Appendix D

Total and Dissolved PCB Analytical Data

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APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNDock0821			PMCSEDock821			PMCNRef0821			PMCNDock0821			PMCSEDock821		
Collected	8/21/2008			8/21/2008			8/21/2008			8/21/2008			8/21/2008		
Fraction	DISS			DISS			DISS			TOTAL			TOTAL		
QC Code	SA			SA			SA			SA			SA		
Sample ID	WQ-DPC-001-082108			WQ-DPC-002-082108			WQ-DPC-003-082108			WQ-TPC-001-082108			WQ-TPC-002-082108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.035	UG/L		0.034	UG/L		0.056	UG/L		0.069	UG/L		0.067	UG/L	
2,2',5-Tricb (PCB 18)	0.061	UG/L		0.057	UG/L		0.094	UG/L		0.123	UG/L		0.119	UG/L	
2,4,4'-Tricb (PCB 28)	0.044	UG/L		0.038	UG/L		0.068	UG/L		0.149	UG/L		0.133	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.02	UG/L		0.017	UG/L		0.02	UG/L		0.093	UG/L		0.08	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.045	UG/L		0.038	UG/L		0.057	UG/L		0.191	UG/L		0.173	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.0045	UG/L		0.0045	UG/L		0.0044	UG/L		0.036	UG/L		0.031	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.0065	UG/L		0.0054	UG/L		0.0043	UG/L		0.081	UG/L		0.071	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.011	UG/L		0.0097	UG/L	
2,3',4,4',5-Pentacb (PCB 118)	0.0038	UG/L		0.0033	UG/L		0.0022	UG/L		0.071	UG/L		0.06	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0092	UG/L		0.0076	UG/L	
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0016	UG/L		0.0012	UG/L		0.0004	UG/L	J	0.052	UG/L		0.043	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0027	UG/L		0.0021	UG/L		0.001	UG/L	J	0.073	UG/L		0.062	UG/L	
2,2',3,3',4,4',5-Heptacb (PCB 170)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.007	UG/L		0.0058	UG/L	
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0095	UG/L		0.0079	UG/L	
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.007	UG/L		0.0058	UG/L	
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0004	UG/L	pJ	0.0002	UG/L	pJ
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0007	UG/L	J	0.0005	UG/L	J
DecaCB (PCB 209)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.22	UG/L		0.2	UG/L		0.31	UG/L		0.98	UG/L		0.88	UG/L	

APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNRef0821						PMC57NTU1001			PMC57NTU1001			PMC24NTU1001		
Collected	8/21/2008			10/1/2008			10/1/2008			10/1/2008			10/1/2008		
Fraction	TOTAL			TOTAL			DISS			DISS			DISS		
QC Code	SA			SA			REP			SA			SA		
Sample ID	WQ-TPC-003-082108			EB-100108-01			WQ-DPC-001-100108-REP			WQ-DPC-001-100108			WQ-DPC-002-100108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.063	UG/L		0.0012	UG/L	U	0.039	UG/L		0.038	UG/L		0.031	UG/L	
2,2',5-Tricb (PCB 18)	0.111	UG/L		0.0012	UG/L	U	0.063	UG/L		0.07	UG/L		0.056	UG/L	
2,4,4'-Tricb (PCB 28)	0.089	UG/L		0.0012	UG/L	U	0.053	UG/L		0.057	UG/L		0.047	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.027	UG/L		0.0012	UG/L	U	0.024	UG/L		0.024	UG/L		0.021	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.087	UG/L		0.0012	UG/L	U	0.043	UG/L		0.047	UG/L		0.038	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.0073	UG/L		0.0012	UG/L	U	0.0083	UG/L		0.0083	UG/L		0.0078	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.012	UG/L		0.0012	UG/L	U	0.0073	UG/L		0.0072	UG/L		0.0069	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0005	UG/L	pJ	0.0012	UG/L	U	0.0011	UG/L	pJ	0.001	UG/L	pJ	0.001	UG/L	pJ
2,3',4,4',5-Pentacb (PCB 118)	0.008	UG/L		0.0012	UG/L	U	0.0051	UG/L		0.0051	UG/L		0.0046	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0045	UG/L		0.0012	UG/L	U	0.002	UG/L		0.0017	UG/L		0.0016	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0076	UG/L		0.0012	UG/L	U	0.0031	UG/L		0.0027	UG/L		0.0028	UG/L	
2,2',3,3',4,4',5-Heptacb (PCB 170)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0001	UG/L	pJ	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
DecaCB (PCB 209)	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.42	UG/L					0.25	UG/L		0.26	UG/L		0.22	UG/L	

