007		
Quant Method:	\\CASH1\ACQU\DATA\GC09\DATA\072407.B\072007_F.M			Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)			Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D			Method ID:	MJ150
				Quant based on Report List	
Data File #1:	J:\GC09\DATA\072407.B\0724F012.D			Instrument:	GC09.i
Data File #2:	\\cash1\acq\data\GC09\data\072407_r.b\0724R012.D			Vial:	10
Acqu Date:	07/24/2007 16:31	Quant Date:	07/25/2007 12:19	Dilution:	1.0
Run Type:	SMPL			Soln Conc. Units:	ng/mL
Lab ID:	K0705409-006				
Signal #1:	DB-35MS	Signal #2:	DB-XLB		

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.57	20.18 ^{-0.01}	442853	351276	68.57	71.30			71OK
%Recovery =					69OK	71OK	Limits =	33-141	

Target Compounds

								Final Conc. Units:	ug/Kg Dry Weight
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016			0	0	0.0000	0.0000	2.9U	2.9U	2.9U
Aroclor 1016 {1}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1016 {2}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1016 {3}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1016 {4}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1016 {5}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1221			0	0	0.0000	0.0000	2.9U	2.9U	2.9U
Aroclor 1221 {1}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1221 {2}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1221 {3}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1221 {4}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1232			0	0	0.0000	0.0000	2.9U	2.9U	2.9U
Aroclor 1232 {1}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1232 {2}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1232 {3}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1232 {4}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1242			0	0	0.0000	0.0000	2.9U	2.9U	2.9U
Aroclor 1242 {1}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1242 {2}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1242 {3}			0d	0d	0.0000	0.0000	2.9U	2.9U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
C: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072407.B\0724F012.D	Instrument:	GC09.i
Data File #2:	\\cash1\acqdata\GC09\data\072407_r.b\0724R012.D	Vial:	10
Acqu Date:	07/24/2007 16:31	Quant Date:	07/25/2007 12:19
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-006	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1242 {5}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1248			0	0	0.0000	0.0000	2.9U	2.9U	2.9U
Aroclor 1248 {1}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1248 {2}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1248 {3}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1248 {4}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1248 {5}			0d	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1254			0	0	36.91	84.22	12Ui	26Ui	12Ui ✓
Aroclor 1254 {1}	9.17	9.85	5129m	5340	16.58	22.17	2.9Ui	2.9Ui	
Aroclor 1254 {2}	9.91	10.40	5931m	22495	29.14	181.42	2.9Ui	2.9Ui	
Aroclor 1254 {3}	10.12	10.64	10276m	10493	20.60	41.45	2.9Ui	2.9Ui	
Aroclor 1254 {4}	10.57	10.99 c	31473m	15687	81.34	136.00	2.9Ui	2.9Ui	
Aroclor 1254 {5}	10.76	c 11.25	0m	8177	0.0000	40.05	2.9Ui	2.9Ui	
Aroclor 1260			0	0	40.10	45.45	13Ui	14Ui	13Ui ✓
Aroclor 1260 {1}	10.44 +0.02	10.99 c	35071m	15687	90.18	66.59	2.9Ui	2.9Ui	
Aroclor 1260 {2}	10.76 +0.01 c	11.52 -0.01	0m	19772	0.0000	74.52	2.9Ui	2.9Ui	
Aroclor 1260 {3}	11.55 -0.01 c	12.16 -0.06	0m	0	0.0000	0.0000	2.9Ui	2.9Ui	
Aroclor 1260 {4}	12.34 -0.01 c	12.42 -0.01	5918m	5215	20.99	29.38	2.9Ui	2.9Ui	
Aroclor 1260 {5}	12.89 -0.01 c	13.89 -0.01	5405m	4629	9.13	11.32	2.9Ui	2.9Ui	
Aroclor 1262			0	0	25.60	0.0000	7.7J	2.9U	2.9U ✓
Aroclor 1262 {1}	11.55	c	0	0d	0.0000	0.0000	2.9U	2.9U	
Aroclor 1262 {2}	12.34	c	5918	0d	17.63	0.0000	5.3J	2.9U	
Aroclor 1262 {3}	12.89	c	5405	0d	8.09	0.0000	2.9U	2.9U	
Aroclor 1262 {4}	13.84		5534	0d	19.00	0.0000	5.7J	2.9U	
Aroclor 1262 {5}	14.05	c	30109	0d	57.71	0.0000	17	2.9U	
Aroclor 1268			0	0	15.95	0.0000	4.8J	2.9U	2.9U ✓
Aroclor 1268 {1}	14.05	c	30109	0d	36.79	0.0000	11J	2.9U	
Aroclor 1268 {2}	14.86		695	0d	1.06	0.0000	2.9U	2.9U	
Aroclor 1268 {3}	15.23		3948	0d	23.79	0.0000	7.2J	2.9U	
Aroclor 1268 {4}	15.86		4577	0d	16.02	0.0000	4.8J	2.9U	
Aroclor 1268 {5}	17.23		3969	0d	2.08	0.0000	2.9U	2.9U	

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount:	11.24 g	Dilution:	1.0
Prep Final Vol:	2 ml	Unit Factor:	1
Solids:	59.1 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/20/2007	Receive Date:	06/22/2007

Analysis Lot:	KWG0708132	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613936	Prep Date:	07/02/2007		

Quant Method:	\\CASH1\ACQUDATA\GC09\DATA\072607.B\072007_F.M	Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)	Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D	Method ID:	MJ150
		Quant based on Report List	

Data File #1:	J:\GC09\DATA\072607.B\0726F010.D	Instrument:	GC09.i
Data File #2:	\\Cash1\Acqudata\GC09\data\072607_r.b\0726R010.D	Vial:	6
Acqu Date:	07/26/2007 21:04	Quant Date:	07/31/2007 14:05
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-007	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.58 ^{+0.02}	20.19 ^{+0.01}	615414	349082	95.29	70.86			95OK
			%Recovery =		95OK	71OK	Limits =	33-141	

Target Compounds

				Final Conc. Units:		ug/Kg Dry Weight			
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016			0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1016 {1}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1016 {2}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1016 {3}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1016 {4}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1016 {5}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1221			0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1221 {1}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1221 {2}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1221 {3}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1221 {4}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1232			0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1232 {1}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1232 {2}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1232 {3}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1232 {4}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1242			0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1242 {1}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1242 {2}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1242 {3}			0d	0d	0.0000	0.0000	2.6U	2.6U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072607.B\0726F010.D	Instrument:	GC09.i
Data File #2:	\\Cash1\Acqudata\GC09\data\072607_r.b\0726R010.D	Vial:	6
Acqu Date:	07/26/2007 21:04	Quant Date:	07/31/2007 14:05
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-007	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1242 {5}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1248			0	0	988.79	1,241	150	190	190 ✓
Aroclor 1248 {1}	7.70	8.29	159896	171394m	1,014	1,364	150	210	
Aroclor 1248 {2}	8.14	8.59	225153	0m	1,026	0.0000	150	2.6U	
Aroclor 1248 {3}	8.45	9.45	108551	273419m	564.19	968.10	85	150	
Aroclor 1248 {4}	8.83	9.56	248094	266768m	882.55	1,390	130	210	
Aroclor 1248 {5}	8.92	9.85	517386	0m	1,458	0.0000	220	2.6U	
Aroclor 1254			0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1254 {1}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {2}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {3}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {4}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {5}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1260			0	0	942.25	1,392	140	210	210 ✓
Aroclor 1260 {1}	10.43 ^{+0.00}	10.99	332936	317761m	856.10	1,349	130	200	
Aroclor 1260 {2}	10.75 ^{+0.00}	11.53	499089	429174m	1,124	1,618	170	240	
Aroclor 1260 {3}	11.56 ^{+0.00}	12.21	0	614429m	0.0000	1,860	2.6U	280	
Aroclor 1260 {4}	12.35 ^{+0.00}	12.43 ^{+0.00}	199205	179613m	706.37	1,012	110	150	
Aroclor 1260 {5}	12.89 ^{+0.00}	13.89 ^{+0.00}	641112	459406m	1,083	1,123	160	170	
Aroclor 1262			0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1262 {1}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1262 {2}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1262 {3}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1262 {4}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1262 {5}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1268			0	0	56.77	128.90	8.5J	19	19P
Aroclor 1268 {1}	14.06	15.15	0	150876	0.0000	250.81	2.6U	38	
Aroclor 1268 {2}	14.86	16.04	14949	9454	22.86	19.30	3.4J	2.9J	
Aroclor 1268 {3}	15.25	16.42	19491	0	117.46	0.0000	18	2.6U	
Aroclor 1268 {4}	15.88	17.25	0	0	0.0000	0.0000	2.6U	2.6U	
Aroclor 1268 {5}	17.24	18.82	57151	167590	30.00	116.59	4.5J	18	RPD