APPENDIX D

Individual Congener and Sum of Congeners Results

Station ID	PMCNREF10010			PMC57NTU1001			PMC57NTU1001			PMC24NTU1001			PMCNREF10010		
Collected	10/1/2008			10/1/2008			10/1/2008			10/1/2008			10/1/2008		
Fraction	DISS			TOTAL			TOTAL			TOTAL			TOTAL		
QC Code	SA			REP			SA			SA			SA		
Sample ID	WQ-DPC-003-100108			WQ-TPC-001-100108-REP			WQ-TPC-001-100108			WQ-TPC-002-100108			WQ-TPC-003-100108		
Param Name	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q	Result	Unit	Final Q
2,4'-Dicb (PCB 8)	0.02	UG/L		0.086	UG/L		0.085	UG/L		0.063	UG/L		0.025	UG/L	
2,2',5-Tricb (PCB 18)	0.034	UG/L		0.193	UG/L	D	0.209	UG/L	D	0.128	UG/L		0.045	UG/L	
2,4,4'-Tricb (PCB 28)	0.03	UG/L		0.265	UG/L	D	0.263	UG/L	D	0.163	UG/L	D	0.045	UG/L	
2,2',3,5'-Tetracb (PCB 44)	0.011	UG/L		0.195	UG/L		0.182	UG/L		0.112	UG/L		0.017	UG/L	
2,2',5,5'-Tetracb (PCB 52)	0.028	UG/L		0.303	UG/L	D	0.298	UG/L	D	0.184	UG/L	D	0.047	UG/L	
2,3',4,4'-Tetracb (PCB 66)	0.005	UG/L	p	0.112	UG/L		0.105	UG/L		0.064	UG/L		0.0073	UG/L	
2,2',4,5,5'-Pentacb (PCB 101)	0.004	UG/L		0.125	UG/L	D	0.111	UG/L	D	0.099	UG/L		0.011	UG/L	
2,3,3',4,4'-Pentacb (PCB 105)	0.0004	UG/L	pJ	0.029	UG/L		0.029	UG/L		0.018	UG/L		0.0016	UG/L	p
2,3',4,4',5-Pentacb (PCB 118)	0.0027	UG/L		0.136	UG/L	D	0.128	UG/L	D	0.088	UG/L		0.0089	UG/L	
2,2',3,3',4,4'-Hexacb (PCB 128)	0.0013	UG/L	U	0.019	UG/L		0.018	UG/L		0.01	UG/L		0.0002	UG/L	pJ
2,2',3,4,4',5'-Hexacb (PCB 138)	0.0006	UG/L	J	0.106	UG/L		0.104	UG/L		0.059	UG/L		0.005	UG/L	
2,2',4,4',5,5'-Hexacb (PCB 153)	0.0016	UG/L		0.148	UG/L	p	0.146	UG/L	p	0.083	UG/L		0.0081	UG/L	
2,2',3,3',4,4',5-Heptacb (PCB 170)	0.0013	UG/L	U	0.015	UG/L		0.014	UG/L		0.0074	UG/L		0.0001	UG/L	pJ
2,2',3,4,4',5,5'-Heptacb (PCB 180)	0.0013	UG/L	U	0.022	UG/L		0.021	UG/L		0.012	UG/L		0.0004	UG/L	J
2,2',3,4',5,5',6-Heptacb (PCB 187)	0.0012	UG/L	U	0.016	UG/L		0.016	UG/L		0.0091	UG/L		0.0012	UG/L	U
2,2',3,3',4,4',5,6-Octacb (PCB 195)	0.0013	UG/L	U	0.0012	UG/L	p	0.0012	UG/L	p	0.0003	UG/L	pJ	0.0013	UG/L	U
2,2',3,3',4,4',5,5',6-Nonacb (PCB 206)	0.0013	UG/L	U	0.0017	UG/L		0.0016	UG/L		0.0006	UG/L	J	0.0013	UG/L	U
DecaCB (PCB 209)	0.0013	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0012	UG/L	U	0.0013	UG/L	U
Sum of 18 NOAA Congeners (SUM 18 CONG)	0.14	UG/L		1.8	UG/L		1.7	UG/L		1.1	UG/L		0.22	UG/L	

APPENDIX D

PCB Data Qualifiers

Qualifiers:

D	Dilution run. Initial run outside linear range of instrument
J	Analyte detected below the sample specific reporting limit
p	The relative percent difference (RPD) between the values obtained from the dual columns is >40%.
U	Analyte not detected at 3:1 signal:noise ratio. Reporting limit is reported.

PCB QA/QC Summaries and QC Data

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PCB Congeners – Water QA/QC Summary
Batch 08-0212

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Water
SAMPLE CUSTODY: Water samples were collected on 8/21/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The samples were logged into LIMS and received unique Battelle IDs. The samples were stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin. Prior to sample extraction, water samples that were designated for dissolved PCB analysis were filtered through glass fiber filters with 1 µm pore size.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0012

METHOD: Water samples were extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, cleaned up with copper for sulfur removal, and then further cleaned by disposable Florisil columns. The extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0212	8/21/2008	8/27/2008	9/8/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0212

LIST OF SAMPLES:

08-0212

Sample ID	**Battelle ID**
WQ-TPC-01-082108	Q3976
WQ-TPC-02-082108	Q3977
WQ-TPC-03-082108	Q3978
WQ-DPC-01-082108	Q3979
WQ-DPC-03-082108	Q3980
WQ-DPC-02-082108	Q3981

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0212 – No exceedences noted. No target PCBs were detected in the PB.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0212 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0212 – No exceedence noted**.** All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0212 – All calibration criteria were met.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank
Battelle ID	BM217PB-P
Sample Type	PB
Collection Date	08/27/08
Extraction Date	08/27/08
Analysis Date	09/08/08
Analytical Instrument	ECD
% Moisture	NA
% Lipid	NA
Matrix	WATER
Sample Size	1.00
Size Unit-Basis	L_LIQUID
Units	UG/L_LIQUID

Cl2(8)	0.0012	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0012	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0012	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0012	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0012	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	75
Cl6(152)	76

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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM218LCS-P			
Sample Type	LCS			
Collection Date	08/27/08			
Extraction Date	08/27/08			
Analysis Date	09/08/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0379	0.05	76	
Cl3(18)	0.0374	0.05	75	
Cl3(28)	0.0362	0.05	72	
Cl4(44)	0.0387	0.05	77	
Cl4(52)	0.038	0.05	76	
Cl4(66)	0.04	0.05	80	
Cl5(101)	0.0397	0.05	79	
Cl5(105)	0.0416	0.05	83	
Cl5(118)	0.0414	0.05	83	
Cl6(128)	0.0407	0.05	81	
Cl6(138)	0.0398	0.05	79	
Cl6(153)	0.0404	0.05	81	
Cl7(170)	0.0415	0.05	83	
Cl7(180)	0.0411	0.05	82	
Cl7(187)	0.0399	0.05	80	
Cl8(195)	0.0406	0.05	81	
Cl9(206)	0.04	0.05	80	
Cl10(209)	0.0405	0.05	81	

Surrogate Recoveries (%)

Cl3(34)	78
Cl6(152)	78

PCB Congeners – Water QA/QC Summary
Batch 08-0274

PROJECT: USACE-NAE – New Bedford Harbor Environmental Monitoring
PARAMETER: PCB Congeners
LABORATORY: Battelle, Duxbury, MA
MATRIX: Water
SAMPLE CUSTODY: Water samples were collected on 10/1/2008 and hand delivered to the Chemistry Department by the Battelle Field Group. No custody issues were noted. The samples were logged into LIMS and received unique Battelle IDs. The samples were stored at 4°C in an access controlled walk-in refrigerator until sample preparation could begin. Prior to sample extraction, water samples that were designated for dissolved PCB analysis were filtered through glass fiber filters with 1 µm pore size.