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount:	20.04 g	Dilution:	1.0
Prep Final Vol:	2 ml	Unit Factor:	1
Solids:	66.3 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report

Bottle ID:		Tier:	I	Matrix:	SEDIMENT
Prod Code:	8082 PCB_LL	Collect Date:	06/19/2007	Receive Date:	06/22/2007

Analysis Lot:	KWG0708132	Prep Lot:	KWG0707164	Report Group:	K0705409
Analysis Method:	8082	Prep Method:	EPA 3540C		
Prep Ref:	613930	Prep Date:	07/02/2007		

Quant Method:	\\CASH1\ACQU\DATA\GC09\DATA\072607.B\072007_F.M	Calibration ID:	CAL6451
Title:	Polychlorinated Biphenyls (PCBs)	Report List ID:	LJ2797
MB Ref:	J:\GC09\DATA\072307.B\0723F024.D	Method ID:	MJ150
		Quant based on Report List	

Data File #1:	J:\GC09\DATA\072607.B\0726F011.D	Instrument:	GC09.i
Data File #2:	\\Cash1\Acqudata\GC09\data\072607_r.b\0726R011.D	Vial:	7
Acqu Date:	07/26/2007 21:30	Quant Date:	07/31/2007 13:50
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-008	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Surrogate Compounds

Parameter Name	RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2		Rpt
Decachlorobiphenyl	18.58 ^{+0.02}	20.19 ^{+0.00}	659118	367428m	102.06	74.58		102OK
			%Recovery =		102OK	75OK	Limits =	33-141

Target Compounds

				Final Conc. Units:		ug/Kg Dry Weight			
Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016			0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1016 {1}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {2}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {3}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {4}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {5}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221			0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1221 {1}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221 {2}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221 {3}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221 {4}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232			0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1232 {1}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232 {2}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232 {3}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232 {4}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1242			0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1242 {1}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1242 {2}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1242 {3}			0d	0d	0.0000	0.0000	5.4U	5.4U	

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File #1:	J:\GC09\DATA\072607.B\0726F011.D	Instrument:	GC09.i
Data File #2:	\\Cash1\Acqudata\GC09\data\072607_r.b\0726R011.D	Vial:	7
Acqu Date:	07/26/2007 21:30	Quant Date:	07/31/2007 13:50
Run Type:	SMPL	Dilution:	1.0
Lab ID:	K0705409-008	Soln Conc. Units:	ng/mL
Signal #1:	DB-35MS	Signal #2:	DB-XLB

Target Compounds

Final Conc. Units: ug/Kg Dry Weight

Parameter Name	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1242 {5}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1248			0	0	302.02	414.78	190	260	190
Aroclor 1248 {1}	7.70	8.29	43270m	43753m	274.34	348.20	170	220	
Aroclor 1248 {2}	8.14	8.59	67629m	62723m	308.16	488.09	190	300	
Aroclor 1248 {3}	8.45	9.45	35684m	102853m	185.47	364.17	120	230	
Aroclor 1248 {4}	8.82	9.56	82881m	87998m	294.83	458.67	180	290	
Aroclor 1248 {5}	8.92	9.85	158776m	0m	447.28	0.0000	280	5.4U	
Aroclor 1254			0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1254 {1}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {2}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {3}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {4}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {5}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1260			0	0	567.53	701.31	350	440	440
Aroclor 1260 {1}	10.43 ^{+0.00}	10.99	187209m	180671m	481.38	766.90	300	480	
Aroclor 1260 {2}	10.75 ^{+0.00}	11.53	297332m	228027m	669.33	859.46	420	540	
Aroclor 1260 {3}	11.56 ^{+0.00}	12.21 ^{+0.00}	0m	0m	0.0000	0.0000	5.4U	5.4U	
Aroclor 1260 {4}	12.35	12.43 ^{+0.00}	130688m	102892m	463.41	579.74	290	360	
Aroclor 1260 {5}	12.89 ^{+0.00}	13.89 ^{+0.00}	388343m	245062m	656.02	599.15	410	370	
Aroclor 1262			0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1262 {1}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1262 {2}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1262 {3}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1262 {4}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1262 {5}			0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1268			0	0	125.68	199.20	78	120	120P
Aroclor 1268 {1}	14.06	15.15	0m	143291	0.0000	238.20	5.4U	150	
Aroclor 1268 {2}	14.86	16.03	46889m	71893	71.70	146.75	45	92	
Aroclor 1268 {3}	15.24	16.40	33133m	0	199.67	0.0000	120	5.4U	
Aroclor 1268 {4}	15.88	17.25	0m	0	0.0000	0.0000	5.4U	5.4U	
Aroclor 1268 {5}	17.24	18.81	201365m	305662	105.69	212.64	66	130	

The +/- after Retention Time symbolize the direction of the RT shift

Prep Amount:	6.25 g	Dilution:	1.0
Prep Final Vol:	2 ml	Unit Factor:	1
Solids:	51.3 %		

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / (Prep Amount x Solids)) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

September 25, 2007

Dr. Loan Vo
Columbia Analytical Services, Inc
1317 South 13th Avenue
Kelso, WA 98626

CAS/Houston SR: K0705409
Project: Portland Harbor Inline Samp

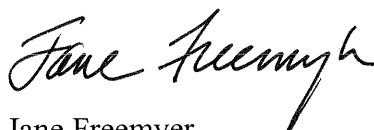
Dear Dr. Vo,

Enclosed please find the results of the samples submitted to our laboratory for HRMS testing on June 26, 2007. For your reference, these analyses have been assigned our service request number K0705409.

All analyses were performed according to our laboratory's quality assurance program. The test results meet the requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 23. You may also contact me via email at jfreemyer@houston.caslab.com.

Respectfully submitted,
COLUMBIA ANALYTICAL SERVICES, INC



Jane Freemyer
Project Manager

Page 1 of 39



Certificate of Analysis

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

COLUMBIA ANALYTICAL SERVICES, INC

Client: City of Portland
Project: Portland Harbor Inline Samp
Sample Matrix: Solid

Service Request No.: K0705409
Date Received: 06/27/07

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier I. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two solid samples were received for analysis at Columbia Analytical Services on 06/27/07.

The samples were received at 2°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Y flags – Labeled Standards

Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

MS/MSD

EQ0700300: Laboratory Control Spike /Laboratory Control Spike Duplicate (LCS/LCSD) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch. The LCS/LCSD results are not included in this report.