	Reference Method	Method Blank	Surrogate Recovery	LCS Recovery	MS Recovery	MS/MSD Relative Percent Difference	Detection Limits (ug/L)
PCB Congeners	EPA 8082M	<ssRL	40-120% Recovery	40-120% Recovery	40-120% Recovery (analyte conc. in MS must be >5x background)	<30% RPD (analytes must be > 5x MDL to be used for data quality assessment)	RL: ~ 0.0013

METHOD: Water samples were extracted for PCB Congeners following modified EPA Method 3510C. Approximately 1 liter of water was spiked with surrogates and extracted three times with dichloromethane using separatory funnel techniques. Combined extract was dried over anhydrous sodium sulfate, concentrated, cleaned up with copper for sulfur removal, and then further cleaned by disposable Florisil columns. The extract was concentrated, fortified with internal standards (IS), and then analyzed using gas chromatography/electron capture detector (GC/ECD), following modified EPA Method 8082. Sample data were quantified by the method of internal standards, using the spiked IS compounds.

HOLDING TIMES: Water samples were extracted within 7 days of sample collection. All extracts were analyzed within 40 days of extract holding time.

Batch	Collection Date	Extraction Date	Analysis Date
08-0274	10/1/2008	10/2/2008	10/7/2008 - 10/9/2008

PCB Congeners – Water QA/QC Summary
Batch 08-0274

LIST OF SAMPLES:

08-0274

Sample ID	**Battelle ID**
WQ-DPC-001-100108	Q4839
WQ-DPC-001-100108REP	Q4840
WQ-TPC-001-100108	Q4841
WQ-TPC-001-100108REP	Q4842
WQ-DPC-002-100108	Q4843
WQ-TPC-002-100108	Q4844
WQ-DPC-003-100108	Q4845
WQ-TPC-003-100108	Q4846
EB-100108-01	Q4847

BLANK: A procedural blank (PB) was prepared with each analytical batch. Blanks were analyzed to ensure the sample extraction and analysis methods were free of contamination.

08-0274 – No exceedences noted. No target PCBs were detected in the PB.

LABORATORY CONTROL SAMPLE: A laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy.

08-0274 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%).

MATRIX SPIKE/MATRIX SPIKE DUPLICATE: Two pairs of matrix spike (MS) and matrix spike duplicate samples (MSD) were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure data quality in terms of accuracy. The RPD between percent recoveries was calculated to measure the data quality in terms of precision.

08-0274 – All percent recoveries of spiked target analytes were within the laboratory control limit (40-120%). All RRDs met the <30% criteria.

SURROGATES: Two surrogate compounds were added prior to extraction, including PCB 34 and PCB 152. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

08-0274 – No exceedence noted**.** All percent recoveries were within the laboratory control limit (40%-120%).

CALIBRATIONS: The GC/ECD was calibrated with a minimum 6 level curve, with a linear correlation coefficient of >0.995. Each batch of samples analyzed is bracketed by continuing calibration verification (CCV) sample, run at a frequency of minimally every 24 hours. The %D between the initial calibration (ICAL) and the continuing calibration samples should be <20% for each compound. Additionally an Initial Calibration Check (ICC) sample is run immediately following the ICAL. The ICC is to have a percent difference < 20%.

08-0274 – All calibration criteria were met.

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Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Procedural Blank	
Battelle ID	BM433PB-P	
Sample Type	PB	
Collection Date	10/02/08	
Extraction Date	10/02/08	
Analysis Date	10/07/08	
Analytical Instrument	ECD	
% Moisture	NA	
% Lipid	NA	
Matrix	WATER	
Sample Size	1.00	
Size Unit-Basis	L_LIQUID	
Units	UG/L_LIQUID	
Cl2(8)	0.0012	U
Cl3(18)	0.0013	U
Cl3(28)	0.0013	U
Cl4(44)	0.0012	U
Cl4(52)	0.0013	U
Cl4(66)	0.0013	U
Cl5(101)	0.0012	U
Cl5(105)	0.0013	U
Cl5(118)	0.0013	U
Cl6(128)	0.0013	U
Cl6(138)	0.0013	U
Cl6(153)	0.0012	U
Cl7(170)	0.0013	U
Cl7(180)	0.0013	U
Cl7(187)	0.0012	U
Cl8(195)	0.0013	U
Cl9(206)	0.0013	U
Cl10(209)	0.0013	U

Surrogate Recoveries (%)

Cl3(34)	79
Cl6(152)	72

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	Laboratory Control Sample			
Battelle ID	BM434LCS-P			
Sample Type	LCS			
Collection Date	10/02/08			
Extraction Date	10/02/08			
Analysis Date	10/07/08			
Analytical Instrument	ECD			
% Moisture	NA			
% Lipid	NA			
Matrix	WATER			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.04	0.05	80	
Cl3(18)	0.0411	0.05	82	
Cl3(28)	0.0375	0.05	75	
Cl4(44)	0.0441	0.05	88	
Cl4(52)	0.0426	0.05	85	
Cl4(66)	0.0477	0.05	95	
Cl5(101)	0.0452	0.05	90	
Cl5(105)	0.0442	0.05	88	
Cl5(118)	0.0506	0.05	101	
Cl6(128)	0.0447	0.05	89	
Cl6(138)	0.0444	0.05	89	
Cl6(153)	0.0493	0.05	99	
Cl7(170)	0.0482	0.05	96	
Cl7(180)	0.0497	0.05	99	
Cl7(187)	0.0476	0.05	95	
Cl8(195)	0.0473	0.05	94	
Cl9(206)	0.0452	0.05	90	
Cl10(209)	0.0446	0.05	89	

Surrogate Recoveries (%)

Cl3(34)	89
Cl6(152)	93

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-DPC-003-100108		WQ-DPC-003-100108			
Battelle ID	Q4845-P		Q4845MS-P			
Sample Type	SA		MS			
Collection Date	10/01/08		10/1/2008			
Extraction Date	10/02/08		10/2/2008			
Analysis Date	10/08/08		10/8/2008			
Analytical Instrument	ECD		ECD			
% Moisture	NA		NA			
% Lipid	NA		NA			
Matrix	WATER		WATER			
Sample Size	1.00		0.5			
Size Unit-Basis	L_LIQUID		L_LIQUID			
Units	UG/L_LIQUID		UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0196		0.1064	0.10	87	
Cl3(18)	0.0338		0.1204	0.10	86	
Cl3(28)	0.0302		0.113	0.10	83	
Cl4(44)	0.0106		0.1015	0.10	91	
Cl4(52)	0.0281		0.1215	0.10	93	
Cl4(66)	0.005	p	0.1031	0.10	98	
Cl5(101)	0.004		0.0989	0.10	95	
Cl5(105)	0.0004	pJ	0.0855	0.10	85	
Cl5(118)	0.0027		0.0991	0.10	96	
Cl6(128)	0.0013	U	0.0842	0.10	84	
Cl6(138)	0.0006	J	0.0858	0.10	85	
Cl6(153)	0.0016		0.0941	0.10	92	
Cl7(170)	0.0013	U	0.0927	0.10	92	
Cl7(180)	0.0013	U	0.0981	0.10	98	
Cl7(187)	0.0012	U	0.0956	0.10	95	
Cl8(195)	0.0013	U	0.0902	0.10	90	
Cl9(206)	0.0013	U	0.0916	0.10	91	
Cl10(209)	0.0013	U	0.0899	0.10	90	