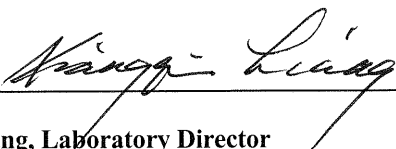
MRL

Both samples were re-extracted due to recoveries of labeled standards outside the acceptance criteria. The sample was extracted using a smaller sample aliquot.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Approved by



Date

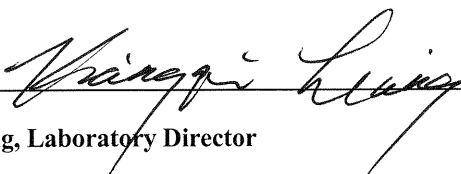
9/26/07

Xiangqiu Liang, Laboratory Director

Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

Approved by



Date

9/26/07

Xiangqiu Liang, Laboratory Director

Client: Portland, City of
Project: Portland Harbor Inline Samp

Service Request: K0705409

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K0705409-001	FO 070803	06/21/07	09:45
K0705409-002	FO 070804	06/18/07	15:03
K0705409-003	FO 070805	06/19/07	11:47
K0705409-004	FO 070806	06/19/07	16:02
K0705409-005	FO 070807	06/19/07	14:35
K0705409-006	FO 070808	06/20/07	09:15
K0705409-007	FO 070809	06/20/07	12:58
K0705409-008	FO 070810	06/19/07	09:20

Data Qualifier Flags

- ❖ B Used when an associated analyte is found in the method blank, as well as in the sample
- ❖ C Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF. The samples requiring confirmation are indicated in the table above.
- ❖ E Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range
- ❖ J Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the detection limit (DL)
- ❖ K EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.
- ❖ U Indicates the compound was analyzed and not detected.
- ❖ X User defined; see case narrative for detailed explanation
- ❖ Y Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.
- ❖ * Indicates concentration is reported as 'Not Detected'
- ❖ S Peak is saturated; data not reportable
- ❖ Q Lock-mass interference by ether compounds

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID

K0705409

First Level - Data Processing - to be filled by person generating the forms

Date

lee

Person 1

9/13/07

Date

Person 2

Second Level - Data Review - to be filled by person doing peer review

Date

mc

Primary Data Reviewer

9/18/07

Date

Secondary Data Reviewer

Project Level - Review - to be filled by person doing project compliance review

Date

Reviewer



Analytical Results

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409**Date Collected:****Date Received:**

Sample Name: Method Blank
Lab Code: EQ0700300-01

Units: ng/Kg**Basis:** Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 5.000g
Percent Solids:
Data File Name: U211737
ICAL Name: U609251668I

Date Analyzed: 9/12/07 1927
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211736

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND U	1.85	40.0			1
PCB 2	ND U	2.21	2.00			1
PCB 3	ND U	2.56	40.0			1
PCB 4	ND U	12.8	100			1
PCB 10	ND U	11.1	10.0			1
PCB 9	ND U	35.6	10.0			1
PCB 7	ND U	31.3	10.0			1
PCB 6	ND U	35.4	10.0			1
PCB 5	ND U	33.8	10.0			1
PCB 8	ND U	34.3	100			1
PCB 14	ND U	37.4	20.0			1
PCB 11	ND U	42.0	40.0			1
PCBs 12 + 13	ND U	37.6	40.0			1
PCB 15	ND U	65.4	100			1
PCB 19	ND U	9.15	20.0			1
PCBs 18 + 30	15.3 JK	9.52	200	1.28	1.090	1
PCB 17	ND U	11.7	40.0			1
PCBs 27 + 24	ND U	8.27	80.0			1
PCB 16	ND U	13.9	20.0			1
PCB 32	ND U	7.71	40.0			1
PCB 34	ND U	6.56	40.0			1
PCB 23	ND U	23.6	40.0			1
PCBs 26 + 29	ND U	20.8	80.0			1
PCB 25	ND U	21.9	40.0			1
PCB 31	ND U	20.2	100			1
PCBs 20 + 28	ND U	17.7	200			1
PCBs 21 + 33	ND U	21.1	80.0			1
PCB 22	ND U	18.2	40.0			1
PCB 36	ND U	16.9	40.0			1
PCB 39	ND U	15.6	40.0			1
PCB 38	ND U	17.6	40.0			1
PCB 35	ND U	18.4	40.0			1
PCB 37	ND U	17.7	100			1
PCB 54	ND U	4.38	100			1

Comments:

DB 9/25

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409**Date Collected:****Date Received:**

Sample Name: Method Blank
Lab Code: EQ0700300-01

Units: ng/Kg**Basis:** Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 5.000g
Percent Solids:
Data File Name: U211737
ICAL Name: U609251668I

Date Analyzed: 9/12/07 1927
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211736

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 50 + 53	ND U	1.87	80.0			1
PCBs 45 + 51	ND U	1.85	80.0			1
PCB 46	ND U	2.05	40.0			1
PCBs 52 + 43 + 73	ND U	1.52	240			1
PCBs 49 + 69	3.22 JK	1.38	200	0.95	1.232	1
PCB 48	ND U	1.61	40.0			1
PCBs 44 + 47 + 65	ND U	1.49	300			1
PCBs 59 + 62 + 75	ND U	1.28	120			1
PCB 42	ND U	2.60	40.0			1
PCBs 41 + 71 + 40	ND U	1.89	300			1
PCB 64	ND U	1.98	40.0			1
PCB 72	ND U	0.735	100			1
PCB 68	ND U	0.677	100			1
PCB 57	ND U	0.769	100			1
PCB 58	ND U	0.542	100			1
PCB 67	ND U	0.941	100			1
PCB 63	ND U	0.715	100			1
PCBs 70 + 61 + 74 + 76	21.5 J	0.704	400	0.65	0.880	1
PCB 66	10.9 J	0.688	100	0.84	0.891	1
PCB 55	ND U	0.791	100			1
PCB 56	6.69 J	0.734	40.0	0.72	0.912	1
PCB 60	2.83 J	0.723	100	0.80	0.917	1
PCB 80	ND U	0.624	100			1
PCB 79	ND U	0.679	100			1
PCB 78	ND U	0.742	100			1
PCB 81	ND U	0.356	100			1
PCB 77	ND U	0.373	100			1
PCB 104	ND U	1.23	100			1
PCB 96	ND U	0.233	100			1
PCB 103	ND U	1.11	100			1
PCB 94	ND U	1.21	100			1
PCBs 95 + 93 + 100	5.95 J	1.16	300	1.64	1.114	1
PCBs 98 + 102	ND U	1.02	200			1
PCBs 88 + 91	ND U	1.15	200			1

Comments:

QR 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409**Date Collected:****Date Received:**

Sample Name: Method Blank
Lab Code: EQ0700300-01

Units: ng/Kg**Basis:** Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 5.000g
Percent Solids:
Data File Name: U211737
ICAL Name: U609251668I

Date Analyzed: 9/12/07 1927
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211736

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 84	ND U	1.29	100			1
PCB 89	ND U	1.31	100			1
PCB 121	ND U	0.809	100			1
PCB 92	ND U	1.21	100			1
PCBs 90 + 101 + 113	ND U	0.933	600			1
PCBs 83 + 99	6.71 J	0.855	200	1.47	0.891	1
PCB 112	ND U	1.25	200			1
PCBs 86 + 87 + 97 + 108 + 119 + 125	ND U	0.923	600			1
PCBs 85 + 116 + 117	ND U	1.13	120			1
PCBs 110 + 115	4.91 J	1.11	400	1.45	0.928	1
PCB 82	ND U	1.76	100			1
PCB 111	ND U	0.770	200			1
PCB 120	ND U	0.769	100			1
PCBs 107 + 124	ND U	1.59	400			1
PCB 109	ND U	1.22	40.0			1
PCB 123	ND U	1.11	100			1
PCB 106	ND U	2.47	100			1
PCB 118	13.8 J	1.03	100	1.49	1.000	1
PCB 122	ND U	1.43	100			1
PCB 114	ND U	1.19	100			1
PCB 105	7.82 J	1.06	40.0	1.62	1.000	1
PCB 127	ND U	1.61	200			1
PCB 126	ND U	1.07	100			1
PCB 155	ND U	0.667	200			1
PCBs 152 + 150	ND U	0.372	400			1
PCB 136	ND U	0.496	40.0			1
PCB 145	ND U	0.314	200			1
PCB 148	ND U	0.520	200			1
PCBs 135 + 151 + 154	ND U	0.458	300			1
PCB 144	ND U	0.532	100			1
PCBs 134 + 147 + 149	23.8 J	0.743	300	1.18	1.135	1
PCB 143	ND U	0.327	100			1
PCBs 139 + 140	ND U	0.489	200			1
PCBs 131 + 142	ND U	0.653	300			1

Comments:

SB 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409**Date Collected:****Date Received:**

Sample Name: Method Blank
Lab Code: EQ0700300-01

Units: ng/Kg**Basis:** Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 5.000g
Percent Solids:
Data File Name: U211737
ICAL Name: U609251668I

Date Analyzed: 9/12/07 1927
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211736