Surrogate Recoveries (%)

Cl3(34)	86	95
Cl6(152)	87	93

Analyzed by Restucci Jr, Richard
10/30/2008

Not Surrogate Corrected

MS: L08-0274ECD-8082 Congeners-Final.xls

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-DPC-003-100108					
Battelle ID	Q4845MSD-P					
Sample Type	MSD					
Collection Date	10/1/2008					
Extraction Date	10/2/2008					
Analysis Date	10/8/2008					
Analytical Instrument	ECD					
% Moisture	NA					
% Lipid	NA					
Matrix	WATER					
Sample Size	0.5					
Size Unit-Basis	L_LIQUID					
Units	UG/L_LIQUID	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.109	0.10	89		2.3	
Cl3(18)	0.1257	0.10	92		6.7	
Cl3(28)	0.1152	0.10	85		2.4	
Cl4(44)	0.1055	0.10	95		4.3	
Cl4(52)	0.1231	0.10	95		2.1	
Cl4(66)	0.1075	0.10	102		4.0	
Cl5(101)	0.1021	0.10	98		3.1	
Cl5(105)	0.0918	0.10	91		6.8	
Cl5(118)	0.1028	0.10	100		4.1	
Cl6(128)	0.0883	0.10	88		4.7	
Cl6(138)	0.0894	0.10	89		4.6	
Cl6(153)	0.0975	0.10	96		4.3	
Cl7(170)	0.096	0.10	96		4.3	
Cl7(180)	0.1026	0.10	102		4.0	
Cl7(187)	0.1001	0.10	100		5.1	
Cl8(195)	0.0967	0.10	96		6.5	
Cl9(206)	0.094	0.10	94		3.2	
Cl10(209)	0.0944	0.10	94		4.3	

Surrogate Recoveries (%)

Cl3(34)	95
Cl6(152)	94

Analyzed by Restucci Jr, Richard
10/30/2008

Not Surrogate Corrected

MS: L08-0274ECD-8082 Congeners-Final.xls

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-TPC-003-100108		WQ-TPC-003-100108			
Battelle ID	Q4846-P		Q4846MS-P			
Sample Type	SA		MS			
Collection Date	10/1/2008		10/1/2008			
Extraction Date	10/2/2008		10/2/2008			
Analysis Date	10/8/2008		10/8/2008			
Analytical Instrument	ECD		ECD			
% Moisture	NA		NA			
% Lipid	NA		NA			
Matrix	WATER		WATER			
Sample Size	1		0.5			
Size Unit-Basis	L_LIQUID		L_LIQUID			
Units	UG/L_LIQUID		UG/L_LIQUID	Target	% Recovery	Qualifier
Cl2(8)	0.0249		0.105	0.10	80	
Cl3(18)	0.0454		0.1265	0.10	81	
Cl3(28)	0.0446		0.1188	0.10	74	
Cl4(44)	0.0168		0.1013	0.10	84	
Cl4(52)	0.0465		0.1281	0.10	82	
Cl4(66)	0.0073		0.0985	0.10	91	
Cl5(101)	0.0109		0.0981	0.10	87	
Cl5(105)	0.0016	p	0.0854	0.10	84	
Cl5(118)	0.0089		0.1025	0.10	94	
Cl6(128)	0.0002	pJ	0.0829	0.10	82	
Cl6(138)	0.005		0.0855	0.10	80	
Cl6(153)	0.0081		0.0983	0.10	90	
Cl7(170)	0.0001	pJ	0.0895	0.10	89	
Cl7(180)	0.0004	J	0.0934	0.10	93	
Cl7(187)	0.0012	U	0.0903	0.10	90	
Cl8(195)	0.0013	U	0.0895	0.10	89	
Cl9(206)	0.0013	U	0.0873	0.10	87	
Cl10(209)	0.0013	U	0.0862	0.10	86	

Surrogate Recoveries (%)