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 132	9.61 J	0.596	100	1.33	1.177	1
PCB 133	ND U	0.613	100			1
PCB 165	ND U	0.425	200			1
PCB 146	ND U	0.334	100			1
PCB 161	ND U	0.718	200			1
PCBs 153 + 168	22.1 J	0.392	200	1.32	0.902	1
PCB 141	6.46 JK	0.636	40.0	1.47	0.908	1
PCB 130	ND U	0.560	100			1
PCB 137	ND U	0.411	200			1
PCB 164	ND U	0.538	100			1
PCBs 129 + 138 + 160 + 163	40.5 J	0.459	400	1.31	0.933	1
PCB 158	4.50 J	0.382	40.0	1.34	0.941	1
PCBs 128 + 166	ND U	0.471	200			1
PCB 159	ND U	1.40	200			1
PCB 162	ND U	1.38	200			1
PCB 167	1.35 J	0.704	100	1.09	1.001	1
PCBs 156 + 157	6.67 J	1.50	200	1.32	0.999	1
PCB 169	ND U	1.71	100			1
PCB 188	ND U	0.603	100			1
PCB 179	ND U	0.559	100			1
PCB 184	ND U	0.484	200			1
PCB 176	ND U	0.560	200			1
PCB 186	ND U	0.524	200			1
PCB 178	ND U	1.57	100			1
PCB 175	ND U	2.31	200			1
PCB 187	43.0 J	1.69	100	1.04	1.109	1
PCB 182	ND U	2.76	200			1
PCB 183	ND U	4.88	200			1
PCB 185	ND U	8.91	200			1
PCB 174	ND U	8.52	100			1
PCB 177	ND U	8.06	100			1
PCB 181	ND U	6.83	200			1
PCBs 171 + 173	ND U	7.56	400			1
PCB 172	ND U	8.48	200			1

Comments:

AB 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409**Date Collected:****Date Received:**

Sample Name: Method Blank
Lab Code: EQ0700300-01

Units: ng/Kg**Basis:** Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 5.000g
Percent Solids:
Data File Name: U211737
ICAL Name: U609251668I

Date Analyzed: 9/12/07 1927
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211736

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 192	ND U	6.22	200			1
PCBs 180 + 193	ND U	6.32	200			1
PCB 191	ND U	6.21	200			1
PCB 170	ND U	8.75	100			1
PCB 190	ND U	6.40	100			1
PCB 189	ND U	7.28	100			1
PCB 202	1.34 JK	1.13	200	0.61	1.000	1
PCB 201	ND U	1.08	200			1
PCB 204	ND U	1.05	200			1
PCBs 197 + 200	ND U	1.04	400			1
PCBs 198 + 199	ND U	1.47	200			1
PCB 196	ND U	1.39	200			1
PCB 203	ND U	1.53	200			1
PCB 195	ND U	1.72	200			1
PCB 194	ND U	1.72	100			1
PCB 205	ND U	1.59	200			1
PCB 208	ND U	1.43	200			1
PCB 207	ND U	1.32	200			1
PCB 206	ND U	15.7	200			1
PCB 209	ND U	2.58	100			1

Comments:*DR 9/25/07*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K0705409

Date Collected:

Date Received:

Sample Name: Method Blank
 Lab Code: EQ0700300-01

Units: ng/Kg

Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
 Prep Method: Method
 Sample Amount: 5.000g
 Percent Solids:
 Data File Name: U211737
 ICAL Name: U609251668I

Date Analyzed: 9/12/07 1927
 Date Extracted: 8/21/07
 Instrument Name: E-HRMS-02
 GC Column: SPB-OCTYL
 Blank File Name: U211737
 Cal Ver. File Name: U211736

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	343.085	17		15-150	3.01	0.762
PCB 3L	2000	370.823	19		15-150	2.84	0.882
PCB 4L	2000	416.919	21	Y	25-150	1.48	0.896
PCB 15L	2000	169.966	8	Y	25-150	1.46	1.231
PCB 19L	2000	303.708	15	Y	25-150	0.97	1.073
PCB 37L	2000	759.276	38		25-150	1.05	1.087
PCB 54L	2000	811.633	41		25-150	0.74	0.825
PCB 81L	2000	2115.732	106		25-150	0.74	1.335
PCB 77L	2000	2057.654	103		25-150	0.75	1.361
PCB 104L	2000	147.573	7	Y	25-150	1.44	0.823
PCB 123L	2000	705.077	35		25-150	1.44	1.142
PCB 118L	2000	721.124	36		25-150	1.42	1.153
PCB 114L	2000	638.525	32		25-150	1.52	1.169
PCB 105L	2000	714.383	36		25-150	1.53	1.194
PCB 126L	2000	726.232	36		25-150	1.43	1.289
PCB 155L	2000	372.635	19	Y	25-150	1.19	0.790
PCB 167L	2000	632.836	32		25-150	1.21	1.072
PCBs 156L + 157L	4000	1155.873	29		25-150	1.24	1.105
PCB 169L	2000	292.443	15	Y	25-150	1.30	1.186
PCB 188L	2000	2164.989	108		25-150	1.00	0.717
PCB 189L	2000	928.830	46		25-150	0.99	0.961
PCB 202L	2000	2026.640	101		25-150	0.92	0.818
PCB 205L	2000	1021.143	51		25-150	0.88	1.009
PCB 208L	2000	916.432	46		30-135	0.83	0.945
PCB 206L	2000	1220.566	61		30-135	0.77	1.040
PCB 209L	2000	1324.260	66		30-135	1.22	1.067
PCB 28L	2000	446.653	22	Y	25-150	0.82	0.929
PCB 111L	2000	785.142	39		25-150	1.55	1.079
PCB 178L	2000	913.840	46		25-150	1.01	1.006

Comments:

AR 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ng/Kg
Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1.926g
Percent Solids: 37.9
Data File Name: U211749
ICAL Name: U609251668I

Date Analyzed: 9/13/07 1213
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211747

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND U	36.1	274			1
PCB 2	ND U	42.9	13.7			1
PCB 3	ND U	51.0	274			1
PCB 4	ND U	0.00	685			1
PCB 10	ND U	1190	68.5			1
PCB 9	ND U	1280	68.5			1
PCB 7	ND U	1120	68.5			1
PCB 6	ND U	1270	68.5			1
PCB 5	ND U	1210	68.5			1
PCB 8	ND U	1230	685			1
PCB 14	ND U	1340	137			1
PCB 11	ND U	0.00	274			1
PCBs 12 + 13	ND U	1350	274			1
PCB 15	ND U	1290	685			1
PCB 19	ND U	160	137			1
PCBs 18 + 30	614 JK	144	1370	0.87	1.097	1
PCB 17	ND U	176	274			1
PCBs 27 + 24	ND U	125	548			1
PCB 16	ND U	209	137			1
PCB 32	220 J	116	274	1.18	1.171	1
PCB 34	ND U	98.9	274			1
PCB 23	ND U	208	274			1
PCBs 26 + 29	ND U	184	548			1
PCB 25	ND U	194	274			1
PCB 31	726	178	685	0.92	0.845	1
PCBs 20 + 28	527 J	156	1370	1.06	0.853	1
PCBs 21 + 33	310 J	186	548	0.93	0.864	1
PCB 22	203 J	161	274	1.19	0.878	1
PCB 36	ND U	150	274			1
PCB 39	ND U	138	274			1
PCB 38	ND U	156	274			1
PCB 35	ND U	163	274			1
PCB 37	243 J	150	685	1.08	1.000	1
PCB 54	ND U	32.3	685			1

Comments: SR 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ng/Kg
Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1.926g
Percent Solids: 37.9
Data File Name: U211749
ICAL Name: U609251668I

Date Analyzed: 9/13/07 1213
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211747

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 50 + 53	175 J	24.8	548	0.72	1.099	1
PCBs 45 + 51	104 JK	24.6	548	0.50	1.131	1
PCB 46	ND U	27.2	274			1
PCBs 52 + 43 + 73	791 J	20.1	1640	0.71	1.205	1
PCBs 49 + 69	281 J	18.3	1370	0.72	1.225	1
PCB 48	27.6 J	21.4	274	0.65	1.236	1
PCBs 44 + 47 + 65	210 JK	19.8	2050	0.51	1.250	1
PCBs 59 + 62 + 75	132 JK	17.0	822	1.16	1.256	1
PCB 42	ND U	34.6	274			1
PCBs 41 + 71 + 40	204 J	25.1	2050	0.65	1.300	1
PCB 64	487	26.3	274	0.80	1.309	1
PCB 72	ND U	47.5	685			1
PCB 68	ND U	43.8	685			1
PCB 57	ND U	49.7	685			1
PCB 58	ND U	35.0	685			1
PCB 67	ND U	60.8	685			1
PCB 63	ND U	46.3	685			1
PCBs 70 + 61 + 74 + 76	909 J	45.5	2740	0.77	0.879	1
PCB 66	355 J	44.5	685	0.78	0.888	1
PCB 55	ND U	51.2	685			1
PCB 56	183 JK	47.4	274	0.91	0.910	1
PCB 60	92.6 J	46.8	685	0.79	0.914	1
PCB 80	ND U	40.3	685			1
PCB 79	ND U	43.9	685			1
PCB 78	ND U	48.0	685			1
PCB 81	ND U	42.7	685			1
PCB 77	ND U	42.4	685			1
PCB 104	ND U	15.0	685			1
PCB 96	ND U	13.3	685			1
PCB 103	ND U	42.8	685			1
PCB 94	ND U	46.7	685			1
PCBs 95 + 93 + 100	1350 J	44.7	2050	1.65	1.118	1
PCBs 98 + 102	ND U	39.1	1370			1
PCBs 88 + 91	ND U	44.0	1370			1

Comments:

RB 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ng/Kg
Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1.926g
Percent Solids: 37.9
Data File Name: U211749
ICAL Name: U609251668I

Date Analyzed: 9/13/07 1213
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211747

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 84	ND U	49.4	685			1
PCB 89	207 J	50.2	685	1.47	1.149	1
PCB 121	177 J	31.1	685	1.38	1.160	1
PCB 92	223 J	46.7	685	1.64	0.861	1
PCBs 90 + 101 + 113	1380 J	35.9	4110	1.64	0.876	1
PCBs 83 + 99	413 J	32.8	1370	1.75	0.890	1
PCB 112	ND U	47.9	1370			1
PCBs 86 + 87 + 97 + 108 + 119 + 125	1220 J	35.5	4110	1.62	0.913	1
PCBs 85 + 116 + 117	129 JK	43.4	822	1.82	0.927	1
PCBs 110 + 115	1510 J	42.6	2740	1.60	0.932	1
PCB 82	ND U	67.7	685			1
PCB 111	ND U	29.6	1370			1
PCB 120	ND U	29.6	685			1
PCBs 107 + 124	ND U	53.4	2740			1
PCB 109	ND U	41.1	274			1
PCB 123	ND U	52.1	685			1
PCB 106	ND U	83.1	685			1
PCB 118	701	48.4	685	1.35	1.002	1
PCB 122	ND U	48.2	685			1
PCB 114	ND U	66.9	685			1
PCB 105	301	48.4	274	1.59	1.000	1
PCB 127	ND U	54.3	1370			1
PCB 126	ND U	53.5	685			1
PCB 155	ND U	7.27	1370			1
PCBs 152 + 150	ND U	6.75	2740			1
PCB 136	ND U	8.99	274			1
PCB 145	187 J	5.70	1370	1.15	1.035	1
PCB 148	ND U	9.43	1370			1
PCBs 135 + 151 + 154	677 J	8.30	2050	1.17	1.105	1
PCB 144	ND U	9.65	685			1
PCBs 134 + 147 + 149	ND U	74.0	2050			1
PCB 143	954	32.6	685	1.24	1.134	1
PCBs 139 + 140	ND U	48.6	1370			1
PCBs 131 + 142	ND U	65.0	2050			1

Comments:

AB 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ng/Kg
Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1.926g
Percent Solids: 37.9
Data File Name: U211749
ICAL Name: U609251668I

Date Analyzed: 9/13/07 1213
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211747

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 132	ND U	59.3	685			1
PCB 133	486 J	61.1	685	1.18	1.178	1
PCB 165	159 J	42.3	1370	1.21	0.887	1
PCB 146	ND U	33.3	685			1
PCB 161	ND U	71.5	1370			1
PCBs 153 + 168	1490	39.0	1370	1.24	0.901	1
PCB 141	365	63.4	274	1.35	0.907	1
PCB 130	ND U	55.8	685			1
PCB 137	ND U	40.9	1370			1
PCB 164	110 J	53.6	685	1.24	0.926	1
PCBs 129 + 138 + 160 + 163	1570 J	45.7	2740	1.28	0.932	1
PCB 158	110 JK	38.0	274	1.62	0.940	1
PCBs 128 + 166	115 J	46.9	1370	1.20	0.964	1
PCB 159	ND U	32.2	1370			1
PCB 162	ND U	31.6	1370			1
PCB 167	ND U	31.1	685			1
PCBs 156 + 157	138 J	37.5	1370	1.19	1.000	1
PCB 169	ND U	31.8	685			1
PCB 188	ND U	12.0	685			1
PCB 179	475 JK	10.6	685	0.85	1.015	1
PCB 184	ND U	9.17	1370			1
PCB 176	117 JK	10.6	1370	0.81	1.038	1
PCB 186	ND U	9.95	1370			1
PCB 178	458 JK	29.7	685	0.85	1.086	1
PCB 175	ND U	43.8	1370			1
PCB 187	ND U	32.1	685			1
PCB 182	7350	52.3	1370	0.90	1.109	1
PCB 183	ND U	28.3	1370			1
PCB 185	ND U	51.6	1370			1
PCB 174	682 J	49.4	685	0.95	1.125	1
PCB 177	964	46.6	685	0.94	1.135	1
PCB 181	319 J	39.6	1370	0.96	1.146	1
PCBs 171 + 173	143 J	43.8	2740	0.97	1.162	1
PCB 172	76.1 J	49.1	1370	0.89	0.899	1

Comments:

DB 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ng/Kg
Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1.926g
Percent Solids: 37.9
Data File Name: U211749
ICAL Name: U609251668I

Date Analyzed: 9/13/07 1213
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211747

Analyte Name	Result Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 192	ND U	36.0	1370			1
PCBs 180 + 193	1670	36.6	1370	0.92	0.912	1
PCB 191	ND U	36.0	1370			1
PCB 170	419 J	50.6	685	0.89	0.939	1
PCB 190	151 J	37.1	685	0.97	0.949	1
PCB 189	ND U	34.9	685			1
PCB 202	277 JK	9.25	1370	0.72	1.000	1
PCB 201	160 JK	7.09	1370	0.72	1.022	1
PCB 204	23.2 JK	6.89	1370	0.44	1.043	1
PCBs 197 + 200	148 J	6.86	2740	0.77	1.048	1
PCBs 198 + 199	879 J	9.66	1370	0.78	1.113	1
PCB 196	284 J	9.12	1370	1.02	0.917	1
PCB 203	608 JK	10.1	1370	0.72	0.920	1
PCB 195	161 J	11.3	1370	0.83	0.947	1
PCB 194	417 J	11.3	685	0.81	0.991	1
PCB 205	ND U	7.26	1370			1
PCB 208	113 J	7.36	1370	0.67	1.001	1
PCB 207	43.2 J	6.88	1370	0.80	1.019	1
PCB 206	232 J	19.3	1370	0.65	1.000	1
PCB 209	75.8 J	20.7	685	1.20	1.000	1

Comments:

AB 9/25/07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K0705409
Date Collected: 06/18/2007
Date Received: 06/22/2007

Sample Name: FO 070804
Lab Code: K0705409-002

Units: ng/Kg
Basis: Dry

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1.926g
Percent Solids: 37.9
Data File Name: U211749
ICAL Name: U609251668I

Date Analyzed: 9/13/07 1213
Date Extracted: 8/21/07
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U211737
Cal Ver. File Name: U211747

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	434.884	22		15-150	3.13	0.760
PCB 3L	2000	385.789	19		15-150	3.58	0.880
PCB 4L	2000	553.708	28		25-150	1.49	0.895
PCB 15L	2000	731.855	37		25-150	1.50	1.232
PCB 19L	2000	831.802	42		25-150	0.99	1.070
PCB 37L	2000	801.551	40		25-150	1.13	1.092
PCB 54L	2000	832.521	42		25-150	0.71	0.831
PCB 81L	2000	899.140	45		25-150	0.74	1.347
PCB 77L	2000	923.467	46		25-150	0.76	1.372
PCB 104L	2000	1025.986	51		25-150	1.46	0.820
PCB 123L	2000	893.216	45		25-150	1.46	1.144
PCB 118L	2000	940.201	47		25-150	1.53	1.154
PCB 114L	2000	714.306	36		25-150	1.42	1.171
PCB 105L	2000	872.432	44		25-150	1.48	1.195
PCB 126L	2000	776.682	39		25-150	1.44	1.292
PCB 155L	2000	1301.608	65		25-150	1.22	0.789
PCB 167L	2000	1075.802	54		25-150	1.27	1.074
PCBs 156L + 157L	4000	2190.315	55		25-150	1.21	1.104
PCB 169L	2000	1030.459	52		25-150	1.22	1.187
PCB 188L	2000	1261.646	63		25-150	0.99	0.718
PCB 189L	2000	899.152	45		25-150	1.05	0.962
PCB 202L	2000	1124.684	56		25-150	0.90	0.820
PCB 205L	2000	1167.205	58		25-150	0.92	1.009
PCB 208L	2000	1073.387	54		30-135	0.80	0.946
PCB 206L	2000	1414.999	71		30-135	0.77	1.040
PCB 209L	2000	1382.433	69		30-135	1.14	1.066
PCB 28L	2000	1005.066	50		25-150	0.96	0.930
PCB 111L	2000	1377.650	69		25-150	1.54	1.080
PCB 178L	2000	1383.842	69		25-150	1.01	1.007

Comments:

AB 9/25/07

USEPA - CLP
Form3
PCB TOTAL HOMOLOGOUS CONCENTRATION

CLIENT ID.

FO 070804

Lab Name: Columbia Analytical Services	Contract:
Lab Code: CAS Case No.:	Lab ID: K0705409-002RE
Client Name: CITY OF PORTLAND	Sample Wt/Vol: 1.926 g
Matrix(Solid/Aqueous/Waste/Ash): solid	Initial Calibration Date: 09/25/06
Sample Receipt Date: 6/27/2007	Instrument ID: AutoSpec-Ultima
Ext. Date 8/21/2007	GC Column ID: SPB-OCTYL
Ext. Vol(ul): 20.0 Inj. Vol(ul): 1.0	Sample Date Filename: U211749
Analysis Date: 13-Sep-07	Blank Data Filename: U211737
Dilution Factor: 1	Cal. Ver. Date Filename: U211747
CONCENTRATION UNITS: (pg/L or ng/Kg)	ng/Kg %Moisture 62.1

TARGET ANALYTE	CONCENTRATION
Tot MoCB	0.00
Tot DiCB	0.00
Tot TriCB	2843.29
Tot TeCB	3951.27
Tot PeCB	7604.98
Tot HxCB	6361.97
Tot HpCB	12828.45
Tot OcCB	2956.27
Tot NoCB	388.22
Tot DeCB	75.84
Total PCB	37010.29



Chain-of-custody

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 360-577-7222 • FAX 360-636-1068

CAS Contact: Loan Vo, Ph.D.

Project Name: Portland Harbor Inline Samp
 Project Number:
 Project Manager: Jennifer Shackelford
 Company: Portland, City of

CI Biphen Cong
 1668A

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample		Date Received	Send To
				Date	Time		
K0705409-001	FO 070803		Sediment	06/21/07	0945	06/22/07	HOUSTON
K0705409-002	FO 070804		Sediment	06/18/07	1503	06/22/07	HOUSTON

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Test Comments

CI Biphen Cong - 1668A K0705409-001,2 All 209 Congeners. Kelso perform TS.

Special Instructions/Comments	Turnaround Requirements RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 STANDARD Requested FAX Date: Requested Report Date: 07/09/07	Report Requirements I. Results Only II. Results + QC Summaries III. Results + QC and Calibration Summaries IV. Data Validation Report with Raw Data PQL/MDL/J N EDD N	Invoice Information PO# K0705409 Bill to

Relinquished By: Amanda Gull 6-26-07 0700 Received By: [Signature] 6/27/07 Airbill Number: 10:00 20

Service Request Summary

Folder #: K0705409
Client Name: Portland, City of
Project Name: Portland Harbor Inline Samp
Project Number:
Report To: Jennifer Shackelford
 Portland, City of
 1120 SW Fifth Avenue # 600
 Portland, OR 97204
 503-823-5614
Phone Number:
Cell Number:
Fax Number: 503-823-4500
E-mail: jennifers@bes.ci.portland.or.us

Project Chemist: Jane Freemyer
Originating Lab: KELSO
Logged By: AJUELL
Date Received: 06/22/2007
Internal Due Date: 07/09/2007
QAPP: LAB QAP
Qualifier Set: CAS Standard
Formset: CAS Standard
Merged?: Y
Report to MDL?: N
P.O. Number: 36238
EDD: ~~Not EDD Specified~~ Basic w/QC OF 7/5/7

8 - 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
 2 - 2 oz-Glass Jar WM CLEAR Teflon Liner 4-deg C
Location: K-HERK-H3, In Lab, E-WIC01

CAS Samp No.	Client Samp No.	Matrix	Collected	Sub Sample/ Subsample	KELSO	KELSO	KELSO	KELSO	KELSO	KELSO	KELSO	SVM
K0705409-001	FO 070803	Sediment	6/21/07 0945									CI Biphen Cong/ 1668A
K0705409-002	FO 070804	Sediment	6/18/07 1503	I	I	I	I	I(C)				Total Solids/ TS-MET
K0705409-003	FO 070805	Sediment	6/19/07 1147									
K0705409-004	FO 070806	Sediment	6/19/07 1602	I	I							
K0705409-005	FO 070807	Sediment	6/19/07 1435	I	I			I				
K0705409-006	FO 070808	Sediment	6/20/07 0915	I	I							
K0705409-007	FO 070809	Sediment	6/20/07 1258	I	I			I(C)				
K0705409-008	FO 070810	Sediment	6/19/07 0920									

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	Sub Sample/Subsample	2	Sub sample for Houston
Metals	Metals T/6020	5	Al,Sb,As,Cd,Cr,Cu,Pb,Mn,Ni,Ag,Zn
Metals	Metals T/6020	2, 7	Al,Sb,As,Cd,Cr,Cu,Pb,Mn,Ni,Ag,Zn. Please let ORGANICs get to sample first.
Semivola GC	PCB_LL/8082	3, 6, 8	Limited Sample
Semivola GCMS	CI Biphen Cong/1668A	1-2	All 209 Congeners. Kelso perform TS.
TS	Total Solids/TS-MET	2-8	Limited sample. Use minimal amount of sample.

**Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form**

Work Order: K0705409

Project/Client: Portland Harbor Inline Samp/Portland, City of

Cooler received on 06/27/2007 and opened on 6/27/07 1000 by [Signature] RL GM

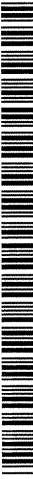
1. Were custody seals on outside of cooler?	☒ Y ☐ N	9. Did all bottle labels and tags agree with custody papers?	☒ Y ☐ N
2. Were seals intact and signature & date correct?	☒ Y ☐ N	10. Were the correct types of bottles used for the tests indicated?	☒ Y ☐ N
3. Is the shipper's airbill available and filed?	☒ Y ☐ N	11. Were all of the preserved bottles received at the lab with the appropriate pH?	☒ Y ☐ N
4. COC #	☒ Y ☐ N	12. Were VOA vials checked for absence of air bubbles, and if present, noted below?	☒ Y ☐ N
5. Were custody papers properly filled out (ink, signed, etc.)?	☒ Y ☐ N	13. Did the bottles originate from CAS/K or a branch laboratory?	☒ Y ☐ N
6. Type of packing material present	☒ Y ☐ N	14. Are CWA Microbiology samples received with >1/2 the 24 hr. hold time remaining from collection?	☒ Y ☐ N
7. Did all bottles arrive in good condition (unbroken)?	☒ Y ☐ N	15. Was Cl2/Res negative?	☒ Y ☐ N
8. Were all bottle labels complete (i.e. analysis, preservation, etc.)?	☒ Y ☐ N		

Lab Code Sample Name

K0705409-001 FO 070803

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID Barcode

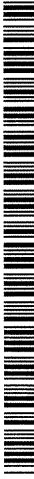
K0705409-001.04 

Test List: 1668A

TS-MET

2oz-Glass Jar WM CLEAR Teflon Liner(4-deg C)

Bottle ID Barcode

K0705409-001.05 

Test List: 1668A

TS-MET

K0705409-002 FO 070804

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID Barcode

K0705409-002.01 

Test List: 6020

7471A

8151A

8270C

8082 ASTM D4129-82M

TS-MET 8270C SIM

Expected Conditions		Received Conditions	
HS	pH Temp	Temp deg C	pH Rec HS
NA	-		NA

Expected Conditions		Received Conditions	
HS	pH Temp	Temp deg C	pH Rec HS
NA	-		

Expected Conditions		Received Conditions	
HS	pH Temp	Temp deg C	pH Rec HS
NA	-		NA

1668A
8081A
Subsample

**Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form**

Lab Code **Sample Name**
K0705409-002 FO 070804

2oz-Glass Jar WM CLEAR Teflon Liner(4-deg C)

Bottle ID **Barcode**

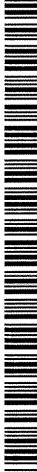
K0705409-002.02 

Test List: 6020 7471A
8151A 8270C
8082 ASTM D4129-82M
TS-MET 8270C SIM

K0705409-003 FO 070805

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID **Barcode**

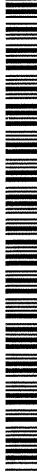
K0705409-003.01 

Test List: 8082 TS-MET

K0705409-004 FO 070806

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID **Barcode**

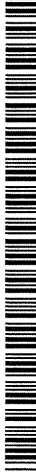
K0705409-004.01 

Test List: 8270C 8081A
ASTM D4129-82M TS-MET

K0705409-005 FO 070807

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID **Barcode**

K0705409-005.01 

Test List: 6020 7471A
8270C 8081A
ASTM D4129-82M TS-MET

K0705409-006 FO 070808

Expected Conditions **Cooler #** **Received Conditions**
HS **pH** **Temp** **Temp deg C** **pH** **Rec** **Seal**
NA - - - - - - **Intact?** **Corrective Action**

1668A
8081A
Subsample

Expected Conditions **Cooler #** **Received Conditions**
HS **pH** **Temp** **Temp deg C** **pH** **Rec** **Seal**
NA - - - - - - **Intact?** **Corrective Action**

NA - - - - - - - -

Expected Conditions **Cooler #** **Received Conditions**
HS **pH** **Temp** **Temp deg C** **pH** **Rec** **Seal**
NA - - - - - - **Intact?** **Corrective Action**

8082
8270C SIM

NA - - - - - - - -

Expected Conditions **Cooler #** **Received Conditions**
HS **pH** **Temp** **Temp deg C** **pH** **Rec** **Seal**
NA - - - - - - **Intact?** **Corrective Action**

8151A
8082
8270C SIM

NA - - - - - - - -

**Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form**

Lab Code **Sample Name**
K0705409-006 FO 070808

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID **Barcode**

K0705409-006.01 

Test List 8082 ASTM D4129-82M

K0705409-007 FO 070809

Expected Conditions		Cooler		Received Conditions		
HS	pH	Temp	#	Temp	pH	Rec HS
NA		-				NA

TS-MET

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID **Barcode**

K0705409-007.01 

Test List 6020 7471A

8270C 8081A

ASTM D4129-82M TS-MET

K0705409-008 FO 070810

Expected Conditions		Cooler		Received Conditions		
HS	pH	Temp	#	Temp	pH	Rec HS
NA		-				NA

8151A
8082
8270C SIM

8oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID **Barcode**

K0705409-008.01 

Test List 8082 TS-MET

Cooler Receipt Comments:

All tests have one or more assigned bottles

Expected Conditions		Cooler		Received Conditions		
HS	pH	Temp	#	Temp	pH	Rec HS
NA		-				NA

Preparation Information Benchsheet

Prep Run#: 53654

Team: Semivoa GCMS

Prep WorkFlow: OrgExtS(365)

Prep Method: Method

Status: Prepped

Prep Date/Time: 08/21/2007 11:52 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	EQ0700300-01	MB		1668A/Cl Biphen Cong		Sediment	5.000g	
2	EQ0700300-02	LCS		1668A/Cl Biphen Cong		Sediment	5.000g	
3	EQ0700300-03	DLCS		1668A/Cl Biphen Cong		Sediment	5.000g	
4	E0700804-001	Agro-Lig Powder, Lot # R071125	.01	1668A/Cl Biphen Cong		Soil	4.850g	Dark brown powder
5	K0704924-001	F0070711	.02	1668A/Cl Biphen Cong		Sediment	2.690g	Brown mud
6	K0704924-002	F0070712	.02	1668A/Cl Biphen Cong		Sediment	1.947g	Brown mud
7	K0704924-003	F0070713	.02	1668A/Cl Biphen Cong		Sediment	1.779g	Brown mud
8	K0705261-001	FO 070746	.02	1668A/Cl Biphen Cong		Sludge, Solid	2.013g	Black mud
9	K0705261-002	FO 070778	.02	1668A/Cl Biphen Cong		Sludge, Solid	2.106g	Black mud
10	K0705409-001	FO 070803	.07	1668A/Cl Biphen Cong		Sediment	1.761g	Black mud
11	K0705409-002	FO 070804	.04	1668A/Cl Biphen Cong		Sediment	1.926g	Black mud
12	K0706717-003	PB023-IPW011-N-after PW	.02	1668A/Cl Biphen Cong		Sediment	4.742g	Black mud
13	K0706717-006	PB024-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	5.036g	Dark brown mud
14	K0706717-009	PB036-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	5.352g	Black mud
15	K0706717-012	PB036IPW011-D-after PW	.01	1668A/Cl Biphen Cong		Sediment	5.138g	Black mud
16	K0706717-015	PB044-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	6.742g	Dark brown mud
17	K0706717-018	PB046-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	4.868g	Black mud
18	K0706717-021	PB052-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	4.488g	Dark brown mud
19	K0706717-024	PB053-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	4.635g	Black mud
20	K0706717-027	PB059-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	5.230g	Dark brown mud
21	K0706717-030	PB06A-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	5.323g	Dark brown mud
22	K0706717-033	PB06B-IPW011-N-after PW	.01	1668A/Cl Biphen Cong		Sediment	4.755g	Dark gray mud

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____

Date: _____

Received By: _____

Date: _____

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 53654
Team: Semivoa GCMS
Spiking Solutions

Prep WorkFlow: OrgExtS(365)
Prep Method: Method

Status: Prepped
Prep Date/Time: 08/21/2007 11:52 AM

Name: 1668A Clean Up Working Standard	Inventory ID	3026	Logbook Ref: B1-79-2	Expires On: 06/04/2017
---------------------------------------	--------------	------	----------------------	------------------------

E0700804-001	100.00uL	EQ0700300-01	100.00uL	EQ0700300-03	100.00uL	K0704924-001	100.00uL	K0704924-002	100.00uL
K0704924-003	100.00uL	K0705261-001	100.00uL	K0705261-002	100.00uL	K0705409-001	100.00uL	K0705409-002	100.00uL
K0706717-006	100.00uL	K0706717-009	100.00uL	K0706717-012	100.00uL	K0706717-015	100.00uL	K0706717-018	100.00uL
K0706717-024	100.00uL	K0706717-027	100.00uL	K0706717-030	100.00uL	K0706717-033	100.00uL		

Name: 1668A Labeled Working Standard	Inventory ID	3029	Logbook Ref: B1-80-5	Expires On: 08/04/2017
--------------------------------------	--------------	------	----------------------	------------------------

E0700804-001	1,000.00uL	EQ0700300-01	1,000.00uL	EQ0700300-03	1,000.00uL	K0704924-001	1,000.00uL	K0704924-002	1,000.00uL
K0704924-003	1,000.00uL	K0705261-001	1,000.00uL	K0705261-002	1,000.00uL	K0705409-001	1,000.00uL	K0705409-002	1,000.00uL
K0706717-006	1,000.00uL	K0706717-009	1,000.00uL	K0706717-012	1,000.00uL	K0706717-015	1,000.00uL	K0706717-021	1,000.00uL
K0706717-024	1,000.00uL	K0706717-027	1,000.00uL	K0706717-030	1,000.00uL	K0706717-033	1,000.00uL		

Name: 1668A Working Matrix Standard	Inventory ID	3034	Logbook Ref: B1-81-1	Expires On: 08/08/2017
-------------------------------------	--------------	------	----------------------	------------------------

EQ0700300-02	1,000.00uL	EQ0700300-03	1,000.00uL		
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Preparation Materials

Silica Gel Reagent Grade	C1-109-1 (346)	Carbon, High Purity	C1-120-005 (2763)	Glass Wool	C1-110-2 (352)
Acetone 99.5% Minimum	C1-87-2 (402)	Nonane (n-Nonane) 99%	C1-108-2 (403)	Dichloromethane (Methylene Chl	C1-108-4 (319)
Toluene 99.9% Minimum	C1-109-4 (349)	Hexane (n-Hexane) 98.5% Minirr	C1-110-1 (320)	Tridecane (n-Tridecane)	C1-106-4 (351)
Sulfuric Acid Reagent Grade	C1-109-3 (348)	Extraction Thimbles 43 x123 mm (1577)		Sand Reagent Grade	C1-99-1 (345)

Preparation Steps

Step: Extraction	Step: Acid Clean	Step: Silica Gel Clean	Step: Final Volume
Started: 8/21/07 11:52	Started: 8/30/07 12:00	Started: 9/4/07 12:00	Started: 9/11/07 06:00
Finished: 8/21/07 11:52	Finished: 8/30/07 12:00	Finished: 9/4/07 12:00	Finished: 9/11/07 12:00
By: ABIDDLE	By: ABIDDLE	By: ABIDDLE	By: ABIDDLE

Comments:

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial	Tare & Wet Sample	Tare & Dry Sample	Calculated Percent Moisture	Dry Weight	Sample Description
MB		EQ0700300-01	Method Blank	5.000						
LCS		EQ0700300-02	Lab Control Spike	5.000						
DCLS		EQ0700300-03	Lab Control Spike Dup	5.000						
1	E0700804	E0700804-001		4.850	13.080	22.911	21.306	83.67	4.06	Dark brown powder
2	K0704924	K0704924-001		2.690	12.965	20.668	17.953	64.75	1.74	Brown mud
3	K0704924	K0704924-002		1.947	13.001	23.333	19.780	65.61	1.28	Brown mud
4	K0704924	K0704924-003		1.779	13.023	22.637	18.953	61.68	1.10	Brown mud
5	K0705261	K0705261-001		2.013	12.982	22.481	19.329	66.82	1.35	Black mud
6	K0705261	K0705261-002		2.106	13.072	21.805	18.681	64.23	1.35	Black mud
7	K0705409	K0705409-001		1.761				42.80	0.75	Black mud
8	K0705409	K0705409-002		1.926				37.90	0.73	Black mud
9	K0706717	K0706717-003		4.742	13.164	17.000	14.224	27.63	1.31	Black mud
10	K0706717	K0706717-006		5.036	13.137	20.173	15.685	36.21	1.82	Dark brown mud
11	K0706717	K0706717-009		5.352	13.179	20.303	15.380	30.90	1.65	Black mud
12	K0706717	K0706717-012		5.138	13.231	20.368	15.821	36.29	1.86	Black mud
13	K0706717	K0706717-015		6.742	13.054	21.345	19.160	73.65	4.97	Dark brown mud
14	K0706717	K0706717-018		4.868	13.062	19.207	14.376	21.38	1.04	Black mud
15	K0706717	K0706717-021		4.488	13.061	19.890	16.469	49.90	2.24	Dark brown mud
16	K0706717	K0706717-024		4.635	13.132	18.709	14.407	22.86	1.06	Black mud
17	K0706717	K0706717-027		5.230	13.228	22.274	18.641	59.84	3.13	Dark brown mud
18	K0706717	K0706717-030		5.323	13.133	19.671	14.842	26.14	1.39	Dark brown mud
19	K0706717	K0706717-033		4.755	13.062	21.121	15.444	29.56	1.41	Dark gray mud
20										
21										
22										
23										
24										
25										
26										

SODIUM SULFATE C1-119-005	SAND C1-99-1	Standard:	Internal	Matrix	EXTRACTION START: 8/21/07
ACETONE C1-87-2	TRIDECANE C1-120-001	Solution ID:	B1-80-5	B1-81-1	EXTRACTION END: 8/22/07
TOLUENE C1-119-002	SULFURIC ACID C1-118-002	Volume:	1000 uL	1000 uL	EXTRACTION TECHNIQUE: Soxhlet
GLASS WOOL C1-110-2	SODIUM HYDROXIDE C1-102-005	Spiker:	ASB	ASB	
DICHLOROMETHANE C1-119-003	CARBON C1-120-005	Witness:	CID	CID	
ETHYL ACETATE C1-114-002	SILICA GEL C1-118-004	Date:	08/21/07	08/21/07	
HEXANE C1-121-001	NONANE C1-117-002	Standard:	Cleanup	Recovery	
		Solution ID:	B1-79-2	B1-80-1	TIME STARTED: 1600
		Volume:	100 uL	2.0 uL	TIME FINISHED: 0800
		Spiker:	CID		EXTRACTS RECEIVED BY <u> </u>
		Witness:	RD		
		Date:	08/24/07		DATE RECEIVED <u> </u> 9/11/07

Columbia Analytical Services, INC.

EQ0700300

1668A

Prep Run: 53654

Sulfuric Acid Cleanup: 8/24/07
Silica Gel/Carbon Column: 9/4/07

Nonconformity and Corrective Action Report

NONCONFORMITY

N&CA Report No. _____

PROCEDURE (SOP or METHOD): <u>1668A</u>	EVENT DATE: _____
EVENT: ☐ Missed Holding Time ☐ QC Failure ☐ Lab Error (spilled sample, spiking error, etc.)	
☐ Method Blank Contamination ☐ Login Error ☐ Project Management Error	
☐ Equipment Failure ☐ Unacceptable PT Sample Result ☐ Other (describe):	
SAMPLES / PROJECTS / CUSTOMERS / SYSTEMS AFFECTED <u>K0705409-001</u> <u>K0705409-002</u>	
DETAILED DESCRIPTION <u>matrix interference.</u>	
ORIGINATOR: <u>VC</u>	DATE: <u>8/21/07</u>
PROJECT CHEMIST(S): _____	NOTIFIED BY: _____ DATE: _____

CORRECTIVE ACTION AND OUTCOME

Re-establishment of conformity must be demonstrated and documented. Describe the steps that were taken, or are planned to be taken, to correct the particular Nonconformity and prevent its reoccurrence. Include Project Chemist instructions here.

use 2.0g sample to re-extract.

Is the data to be flagged in the Analytical Report with an appropriate qualifier? ☐ No ☐ Yes

APPROVAL AND NOTIFICATION

Supervisor Verification and Approval of Corrective Action <u>VC</u>	Date: <u>8/21/07</u>
Comments:	
QA PM Verification and Approval of Corrective Action <u>OK</u>	Date: <u>9/26/07</u>
Comments:	
Customer Notified by ☐ Telephone ☐ Fax ☐ E-mail ☒ Narrative ☐ Not notified	
Project Chemist Verification and Approval of Corrective Action <u>OK</u>	Date: <u>9/26/07</u>
Comments: (Retain record)	