Cl3(34)	93	85
Cl6(152)	94	87

Battelle
The Business of Innovation

Project Client: USACE - North Atlantic Division
Project Name: NBH Water Sample PCB Congener Analysis (ECD)
Project Number: G606422

Client ID	WQ-TPC-003-100108					
Battelle ID	Q4846MSD-P					
Sample Type	MSD					
Collection Date	10/1/2008					
Extraction Date	10/2/2008					
Analysis Date	10/9/2008					
Analytical Instrument	ECD					
% Moisture	NA					
% Lipid	NA					
Matrix	WATER					
Sample Size	0.5					
Size Unit-Basis	L_LIQUID					
Units	UG/L_LIQUID	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Cl2(8)	0.109	0.10	84		4.9	
Cl3(18)	0.1289	0.10	83		2.4	
Cl3(28)	0.1255	0.10	81		9.0	
Cl4(44)	0.1107	0.10	94		11.2	
Cl4(52)	0.1402	0.10	94		13.6	
Cl4(66)	0.1066	0.10	99		8.4	
Cl5(101)	0.1086	0.10	98		11.9	
Cl5(105)	0.1049	0.10	103		20.3	
Cl5(118)	0.1094	0.10	100		6.2	
Cl6(128)	0.091	0.10	90		9.3	
Cl6(138)	0.0944	0.10	89		10.7	
Cl6(153)	0.1052	0.10	97		7.5	
Cl7(170)	0.0997	0.10	99		10.6	
Cl7(180)	0.1034	0.10	103		10.2	
Cl7(187)	0.0999	0.10	100		10.5	
Cl8(195)	0.0969	0.10	97		8.6	
Cl9(206)	0.0976	0.10	97		10.9	
Cl10(209)	0.0964	0.10	96		11.0	

Surrogate Recoveries (%)

Cl3(34)	81
Cl6(152)	90

Analyzed by Restucci Jr, Richard
10/30/2008

Not Surrogate Corrected

MS: L08-0274ECD-8082 Congeners-Final.xls

Chain-of-custody

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Battelle
The Business of Innovation

ShpNo SHP-080822-03

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number:

Client: NBH WATER QUALITY

Received by: Arsenault, Joanne

Date/Time Received: Friday, August 22, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered

Tracking Number: Not Recorded

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	No Container		None	Not Applicable	Not Applicable	Ambient	6

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): Ambient Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Chem South: Refrigerator - R0003 (Upper Cold

BDO IDs Assigned: Q3976 - Q3981

Samples logged in by: Arsenault, Joanne

Date/Time: 08/22/2008 12:00 AM

Approved By:

Approved On:

Authorized By:

Authorized On:

Battelle

The Business of Innovation

ShpNo SHP-080822-03

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number:

Client: NBH WATER QUALITY

Received by: Arsenault, Joanne

Date/Time Received: Friday, August 22, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q3976	WQ-TPC-01-082108	08/21/08 0:00	08/22/08 17:10	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3977	WQ-TPC-02-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3978	WQ-TPC-03-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3979	WQ-DPC-01-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3980	WQ-DPC-03-082108	08/21/08 0:00	08/22/08 17:11	1	WATER		NA	NA	NA	R0003 (Upper C			
Q3981	WQ-DPC-02-082108	08/21/08 0:00	08/22/08 17:12	1	WATER		NA	NA	NA	R0003 (Upper C			

Total Samples: 6

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Chain of Custody

Proj. No	Proj. Name
3606422	New Bedford Harbor Water Quality

SAMPLERS: Signature: [signature] Amanda Maxenchuk

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ~~BATTELLE~~ ID	Lab ~~CLIENT~~ ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED 4°C	Total Number of Containers
/21/08	1420	WQ-TPC-01-082108	Q3976	Total PCB from 25-32 NTU		Total PCB								x	1
	1502	WQ-TPC-02-082108	Q3977	Total PCB from 14-20 NTU		Total PCB								x	1
	1520	WQ-TPC-03-082108	Q3978	Total PCB from .2-.3 NTU		Total PCB								x	1
	1420	WQ-DPC-01-082108	Q3979	Total PCB from 25-32 NTU		Dissolved PCB								x	1
	1520	WQ-DPC-03-082108	Q3980	Total PCB from .2-.3 NTU		Dissolved PCB								x	1
	1502	WQ-DPC-02-082108	Q3981	Total PCB from 14-20 NTU		Dissolved PCB								x	1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	8/21/08	2030	Joanne Donovan	8/22/08	1700
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Battelle

The Business of Innovation

ShpNo SHP-081002-01

Battelle Project No:

Sample Receipt Form

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Wednesday, October 01, 2008 12:00 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Hand Delivered **Tracking Number:** NA

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Cntr	Type	Tracking No.	Seal	Seal Condition	Container Condition	Temp C	Smps
1 of 1	Cooler	NA	None	Not Applicable	Intact	4.0	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 4 Temperature Blank used ☐ Yes ☑ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

Storage Location: Field Room II: Refrigerator - R0004 (Lower Col **BDO IDs Assigned:** Q4839 - Q4847

Samples logged in by: Seyfert, Jeannine **Date/Time:** 10/01/2008 12:00 AM

Approved By: **Approved On:**

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo SHP-081002-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☐ **Authorized** ☐

Project Number: G606422 **Client:**

Received by: Seyfert, Jeannine **Date/Time Received:** Wednesday, October 01, 2008 12:00 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
Q4839	WQ-DPC-001-100108	10/01/08 11:23	10/02/08 8:45	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4840	WQ-DPC-001-100108-REP	10/01/08 11:23	10/02/08 8:46	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4841	WQ-TPC-001-100108	10/01/08 11:23	10/02/08 8:46	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4842	WQ-TPC-001-100108-REP	10/01/08 11:23	10/02/08 8:47	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4843	WQ-DPC-002-100108	10/01/08 11:50	10/02/08 8:47	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4844	WQ-TPC-002-100108	10/01/08 11:50	10/02/08 8:48	2	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4845	WQ-DPC-003-100108	10/01/08 12:15	10/02/08 8:48	5	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4846	WQ-TPC-003-100108	10/01/08 12:15	10/02/08 8:48	5	WATER	4	NA	NA	NA	R0004 (Lower C			
Q4847	EB-100108-01	10/01/08 12:05	10/02/08 8:49	4	WATER	4	NA	NA	NA	R0004 (Lower C			

Total Samples: 9

Ship to: Battelle - Duxbury

Battelle
The Business of Innovation

Chain of Custody

397 Washington Street
Duxbury, MA 02332
Phone: 781-952-5200
Fax: 781-934-2124

Proj. No: G606422
Proj. Name: NBH - Water Quality
SAMPLERS: Signature: Jessica Tenzar + Anna Murphy

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	Field ID ~~BATTELLE ID~~	Lab ID ~~CLIENT ID~~	BPO LIMS ID	SAMPLE DESCRIPTION	~~TEST~~ PCB-TOTAL	PCB - Dissolved	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
10/1/08	1123	WQ-DPC-001-100108		Q4839	50-65 NTU STATION ID: 57 NTU		✓									2
	↓	WQ-DPC-001-100108-REP		Q4840			✓									2
		WQ-TPC-001-100108		Q4841		✓										2
		WQ-TPC-001-100108-REP		Q4842		✓										2
	1150	WQ-DPC-002-100108		Q4843	19-27 NTU, STATION ID: 24 NTU		✓									2
	↓	WQ-TPC-002-100108		Q4844		✓										2
	1215	WQ-DPC-003-100108		Q4845	3.8 NTU, STATION ID: N. Ref ex volume for MS/MSD		✓									5
	↓	WQ-TPC-003-100108		Q4846	↓ ↓	✓										5
	1205	EB-100108-01		Q4847	Equipment Blank	✓	✓									4

Relinquished by:	Date/Time		Received by:	Date/Time	
Jessica M Tenzar	10/1/08	1612	Jeannine Seyfert	10/1/08	1612
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL