

Intergovernmental
Agreement for
Remedial
Investigation and
Source Control
Measures

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Outfall Basin 43 Source Investigation Report

■

City of Portland Outfall Project
ECSI No. 2425

■

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PREPARED BY



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

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Abbreviations and Acronyms

AOPC	Area of Potential Concern
BEHP	bis(2-ethylhexyl)phthalate
BES	Bureau of Environmental Services
City	City of Portland
COI	contaminant of interest
CSO	combined sewer overflow
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DDx	sum of DDD, DDE, and DDT
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	Environmental Protection Agency
HYDRA	Hydrological Data Retrieval and Alarm
JSCS	Joint Source Control Strategy
LWG	Lower Willamette Group
µg/Kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
mg/Kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MRL	method reporting limit
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PST	Pacific Standard Time
RM	river mile
RM 11E	stretch of Willamette River between RM 11 and 11.6
SAP	sampling and analysis plan
SFM	Oregon State Fire Marshal
SIFT©	Screened Inline Flow-Through
SLV	screening level value
SOP	standard operating procedure
SVOC	semi-volatile organic compound
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TSS	total suspended solids
UIC	Underground Injection Control
UST	underground storage tank
WPCL	Water Pollution and Control Laboratory

SECTION 1

Introduction

This report presents the results of the City of Portland (City) source investigation activities in Outfall Basin 43. Outfall 43 discharges to the east bank of the Willamette River at river mile (RM) 11.4. The area of the river between RM 11 and 11.6 (referred to as RM 11E) has been targeted for focused inriver and upland investigations in response to detections of elevated concentrations of polychlorinated biphenyls (PCBs) and other contaminants in river sediment, water, and fish tissue samples from this area. The Oregon Department of Environmental Quality (DEQ) and the City Bureau of Environmental Services (BES) are collaborating on upland source control in this area consistent with the City's ongoing source control program described in the August 13, 2003, Intergovernmental Agreement between DEQ and the City. The source investigation described in this report was conducted in response to DEQ's correspondence dated August 13, 2008 (DEQ, 2008), requesting the City to investigate whether contaminant sources are discharging to RM 11E via Outfalls 43, 44, 44A, and 45.

The Outfall 43 conveyance system includes a combined sewer system serving a residential area and a separated storm system serving the industrial area adjacent to the river. The separated stormwater system currently consists of two main branches: a western branch extending along N. River Street and N. Albina Avenue, and an eastern branch in the vicinity of N. Wheeler Place, N. Kerby Avenue, and N. Thompson Street (see Figure 1). As of December 1, 2011, the combined basin and the stormwater lines in the entire eastern branch were diverted to the wastewater treatment plant as part of the City's combined sewer overflow (CSO) abatement project, thereby eliminating stormwater discharges to the Willamette River from the eastern branch except during infrequent CSO events.¹ Stormwater flows from the western branch will continue to discharge through the outfall.

The City's evaluation of this basin began with monitoring stormwater and solids from the eastern and western branches (Phase 1) to determine if there were current sources that needed to be identified and addressed to be protective of inriver sediment and water quality and the City's wastewater treatment plant. Preliminary results indicated that there were possible PCBs sources in the basin, and several properties were identified as potential sources based on current or historical operations at those sites. The results also indicated a possible cadmium source in one portion of the basin. Additional stormwater and stormwater sediments were collected (Phase 2) throughout the basin to evaluate potential source areas in each branch. Likely sources of these constituents were identified in conjunction with the Phase 2 investigations, and appropriate source control measures were implemented. Results of follow-up sampling in Phase 2 indicate that no major sources currently discharge to the Basin 43 stormwater conveyance system and that additional source tracing is not needed. A specific source of low-level PCBs in the western basin was not identified; the City will clean lines in this area and collect samples to verify that further source control measures are not necessary. In addition, concentrations in stormwater discharges to the portion of the basin that has been diverted to the wastewater treatment plant are within City wastewater discharge limits.

¹ Outfall 43 will be a designated overflow point for the eastside tunnel during extreme wet weather events.

1.1 Objective and Scope

The purpose of the investigation described in this report is to conduct a stormwater pathway screening evaluation of Basin 43 in accordance with the Portland Harbor Joint Source Control Strategy (JSCS) (DEQ/EPA, 2005, as amended in 2007) to determine whether Basin 43 is a significant pathway for contaminant discharges from upland sources to the river. The investigation includes stormwater and sediment trap results from initial (Phase 1) screening to evaluate the potential for major sources to be present in the basin, as well as results from additional stormwater and stormwater solids sampling at selected upgradient locations to further identify potential sources within the basin that may warrant additional investigation and control (Phase 2). The data are evaluated by comparison to JSCS screening level values (SLVs) and the ranges of concentrations detected in upland basins and sites throughout Portland Harbor, and relative to known and suspected sources in the basin.

1.2 Report Organization

The remainder of this report is organized as follows:

- *Section 2: Background* — Summarizes the context for the source investigation, conveyance system configuration and drainage basin setting, contaminants of interest, and potential upland sources.
- *Section 3: Source Investigation Approach* — Describes the overall approach and general chronology of the sampling activities conducted for this source investigation.
- *Section 4: Stormwater Sampling and Analysis* — Describes the stormwater sampling locations, storm events sampled and analytical approach, and summarizes the stormwater analytical results.
- *Section 5: Stormwater Solids Sampling and Analysis* — Describes the sediment trap and inline solids sampling and analyses, and summarizes the analytical results.
- *Section 6: Data Evaluation* — Evaluates the results of the stormwater and solids sampling to assess whether there is evidence of major current sources of contaminants in the basin.
- *Section 7: Source Control Activities* — Summarizes source control activities completed by the City and others during the course of the source investigation.
- *Section 8: Conclusions and Next Steps* — Summarizes the findings from the source investigation and identifies next steps that are needed in the basin.
- *Section 9: References*

Background

2.1 River Mile 11E

Inriver data (sediment, surface water, and tissue) collected by the Lower Willamette Group (LWG) indicate the presence of historical and potential current sources of contaminants to the east side of the river between RM 11 and 11.6. To assist the U.S. Environmental Protection Agency (EPA) and DEQ with the evaluation of data from this area, the LWG compiled background information on potential sources to the contaminated reach (LWG, 2007). Subsequently, EPA expanded the Portland Harbor Study Area to RM 11.8 and DEQ requested parties discharging to the RM11E area to conduct investigations of potential sources to the river.

The City compiled background information on City basins discharging to the RM11E area to support the source investigation approach and Sampling and Analysis Plan (SAP) for Basins 43, 44, and 44A (BES, 2008) and initiated source investigations in these basins in 2008. Additional inriver and upland data collection efforts have been conducted by the City and other parties in this area, which has been designated as Area of Potential Concern (AOPC) 25 by EPA (EPA, 2009). In addition to Outfall 43, three other City outfalls (Outfalls 44, 44A, and 45), one Oregon Department of Transportation outfall, and approximately 13 private industrial outfalls² also discharge to AOPC 25.

2.2 Conveyance System Configuration and Drainage Basin

The Outfall 43 conveyance system is comprised of a combined sewer system that serves a primarily residential area and a separated storm system that serves the industrial area adjacent to the river. The separated stormwater basin associated with this outfall is approximately 51 acres. Figure 1 depicts the configuration of the Outfall 43 separated stormwater conveyance system and the approximate basin boundary. The separated system consists of two main branches that connect to the 56-inch-diameter main line: a western branch extending along N. River Street, N. Albina Avenue, and N. Interstate Avenue and an eastern branch in the vicinity of N. Wheeler Place and N. Kerby Avenue.

As of December 1, 2011, the combined basin and the entire eastern branch of the separated basin were diverted to the eastside tunnel as part of the City's CSO abatement project (see Figure 1), thereby eliminating stormwater discharges to the river from this branch except during infrequent tunnel overflows. Stormwater from approximately 16 acres comprising the western branch will continue to discharge through the outfall.

² Private industrial outfalls serve: Sakrete of Pacific Northwest, Inc. (outfalls WR-282, WR-283, and WR-291); Glacier Northwest, Inc. (WR-350, WR-351, WR-352, WR-353, and WR-354); and Cargill Inc. (WR-341, WR-342, WR-343, WR-344, and WR-401).

2.3 Contaminants of Interest

During development of the SAP for Basin 43, available RM 11E sediment data were reviewed to identify contaminants of interest (COIs) for the basin source investigation (BES, 2008). Elevated levels of PCBs, polycyclic aromatic hydrocarbons (PAHs), and DDT³ (and its breakdown products) were identified in the area, although spatial distributions did not point to a single source. Based on this review, PCBs were identified as the primary COI for the basin investigation.

2.4 Potential Upland Sources

Upland facilities identified as potential sources to the Basin 43 conveyance system include DEQ Cleanup Program sites as listed in DEQ's Environmental Cleanup Site Information (ECSI) database. The locations of ECSI sites within Basin 43 are shown on Figure 1. Information for these sites is summarized below. No facilities in the basin are permitted by DEQ under the National Pollution Discharge Elimination System (NPDES) industrial stormwater discharge permit program.

- *Westinghouse Property (Former) (ECSI #4497)*: Electrical transformer repair operations were conducted at this facility, which operated from 1943 to 1978. The City purchased the property in 1996 at which time the property consisted of a vacated 16,000-square-foot building and a parking area to the west of the building. In 1999 the City removed underground storage tanks (USTs), replaced the onsite stormwater conveyance system, installed stormwater treatment, and repaved the site parking area. Potential hazardous materials identified at the site prior to remediation of the former building area included PCBs, asbestos, lead-based paints, mercury vapor lighting and petroleum (BES, 2005). Major site remediation occurred in 2007 under EPA oversight, including building demolition, removal of concrete slabs, soil excavation, paving with asphaltic concrete, and construction of an onsite stormwater treatment swale. Earlier this year the City located a previously unknown UST; UST removal and closure is underway under DEQ and EPA oversight. The site is currently used by the City Water Bureau (as part of its Interstate Facility) for material storage and parking.
- *Tucker Building (ECSI #3036)*: Various electrical businesses, including Northwest Electric Company, Pacific Power & Light, and Pacific Gas & Electric, operated at this property between 1915 and 1991. PCBs, petroleum and PAHs have been identified as historical contaminants at the site (DEQ, 2005a). The City purchased the site in late 2000 for use as a vehicle ramp for access to and from N. Interstate Avenue (called the Lower Albina Overcrossing Project). Construction of the ramp and redevelopment of the site occurred in 2001 and 2002. As part of the site redevelopment, the onsite stormwater conveyance system was replaced, compensatory offsite stormwater treatment was installed, and the adjacent offsite stormwater conveyance lines were cleaned or abandoned (BES, 2010a). The remediated site received a conditional No Further Action determination from DEQ

³ The presence of non-target halogenated compounds can result in reported organochlorine pesticide compound concentrations that are biased high or false positives. Some samples with elevated pesticides detections were reanalyzed using a method that minimized this bias; reanalyses confirmed matrix interference. These results will be included in a report expected to be produced in 2012.

in 2004 (DEQ, 2005a), conditioned on the continued presence of the vehicle ramp, which acts as an effective site cap.

- *Master Chemical, Inc. (ECSI #1302)*: According to DEQ's ECSI website for this property, "The only hazardous substances that have been used at Master Chemical are sodium hydroxide (caustic), sodium hypochlorite solution (bleach), and chlorine gas (which dissipates)." In 1995, DEQ Site Assessment concluded that there was no indication that significant spills had occurred nor that any kind of persistent toxic substances had been used at the site, and determined that no further action was required (DEQ, 1995).

An additional potential source has been identified at 650-680 N. Tillamook Street just west of the Master Chemical site (see Figure 1). Historical operations at the site include an aluminum and brass foundry that dates to as early as 1960. The City conducted Phase I and Phase II Environmental Site Assessments at this site to support potential property acquisition (Northwest Geotech, 2011; AMEC, 2011). Data collected as part of the Phase II assessment indicated the presence of PCBs, metals, semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH) in site soils and the site stormwater drainage system (AMEC, 2011). The onsite drainage system and lateral connection to the City storm system were cleaned in fall 2010, following the Phase II sampling.

With the recent completion of the eastside tunnel, stormwater discharge from the majority of Basin 43 has been diverted to the wastewater treatment plant, and the former Tucker Building property is the only site among the identified potential upland sources that still discharges to Outfall 43.

2.5 Previous Investigations

In conjunction with the remediation activities on the former Westinghouse site, the City collected stormwater solids samples from the Basin 43 conveyance system in the vicinity of the site (BES, 2010b). In April 2006 (before building demolition in 2007), the City collected solids samples from three Basin 43 catch basins: two catch basins in N. Tillamook Street immediately adjacent to the site (catch basins ADZ264 and APG303), and one catch basin in N. Kerby Avenue, southeast of the site (catch basin ADZ339). In February 2008 (following site redevelopment), the City collected inline solids samples at locations upstream and downstream of the site's connections to the City conveyance system (from manholes ABC488 and ABC539, respectively). The City also collected a stormwater solids sample from manhole ABC363 in the western subbasin; at the time, it was suspected that one of the site catch basins drained to the storm system upstream of this manhole, but subsequent field investigations showed the catch basin drained to the N. Kerby line (BES, 2010b). These samples were analyzed for PCB Aroclors and total organic carbon (TOC). Sample locations are shown on Figure 2, and the resulting data are included in the data evaluation section (Section 6) of this report.

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SECTION 3

Source Investigation Approach

The City's investigation activities in Basin 43 were conducted in two phases, as presented in the project-specific SAP and SAP amendment (BES, 2008; BES, 2009a).⁴ In addition to the work described in the SAPs, supplemental stormwater and solids investigations were conducted as part of the Phase 2 investigation as data were acquired and reviewed. This section summarizes the overall approach and timeline of the phased investigations. Descriptions of the sampling activities and analytical approach are provided in Section 4 (stormwater) and Section 5 (stormwater solids).

During Phase 1 of the investigation, the City collected stormwater grab samples and concurrent inline sediment trap samples at multiple locations as part of a screening step to identify subsequent source investigation priorities for the City outfall basins discharging to the RM 11E area. Due to concurrent eastside tunnel CSO project construction activities, low elevations of the stormwater main line immediately upstream of the outfall, and other physical constraints, a single sampling location was not available that would represent all Basin 43 drainage. Therefore, the City selected four locations in the western and eastern branches for stormwater and solids sample collection (see Figure 1). The Phase 1 stormwater samples were collected during a total of four storm events between late November 2008 and early April 2009. The sediment traps for the Phase 1 solids sampling were deployed in November 2008 and removed in May 2009.

Because early Phase 1 data indicated the potential presence of PCBs sources in the basin, the City conducted field inspections and evaluated conveyance system records to clarify locations of lateral connections from potential sources. Phase 2 investigations, conducted between April 2009 and January 2011, included stormwater and stormwater solids sampling at multiple locations in the basin for source tracing purposes (i.e., upgradient, adjacent, and downgradient of suspected source areas).

Sample collection and handling procedures were conducted using the applicable standard operating procedures (SOPs) included in the City's *Amended Programmatic Sampling and Analysis Plan* for collection of water and solids samples for the City of Portland Outfalls Project (BES, 2007a) and in accordance with the *Amended Programmatic Quality Assurance Project Plan* for the project (BES, 2007b). Sections 4 and 5 discuss the stormwater and solids investigation activities in more detail.

⁴ The SAP was finalized in accordance with DEQ's comments and approval provided in a memorandum dated November 12, 2008.

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Stormwater Sampling and Analysis

4.1 Field Activities

The Phase 1 stormwater samples were collected during four storm events⁵ between November 2008 and March 2009, in accordance with the SAP (BES, 2008), from the following locations in Basin 43 (see Figure 2):

Sampling Location (Manhole)	Area Represented
ABC290 (downstream in 16" line)	Western branch
ABC552 (downstream in 62" line)	Eastern branch – N. Wheeler line, upstream of N. Kerby line connection
ABC499 (downstream in 27" line)	Eastern branch – N. Kerby line, upstream of N. Tillamook line connections
ABC539 (within manhole)	Eastern branch – N. Kerby, N. Tillamook, and N. Thompson lines

Three of the Phase 1 events targeted “first-flush” conditions (broadly defined for the purposes of basin-level monitoring as being within the first 3 hours of observed runoff).

Phase 2 stormwater sampling was conducted in the eastern branch in December 2010, in accordance with the Winter 2010-11 SAP (BES, 2010c), following line cleaning to remove inline solids that had been observed upstream of manhole ABC539. These stormwater samples were collected at the following locations (see Figure 2):

Sampling Location (Manhole)	Area Represented
ABC499 (upstream in 24" line)	Eastern branch – N. Thompson and N. Kerby lines (upstream of N. Tillamook line connections and catch basins at intersection of N. Kerby and N. Tillamook)
ABC500 (downstream in 24" line)	Eastern branch – N. Tillamook and N. Thompson lines
ABC539 (within manhole)	Eastern branch – N. Kerby, N. Tillamook, and N. Thompson lines

⁵ Sampling location ABC499 was added following the completion of the first event; therefore, only three samples were collected from this location.

The Phase 2 stormwater samples represent discharges from a portion of Basin 43 that was slated for diversion to the sanitary system, and this sampling was conducted to confirm that stormwater discharges in this portion of the basin would be in compliance with the City's wastewater discharge prohibition for PCBs and that no additional source investigation is needed in this area. The Phase 2 stormwater sampling locations in the vicinity of manholes ABC499 and ABC500 were modified from the Phase 1 location, to better distinguish inputs from upstream and downstream of the former Westinghouse site (the Phase 1 sampling location was upstream of the N. Tillamook line connections, but included inputs from catch basins located in N. Tillamook Avenue, adjacent to the Westinghouse site).

Photographs of the stormwater sampling locations and stormwater flow conditions during the Phase 1 and Phase 2 sampling are provided in Appendix A. Field notes recorded during sampling activities are provided in Appendix B.

4.2 Storm Events Sampled

The SAP identifies the following target storm event criteria (consistent with the JSCS) for stormwater sampling:

- Antecedent dry period of at least 24 hours (as defined by <0.1 inches of rainfall over the previous 24 hours);
- Minimum predicted rainfall volume of >0.2 inches for the storm event; and
- Expected duration of the storm event of at least 3 hours.

These criteria were developed as part of the JSCS for implementation by upland sites. For the purposes of the City's basin-scale source investigations, the criteria are used as general guidelines for use with specific forecasts, to determine whether storms are likely to generate stormwater runoff representative of the entire drainage basin and thus should be targeted for sampling. For example, storms with predicted volumes of less than 0.2 inches may still deliver a concentrated pulse of rain, generating representative conveyance system flows in smaller drainage areas with a large percentage of impervious area. As a result, some storms are sampled which may be outside of recommended storm criteria but still representative of stormwater discharge from the basin.

Samples were defined as meeting or not meeting "first-flush" conditions based on the rain gage data, field observations, and the timing of sample collection during the storm event. Table 1 includes a summary of the characteristics of each sampling event and designates those events that have been determined to meet "first-flush" criteria. Precipitation graphs for each event from data collected at the Albina rain gage (located at 2920 N. Larrabee Avenue)⁶ are shown on Figure 3. Brief descriptions of the storm events sampled are provided below. As described below, the target JSCS criteria for stormwater sampling were met for all five sampling events.

- *November 20, 2008 (Event 1):* No rainfall was recorded at the Albina rain gage for the six days preceding this event. The minimum forecasted rainfall for this event was 0.29 inches. Rainfall began on November 20th between 6:00 and 7:00 a.m., Pacific Standard

⁶ Station #117 in the City's Hydrological Data Retrieval and Alarm (HYDRA) system rain gage network.

Time (PST), and the Basin 43 samples were collected between 8:54 and 9:32 a.m. By the conclusion of sampling, 0.25 inches of rainfall had been recorded by the Albina rain gage; a total of 0.52 inches was recorded by the time the storm event ended between 7:00 p.m. and 8:00 p.m. that evening. The samples from this event are considered to reflect first-flush conditions.

- *December 12, 2008 (Event 2)*: No rainfall was recorded at the Albina rain gage for the three days preceding this event. The minimum forecasted rainfall for this event was 0.52 inches. Rainfall began between 10:00 and 11:00 a.m. PST, and the Basin 43 samples were collected between 11:57 a.m. and 1:32 p.m. By the conclusion of sampling, 0.16 inches of rainfall had been recorded; a total of 0.44 inches was recorded by the time the event ended between at approximately midnight on December 12th. The sample collected from manhole ABC290 is considered to reflect first-flush conditions. Rainfall stopped for approximately 45 minutes following collection of this sample, and sampling was suspended until runoff resumed. The remaining samples collected during this event are not considered to reflect first-flush conditions.
- *February 23, 2009 (Event 3)⁷*: No rainfall was recorded at the Albina rain gage for the seven days preceding this event. The minimum forecasted rainfall for this event was 0.37 inches. The first rainfall was recorded between 8:00 and 9:00 a.m. PST on February 23rd, and the Basin 43 samples were collected between 1:58 and 3:18 p.m. By the conclusion of sampling, 0.37 inches of rainfall had been recorded, with more than half of this volume occurring during the two hours preceding sample collection. It rained a total of 0.48 inches on February 23rd and continued raining periodically over the next three days. The February 23rd samples are not considered to reflect first-flush conditions.
- *March 23, 2009 (Event 4)*: Less than 0.1 inches of precipitation were recorded in the five days preceding this event. The minimum forecasted rainfall for this event was 0.21 inches. Rainfall began between 12:00 p.m. and 1:00 p.m. PST and peaked in intensity between 3:00 p.m. and 4:00 p.m. The Basin 43 samples were collected between 1:22 and 2:59 p.m. Approximately 0.03 inches of rainfall had been recorded by the conclusion of sampling. The rain event ended shortly after midnight on March 23rd; at that time a total of 0.16 inches of precipitation had been recorded by the Albina rain gage. The samples from this event are considered to reflect first-flush conditions. The total precipitation amount for the March 23, 2009, event was less than the targeted 0.2-inch minimum, but the predicted precipitation was within the targeted amount, and field observations at the time of sampling indicated the sampled flow represented stormwater discharge. However, because the samples were collected after only a relatively small amount of rainfall had occurred (approximately 0.02 inches), the sample may not be representative of discharges from the entire basin.
- *December 7, 2010 (Event 5)*: Less than 0.1 inches of rainfall were recorded at the Albina rain gage for 30 hours preceding this sampling event. The minimum forecasted rainfall for this event was 0.21 inches. Steady rainfall began around 2:00 p.m. and samples were

⁷ Field notes in Appendix B refer to the February 23, 2009 event as “Event 4.” Stormwater sampling in Basin 43 was conducted in conjunction with sampling in nearby basins and a stormwater sampling event conducted on February 8, 2009 did not include sampling in Basin 43.

collected between 5:03 p.m. and 5:28 p.m. PST. By the conclusion of the sampling period, approximately 0.17 inches of rainfall had been recorded; a total of 0.20 inches were recorded by the time the rain ended at approximately 6:30 p.m. on December 7, 2010. Rainfall resumed at 11:30 p.m. The samples from this event are not considered to reflect first-flush conditions.

Based on these sampling conditions, the stormwater samples collected during the 2008/2009 and 2010 storm events meet the Basin 43 sampling objectives of characterizing stormwater discharges in the basin.

4.3 Analytical Approach

For the purposes of screening Basin 43 discharges, stormwater samples from the 2008-2009 (Phase 1) events were analyzed for a broad range of constituents, including PCB congeners, organochlorine pesticides⁸, SVOCs (including PAHs and phthalates), total metals, and total suspended solids (TSS). The December 2010 (Phase 2) stormwater samples were analyzed for PCB Aroclors, TSS and TOC. All stormwater samples were analyzed by the BES Water Pollution Control Laboratory (WPCL) or subcontracted laboratories in accordance with the SAP.

4.4 Summary of Results

PCB congeners were detected in all of the 2008-2009 stormwater samples. PCB Aroclors were not detected in the three samples collected from the eastern branch in 2010. Metals were detected at generally low concentrations in samples from the western branch and at somewhat higher concentrations in samples from the eastern branch. Pesticides, PAHs, phthalates and other SVOCs were detected at relatively low concentrations in one or more samples from each sampling location. Tables 2 through 4 summarize the laboratory analytical results for the stormwater samples and include the JSCS SLVs for reference. The total PCBs concentrations are displayed on Figure 4. The laboratory reports and data review memoranda for the samples were previously submitted to DEQ (BES, 2009b, 2009c, 2009d, 2011a) and are included for reference in Appendix C. The stormwater data, together with the inline solids data, are evaluated in Section 6.

⁸ Pesticides analysis was added to the analytical scope following Event 1.

Stormwater Solids Sampling and Analysis

The City collected stormwater solids in Basin 43 during Phase 1 and Phase 2 investigations at the locations shown on Figure 1. During Phase 1, sediment traps were deployed at the same locations as for the Phase 1 stormwater samples. Additional stormwater solids samples subsequently were collected at selected locations in both the western and eastern branches during Phase 2. The field activities, analytical approach, and results for the solids sampling are described below.

5.1 Field Activities

5.1.1 Sediment Trap Sampling (Phase 1)

Sediment trap deployment and sampling procedures during Phase 1 were conducted in accordance with the SAP (BES, 2008). Sediment traps were installed on November 24 – 25, 2008, at the four Phase 1 stormwater sampling locations.⁹ One of the locations, manhole ABC539 (ST2), essentially functions as a sedimentation manhole due to its configuration. The incoming pipe connects near the bottom of the manhole, while the outgoing pipe connects approximately 3.5 feet higher; this configuration leads to sediment accumulation in the manhole itself, reducing the amount of sediment moving past the manhole and creating an optimal sampling point for this portion of the eastern branch. Because of this configuration, the sediment traps in manhole ABC539 were attached to the manhole wall just below the outgoing pipe (see Photo 11 in Appendix A). Sediment traps at the other Phase 1 sampling locations were installed within the connecting pipes.

The sediment traps were inspected periodically, and accumulated sediments were removed on May 27, 2009. Approximately 0.6 to 2.5 inches of solids had accumulated in the trap bottles at the time of removal. In accordance with the BES SOP 5.01b, "Sampling Stormwater Solids Using Inline Sediment Traps," field personnel filtered sediment bottle contents to remove the solids fraction and composited the samples to generate the final solids sample for laboratory analyses. Selected photographs of the sediment traps in their installed locations are provided in Appendix A. Field notes taken during sediment trap installation, monitoring, removal, and sample processing activities are provided in Appendix B.

5.1.2 Stormwater Solids Sampling (Phase 2)

Phase 2 stormwater solids sampling was conducted during multiple events between April 2009 and January 2011. With the exception of the sieving activities described below, the inline solids samples were collected in accordance with the SAP (BES, 2008) and SAP amendment (BES, 2009a) at the locations shown on Figure 2. Samples listed as "sieved" were homogenized and

⁹ Phase 1 stormwater samples collected at manhole ABC499 and sediment trap samples collected at manhole 500 are representative of the same drainage area. Stormwater samples could not be collected at ABC500 while the sediment trap was in place.

sieved at the WPCL using a #10 sieve that separates solids into two fractions [< 2000 microns (μ) and $\geq 2000 \mu$]; the sieved portions of the samples (i.e., $< 2000 \mu$) were submitted for analysis. This approach was developed during an inline solids pilot study conducted in Basin 44 to segregate road-deicing aggregate material applied to the rights-of-way in December 2008 following a major icing event (BES, 2009c, 2011c). Specific Phase 2 stormwater solids sampling events conducted in Basin 43 are described below. Selected photographs of the sampling activities are provided in Appendix A. Field notes recorded during sample collection are included in Appendix B.

5.1.2.1 April 2009 Inline Solids Sampling

Based on review of preliminary stormwater sampling data, conveyance system inspection and maintenance records, and field inspections in the vicinity of suspected source areas, the City proposed additional inline solids sampling (composite grabs) in three areas of Basin 43 to identify possible sources of PCBs and metals detected in the stormwater samples (BES, 2009a). Areas identified included: the industrial area along N. Thompson (Area 1), the industrial area along N. Tillamook (Area 2), and the area between the former Tucker Building and the railroad right-of-way (Area 3). The sampling was conducted on April 29, 2009. Although five inline locations had been targeted for sampling, insufficient solids were present at the three proposed sampling locations representing the western portion of Area 1 and the western and eastern portions of Area 2. Samples were successfully collected from the following locations during this event:

- Catch basins ANE064 and ANE065, located in the western branch in the railroad right-of-way adjacent to the former Tucker Building site (Area 3). Materials from these two catch basins were composited for sampling. Part of the composited material was sieved and both the sieved and unsieved portions of the final composited sample were submitted for chemical analysis.
- Manhole ABC479 (upstream in the 15" line), located in Area 1 of the eastern branch, on the N. Thompson line west of N. Kerby. The sample was homogenized and sieved; the sieved portion of the samples was submitted for analysis.

5.1.2.2 2009-2010 Sediment Trap Sampling – Western Branch

Sediment traps were deployed at two locations in the western branch in December 2009 to provide additional data to evaluate the possible presence of a localized source of PCBs in this subbasin. Locations were selected to characterize contributions from the upper portion of the western branch and from the western branch as a whole. Screened Inline Flow-Through (SIFT®)¹⁰ style sediment traps were deployed at both locations. The upstream trap was installed at manhole ABC270; this location represents drainage from the N. Interstate Avenue right-of-way and adjacent properties as well as drainage from the area along N. Albina Avenue between the railroad corridor and N. Interstate Avenue (see Figure 2). The downstream sediment trap was installed in the outgoing line from manhole ABC363 (see Figure 2). This location is just downstream of the Phase 1 sediment trap location for the western branch (manhole ABC290) and represents the majority of the western branch drainage area.

¹⁰ 2009 City of Portland. Proprietary and patent pending. These traps were designed by the City for use in smaller pipe diameters and low-flow depth conditions (see Appendix A).

The sediment traps were inspected periodically, and accumulated solids were removed in January, February and April 2010, weighed and archived. The traps were removed on June 15, 2010. When the field crew entered manhole ABC270 to remove the trap, they discovered that the trap was no longer present. To meet the sampling objective of collecting paired data from the two sediment trap locations in the western branch, three (primary) samples were submitted for analyses. The first two represent stormwater samples trapped at both locations (manholes ABC270 and ABC363) for the deployment period of December 30, 2009 to April 16, 2010. (In addition, a duplicate of the sample from manhole ABC363 was submitted.) The third primary sample represents stormwater solids trapped at manhole ABC363 between April 16 and June 15, 2010.

5.1.2.3 April 2010 and January 2011 Inline Solids Sampling

Two rounds of inline solids sampling were conducted at manhole ABC539; both sampling events followed cleaning of lines upstream of this manhole. The first round was conducted on April 28, 2010, following cleanout (as discussed in Section 7) of catch basins and lines in the basin conveyance system upgradient of this manhole and at the Water Bureau Interstate Facility in late 2009 to early 2010. The purpose of this post-line cleanout sampling was to evaluate potential current sources of PCBs and metals in the eastern branch. Minimal solids were present in the manhole at the time of sampling, though sample volume was sufficient to meet analytical objectives.

A second sample was collected at manhole ABC539 on January 11, 2011, following additional line cleaning within and immediately upstream of ABC539 in early October 2010. The purpose of resampling solids from manhole ABC539 was to evaluate whether PCBs detected in the April 2010 solids sample resulted from residual legacy solids from line cleaning activities or reflected a current source to the basin.

5.2 Analytical Approach

Consistent with the analytical approach for the stormwater samples, the Phase 1 sediment trap samples were analyzed for a broad range of contaminants as a screening step. Subsequent stormwater solids samples were analyzed for a subset of those constituents based on source tracing objectives and findings. The stormwater solids collected during the various sampling activities in Basin 43 were analyzed by the WPCL or subcontracted laboratories in general accordance with the SAP (BES, 2008), SAP amendment (BES, 2009a), and/or Winter 2010-11 SAP (BES, 2010c), as applicable, for the analytes listed in Tables 5 through 7.

The sample collected from one of the four sampling locations during the Phase 1 sediment trap sampling (from manhole ABC500) was insufficient to conduct all proposed analyses; based on inriver sediment data in the Albina Riverlots area, the decision was made to analyze this sediment trap sample for PCB congeners, PCB Aroclors, PAHs, phthalates, total solids and TOC. The remaining sediment trap samples were of sufficient volume to be analyzed for the full suite of targeted analyses; these included PCB Aroclors, PCB congeners, total solids, grain size, TOC, metals, pesticides, PAHs, and phthalates. The Phase 2 stormwater solids samples were analyzed for one or more of the following (as indicated in Tables 5 through 7): PCB congeners, PCB Aroclors, total solids, TOC, metals, PAHs, phthalates, and SVOCs.

5.3 Summary of Results

PCBs were detected in all but one of the solids samples, at concentrations ranging from low to significantly elevated. Other constituents detected in one or more samples include pesticides, metals, and SVOCs. Metals, PAHs, and bis(2-ethylhexyl)phthalate (BEHP) were detected at elevated concentrations in one or more samples (from the eastern branch only). Tables 5 through 7 summarize the laboratory analytical results for the solids samples and include the JSCS SLVs for reference. The total PCBs concentrations are displayed on Figure 4. The laboratory reports and data review memoranda for the solids samples were previously submitted to DEQ (BES, 2009e, 2009f, 2010d, 2010e, 2011b) and are included for reference in Appendix C. Solids data are evaluated along with the stormwater data in Section 7.

Data Evaluation

The objectives of the Basin 43 investigation were to evaluate whether there are major sources of contaminants discharging to the City's storm system (Phase 1) and the need for site source investigation and control (Phase 2). The stormwater and solids data are evaluated in this section by branch (western branch; eastern branch – N. Kerby line; and eastern branch – N. Wheeler line). The data from the Phase 1 sampling locations first are screened to identify which analytes may have major current sources in the associated drainage area. Data collected at subsequent Phase 2 locations then are evaluated separately to identify potential source areas.

The data evaluation is based on comparison to the JSCS SLVs and to concentrations in stormwater and solids discharging from other basins and upland sites within the Portland Harbor drainage area. Because the recommended JSCS SLVs (highlighted values in the data tables) are conservative screening values selected to be protective of inriver receptors, exceedances of SLVs in in-pipe media (e.g., stormwater and stormwater solids) do not necessarily indicate the presence of significant sources warranting additional source tracing or source control. For example, some SLVs are below estimated background concentrations, some SLVs are below DEQ's NPDES permit benchmarks, and even undeveloped natural areas can yield samples with analyte concentrations exceeding one or more SLVs.

Therefore, to assess if the data indicate sources to the stormwater pathway, the City evaluated the Basin 43 dataset against SLVs and the harborwide data collected by the City and other parties, to provide references for interpreting the potential significance of the source investigation results.

6.1 Screening Approach

6.1.1 Stormwater Screening

Stormwater data for all analytes for which one or more stormwater sample concentrations exceeded the applicable JSCS SLVs (see Tables 2 and 3) were evaluated to assess the potential need for additional source tracing in each branch. This evaluation was conducted on the geometric mean¹¹ of the concentrations (by branch) to account for the inherent variability in stormwater data. The geometric mean concentrations first were compared to the applicable JSCS SLVs. Analytes for which the geometric mean concentration is less than the SLV were not carried forward for further assessment. Analytes for which the geometric mean concentrations are greater than the SLVs were compared to the following additional screening factors: DEQ default background concentrations (DEQ, 2002), harborwide source tracing categories developed as part of the *Stormwater Evaluation Report* (BES, 2010f), and magnitude of

¹¹ Use of the geometric mean is consistent with DEQ's use of the annual geometric mean concentration as a protective compliance limit in the City's Underground Injection Control (UIC) permit (DEQ, 2005b), DEQ-issued NPDES 1200-Z permits (DEQ, 2006), and DEQ's Industrial Stormwater Advisory Committee discussions regarding monitoring approaches under DEQ's NPDES program (DEQ 2009a, 2009b, and 2009c).

exceedance. The results of this screening are presented by branch in Tables 8, 9 and 10. Because discharges from the eastern branch have been diverted to the wastewater treatment plant, the geometric mean concentrations also are compared to City wastewater discharge limits.

The development of the harborwide source tracing categories in the *Stormwater Evaluation Report* (BES, 2010f) consisted of a statistical analysis of stormwater data collected by the City, the LWG, and others from City and non-City outfall basins within Portland Harbor. The harborwide analyses resulted in the sorting of analytes by basin into one of three source tracing categories (i.e., “1-lower”, “2-moderate”, and “3-higher”) relative to the harborwide distribution of stormwater concentration levels. These categories were then used as the basis for identifying which analytes should be evaluated further, in the context of known and suspected sources, to determine if additional source investigation was needed in City outfall basins. As suggested by DEQ, for the purpose of evaluating the Basin 43 data, a simplified approach was used to generate conservative geometric mean concentrations for comparison purposes, rather than regenerating the statistical analyses.¹²

6.1.2 Stormwater Solids Screening

DEQ compiled and graphed stormwater and stormwater solids data (for selected contaminants) from a large number of industrial sites throughout the Portland Harbor; DEQ has included these graphs in its *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (DEQ, 2010) to assist with data evaluation at upland sites. The possible presence of major sources of these selected contaminants in Basin 43 is evaluated by comparing the concentrations detected in stormwater solids collected at the Basin 43 screening locations to the ranges depicted in the DEQ graphs. The detected concentrations are identified as elevated and indicative of a possible major source in the associated drainage area if they plot in the upper portion of the graph (above the “knee” of the graph).

6.2 Western Branch

6.2.1 Screening Evaluation Results

6.2.1.1 Stormwater Data

The stormwater data collected from manhole ABC290 represent discharges from the majority of the western branch. Stormwater analytes that exceed the applicable JSCS SLVs in one or more samples from this location (see Table 2) were further evaluated to assess the need for source tracing in this branch using the approach described above. The results of this screening for the western branch are presented in Table 8. As indicated in Table 8, the stormwater data from manhole ABC290 do not indicate the presence of major sources in the western branch. In addition, the geometric mean concentrations for detected analytes in stormwater from the western branch of Basin 43 are not elevated relative to the industrial stormwater contaminant ranges compiled by DEQ (DEQ, 2010).

¹² Geometric mean values were calculated using the following conventions: (1) where applicable, averaging the concentrations (for each analyte) for primary and duplicate samples to calculate a single concentration (for each analyte) for the event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting (MRL) limit to 1/2 the value of the laboratory MRL; 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

6.2.1.2 Sediment Trap Data

Results for the sediment trap sample collected at the western branch Phase 1 screening location (manhole ABC290) are summarized in Table 5 and discussed below relative to the SLVs and the range of values included in DEQ's data compilation (DEQ, 2010).

- *Total PCBs:* The total PCB congeners concentration in the sample (971 µg/Kg) exceeds the JSCS Toxicity SLV and is elevated relative to the range of concentrations on DEQ's guidance curve for total PCBs. However, the total PCB Aroclors concentration (90 µg/Kg) for this sample is less than the Toxicity SLV and is relatively low relative to the range of concentrations detected in stormwater solids included in DEQ's data compilation (DEQ, 2010).
- *Other constituents:* The sample also was analyzed for metals, pesticides, PAHs, and phthalates. The detected concentrations of these analytes all are low relative to the JSCS screening levels and/or the DEQ range of concentrations detected in industrial stormwater solids (DEQ, 2010).

6.2.2 Source Tracing

Although results of the stormwater screening evaluation indicated no major PCBs sources in the western subbasin, the City collected additional solids samples from three locations to assist with tracing of possible localized sources of PCBs detected in the sediment trap samples from this branch. The upstream samples included composite samples (sieved and unsieved) of solids collected adjacent to the Tucker Building site from catch basins ANE064 and ANE065 and sediment trap solids collected during the 2009-2010 deployment at manhole ABC270 (see Figure 2). Sediment traps were also deployed in 2009-2010 downstream of the Phase 1 trap location as manhole ABC363 was accessible.

As shown on Figure 4 and Table 5, total PCB Aroclors were not detected or were detected at low concentrations in the catch basin composite samples and the total PCB congeners concentration detected in the upstream sediment trap sample from manhole ABC270 also is low. These results indicate the absence of major current PCBs sources in the areas discharging to these sample locations. Phase 2 sediment trap samples collected from the downstream location (manhole ABC363) had lower total PCB congeners concentrations (142 – 496 µg/Kg) than what had been detected at manhole ABC290 during Phase 1, but the higher values are elevated relative to the range of concentrations included in DEQ's data compilation (DEQ, 2010). PCB Aroclors were not detected in these samples.

The elevated total PCB congeners concentrations in the downstream sediment trap samples suggest a potential source along N. Albina Avenue between manholes ABC270 and ABC290 (see Figure 4). However, no potential current PCBs sources in this vicinity have been identified. It is possible that the results reflect low-level ongoing inputs of legacy contaminants related to historical industrial activities in the area, such as shipbuilding and transformer operations. PacifiCorp's investigation of active Albina Substation properties in the adjacent Basin 44 drainage area identified contaminated erodible soils at the site and in the City rights-of-way alongside the substation. Another possibility is that construction activities associated with

recent transformer upgrades¹³ at the active Albina Substation properties (BES, 2011c) may have resulted in the offsite migration and incidental tracking of contaminated erodible soils from adjacent known source areas to this branch of Basin 43.

6.3 Eastern Branch – N. Wheeler Line

6.3.1 Screening Evaluation

6.3.1.1 Stormwater Data

The Phase 1 stormwater data collected from manhole ABC552 represent all eastern branch contributions from the N. Wheeler line (upstream of the N. Kerby line connection). Analytes that exceed the applicable JSCS SLVs in one or more samples from this location are indicated on Table 3. As indicated in Table 9, the stormwater data from this portion of the eastern branch do not indicate the presence of major sources of these contaminants. In addition, geometric mean concentrations for detected analytes in stormwater from this portion of the eastern branch are not elevated relative to the industrial stormwater contaminant ranges compiled by DEQ (DEQ, 2010) and are below City wastewater discharge limits (see Table 9).

6.3.1.2 Sediment Trap Data

Only indeno(1,2,3-cd)pyrene and BEHP were detected at concentrations above JSCS Toxicity SLVs in the 2008-2009 sediment trap sample from the N. Wheeler line (see Table 6). Comparison of the results for this sample to the harborwide industrial range compiled by DEQ (DEQ, 2010) indicates concentrations are low.

6.3.2 Source Tracing

Based on the low analyte concentrations in the Phase 1 stormwater and sediment trap samples from the N. Wheeler line, major contaminant sources are not likely to be present in this portion of the basin. The City did not conduct additional source tracing in this area.

6.4 Eastern Branch – N. Kerby Line

6.4.1 Screening Evaluation

6.4.1.1 Stormwater Data

The stormwater data collected from manhole ABC539 represent the majority of discharges from the N. Kerby line to the eastern branch. Analytes that exceed the applicable JSCS SLVs in one or more of the Phase 1 samples from this location are indicated on Table 3. The results of the additional screening of these stormwater analytes for this portion of the eastern branch are presented in Table 10 and summarized below. The screening results indicate that there may be major current sources of PCBs and cadmium discharging to the N. Kerby line.

- *Total PCBs:* The geometric mean concentration falls into the intermediate source tracing category.

¹³ Between 2008 and 2009 PacifiCorp replaced a transformer and installed secondary containment at a portion of the active Albina Substation adjacent to North Loring Street. In January 2010 additional work was done in this area in response to a fire and explosion related to the new equipment.

- *Cadmium:* The geometric mean concentration exceeds DEQ background and falls within the highest source tracing category.
- *Other constituents:* Major sources of other constituents are not likely to be discharging to this line based on the considerations listed in Table 10.

Comparison of the geometric mean concentration for cadmium to harborwide industrial ranges compiled by DEQ (DEQ, 2010) confirms that the mean cadmium concentration for the stormwater samples from the N. Kerby line is elevated. The total PCBs geometric mean concentration is somewhat elevated relative to the range included in DEQ's compilation (DEQ, 2010), and the geometric mean values for other analytes are low.

6.4.1.2 Sediment Trap Data

A Phase 1 sediment trap sample was collected at manhole ABC539 (see Table 6). As discussed below, total PCBs, cadmium, and BEHP concentrations in this sample exceed the SLVs and are elevated relative to the range of values included in DEQ's compilation (DEQ, 2010). Detected concentrations of other constituents were generally low.

- *Total PCBs:* The sample was analyzed for PCB Aroclors and PCB congeners. The total PCB congeners concentration was elevated relative to SLVs and the DEQ range of industrial concentrations.
- *Metals:* Some metals (cadmium, copper, lead, nickel and/or zinc) exceed the JSCS Toxicity SLVs; of these only cadmium also is elevated relative to DEQ's range of values (DEQ, 2010). (Metals concentrations were uniformly low in the 2008 inline solids sample from this location; see Table 6).
- *Other Constituents:* The sample was analyzed for PAHs, phthalates, and pesticides.¹⁴ Some individual PAHs exceed the JSCS Toxicity SLVs, but the total PAHs concentration is not elevated relative to DEQ's range of values (DEQ, 2010). BEHP exceeded the Toxicity SLV and is on the upper part of DEQ's curve. Most pesticides were not detected, and detected concentrations were low.

6.4.2 Source Tracing

Screening evaluation results for the N. Kerby branch, as summarized above, indicated the possible presence of major current sources of PCBs and cadmium in this subbasin. Although BEHP also was elevated in the Phase 1 sediment trap sample from the screening location, BEHP concentrations in the stormwater screening samples were low. To assist with tracing of possible sources of PCBs and cadmium, the City evaluated the historical (2006 – 2008) solids data that were collected from this branch before and after remediation of the former Westinghouse site and collected additional data in this branch. The objective of this source tracing was to identify any source areas that required additional investigation or control.

¹⁴ The 2008 inline solids sample also was analyzed for PAHs and phthalates and other SVOCs; SVOCs were not detected in this sample, but the method reporting limits were elevated.

6.4.2.1 PCBs

The highest total PCBs concentrations in the solids samples collected upstream of manhole ABC539 were detected in two of the samples collected in 2006 in the vicinity of the Westinghouse site (from catch basins APG303 and ADZ339, in N. Tillamook Street), indicating the Westinghouse site as a likely historical and possible current source of PCBs to this line. Major site remediation was completed in 2007, and these catch basins were cleaned as described in Section 7. As noted in Section 2.4, PCBs also were detected in surface soils and catch basin solids at the former foundry property located at 650-680 N. Tillamook; these findings indicate the former foundry site also is a likely historical and current source of PCBs to the N. Tillamook line.

Inline solids data collected in 2008 and 2009 at manholes ABC479 and ABC488 in N. Thompson Street suggested the possible presence of a PCBs source(s) upstream of the N. Tillamook line (see Figure 4); however, no potential PCBs sources have been identified in this vicinity. PCBs also were elevated in stormwater samples collected in 2009 immediately upstream of the intersection of N. Kerby and N. Tillamook (at manhole ABC499; see Figure 4), but this sampling location included stormwater discharges from catch basins at the intersection of N. Kerby and N. Tillamook – an area that may have been impacted by historical Westinghouse and/or foundry activities.

Extensive line cleaning was completed by the City in the N. Kerby branch between late 2008 and early 2010 (see Section 7). During this time period, line cleaning also was conducted at the Water Bureau Interstate Facility on and adjacent to the former Westinghouse site. Inline solids were resampled twice at the Phase 1 location (manhole ABC539) and analyzed for PCBs. The first follow-up inline solids sample (April 2010) had the highest total PCBs concentrations (19,900 - 40,500 µg/Kg) among the dataset for this branch (see Table 6). The timing of events suggests the PCBs concentrations in this sample likely were influenced by recent cleaning activities (i.e., legacy solids accumulations loosened during cleaning) and are not necessarily indicative of a major current source in the area. Solids accumulations at manhole ABC539 were low in volume during the period between Fall 2009 and April 2010, based on the relatively small amount of solids (less than 1 inch deep) in manhole ABC359 during the April 2010 sampling (see Appendix B). The low accumulation rate is attributable in part to the extensive cleanout of the stormwater conveyance system upstream of this manhole during this timeframe. In addition, most of the drainage area to this manhole is pervious.

In October 2010, additional line cleaning was conducted to remove solids that had accumulated within the N. Kerby line near manhole ABC539 (video surveys confirmed that only a trace amount of solids was present). The onsite storm system at the former foundry site also was cleaned in fall 2010, as described in Section 7. To verify the absence of current major PCBs sources in the N. Kerby branch following these cleaning activities, the City utilized two lines of evidence. Solids that accumulated in manhole ABC539 following the October 2010 cleaning were collected and analyzed in January 2011. Total PCBs were detected at a moderately elevated concentration (489 µg/Kg), but were two orders-of-magnitude lower than the April 2010 concentration. The City also collected an additional round of stormwater grab samples in December 2010 from three locations on the N. Kerby line (see Figure 2). The samples were analyzed for PCB Aroclors (low-level detection limits). PCBs were not detected in these stormwater samples.

In summary, the most recent data from the eastern branch do not indicate that major current sources of PCBs are present. The slightly elevated total PCBs concentration in the January 2011 solids sample from the N. Kerby branch does indicate low-level ongoing inputs of PCBs to this branch; these inputs are likely related to the presence of legacy contaminants affiliated with historical industrial operations at industrial sites in the area. In addition, PCBs concentrations in stormwater from this branch are not elevated and do not exceed City wastewater discharge limits (see Table 10).

6.4.2.2 Cadmium

Cadmium was detected at high concentrations in the Phase 1 stormwater samples from manhole ABC499 (the corresponding Phase 1 sediment trap sample from ABC499 was not tested for metals). Cadmium also was somewhat elevated in the Phase 2 inline solids sample collected from manhole ABC479, but the concentration was notably lower than in the downstream Phase 1 sediment trap sample collected at manhole ABC539 (see Table 6). The highest concentration in stormwater was detected in December 2008 at manhole ABC499, and was more than three orders-of-magnitude above the recommended JSCS SLV. These results indicate the presence of one or more sources of cadmium to the N. Kerby line.

During investigation activities in August 2010, a substantial illicit non-stormwater discharge was observed in the N. Kerby line. BES inspectors traced the source of the discharge to the Uroboros Glass manufacturing facility at 2139 N. Kerby. Contact cooling water used in the manufacturing process was being discharged to Basin 43 via an unauthorized connection to an onsite storm drain. The site subsequently rerouted this process water to the sanitary sewer. Though the site was not required to characterize this wastewater, cadmium is commonly used in specialty glass manufacturing activities due to its pigment and heat-resistant properties (Golden, 1996). State Fire Marshal records for this site (facility ID number 004489) identify cadmium as a hazardous ingredient of chemical materials stored on site (SFM, 2011). Historical releases from this site may have contributed to cadmium concentrations observed in samples collected from the N. Kerby branch. Cadmium was also detected in erodible soils and catch basin solids at the former foundry property on N. Tillamook Street, indicating this property is another likely historical (and possible current) source of cadmium to the N. Kerby branch.

While the results do not indicate that all sources of cadmium to the N. Kerby line have necessarily been identified and controlled, sources to this line no longer have a complete pathway to the river via the Basin 43 stormwater conveyance system (except during eastside tunnel overflow events), and cadmium concentrations in stormwater from this branch do not exceed City wastewater discharge limits (see Table 10).

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SECTION 7

Source Control Activities

The City completed a number of source control activities within the basin, both before and during this investigation. Some actions were completed at current City properties and others were completed in the Basin 43 conveyance system. Source control activities completed and planned within Basin 43 are summarized below.

Western Branch

City remediation and redevelopment of the former Tucker Building site addressed legacy contamination associated with historical operations and the current site stormwater pathway (BES, 2010a). Stormwater source control activities included:

- Removal of the historical onsite stormwater conveyance system in 2000, including piping, catch basins, and residual legacy materials in the system.
- Demolition of all site structures in 2001-2002 and capping the site with new pavement or landscaping, thereby removing exposure of any historical site contaminants to stormwater.
- Implementation of erosion controls during site remediation and redevelopment, including protection of catch basins potentially affected by soil tracking.
- Cleaning of adjacent catch basins and conveyance systems along N. Albina potentially affected by the former Tucker Building site redevelopment after completion of the Lower Albina Overcrossing Project in 2002. Line segments in the vicinity of the site were also cleaned in 2007 as part of the eastside tunnel construction project (see Figure 5).

Further details on historical maintenance and cleaning activities for the active storm conveyance system serving Outfall 43 are available as an attachment to the SAP amendment (BES, 2009a). Additionally, following completion of the eastside tunnel construction project, the lines and associated catch basins between manhole ABC270 and the end of the N. River Street line (manhole ANR758) will be cleaned as a best management practice to remove any residual solids in the conveyance system.

Eastern Branch

City remediation and redevelopment of the former Westinghouse site began in 1999 and is still underway. Stormwater source controls related to the site that have been completed to date include:

- Removal of the historical onsite stormwater conveyance system in 1999, including piping, catch basins, and residual legacy materials in the system. Work included installation of a stormwater treatment unit, construction of a new connection to the N. Tillamook line, and repaving of the parking area west of the Westinghouse building.

- Building demolition, removal of concrete slabs and underlying soil, and capping with asphaltic concrete in 2007. Roof downspout lateral pipes that formerly connected to the N. Tillamook and N. Kerby lines were plugged with grout.
- Site regrading and construction of new vegetated stormwater treatment swales on the northern and eastern edges of the site. Swales were constructed with clean fill and a new overflow line was connected to manhole ABC500.
- Cleaning onsite and adjacent catch basins in 2007 following completion of building demolition (BES, 2010b).
- Cleaning portions of the Basin 43 stormwater conveyance system downstream of the former Westinghouse facility in the spring and fall of 2008 (see Figure 5). Segments downstream of the intersection of the N. Kerby and N. Wheeler lines are difficult to access; these lines were video surveyed to verify that cleaning was not needed in these lines.
- Cleaning the onsite stormwater conveyance system and associated lateral in the western parking area, and replacing storm filters in January 2010. At that time, the City also cleaned the adjacent Interstate Facility storm line that discharges to the Basin 43 N. Kerby line south of the Westinghouse site.
- Surveying the above referenced Interstate Facility storm line in August 2010 to verify that legacy solids did not remain following the January 2010 cleaning effort.

Additional source control activities completed by the City during the course of the eastern branch investigation are described below.

- During fall 2009, City maintenance crews conducted street sweeping on N. Thompson Street, N. Tillamook Street and N. Kerby Avenue. Following the street sweeping, the City cleaned all basin catch basins, catch basin lateral lines, and storm lines discharging to manhole ABC539 (see Figure 5).
- After the January 2010 cleaning of Interstate facility storm lines and catch basins at and adjacent to the former Westinghouse facility, the City also cleaned the N. Kerby line from N. Tillamook to manhole ABC539.
- Video surveys and a dry-weather flow investigation were conducted during summer 2010 in response to the April 2010 inline solids analytical results. The investigation verified that solids accumulation in manhole ABC539 was low and that only a small pocket of inline solids was present in the Kerby line between manholes ABC538 and ABC539. An unauthorized source of dry-weather flow also was identified during the video survey (contact cooling water from the Uroboros glass manufacturing facility). The site was directed to either remove the discharge or to remove the contact of the cooling water with equipment and obtain a 100-J permit for non-contact cooling water discharge.
- In October 2010, the City cleaned the areas where trace amounts of solids had been noted during the summer survey: the storm line segment between manholes ABC538 and ABC539, the storm lateral between catch basin ADZ339 and manhole ABC538, and manhole ABC539.

- In fall 2010, following completion of the Phase II investigation of the former foundry property at 650-680 N. Tillamook, the City cleaned the onsite storm system and lateral connection to Basin 43.
- As of December 1, 2011, the City diverted the N. Kerby and N. Wheeler drainage areas to the wastewater treatment plant via the new eastside tunnel, thereby eliminating stormwater discharges to the river from the eastern branch except during infrequent tunnel overflows (see Figure 1).

The City also plans to redevelop the entire Interstate Facility, including the former Westinghouse site. Redevelopment is slated to begin in 2012 and will entail removal of the existing stormwater system at the former Westinghouse site, as well as removal of the Interstate Facility storm line and affiliated catch basins discharging to the N. Kerby line. All stormwater will be managed and treated on site through swales and designated infiltration areas. Though a swale overflow connection to manhole ABC500 will remain, the new onsite system is designed to treat flows up to 10-year storm events and stormwater discharges to Basin 43 are expected to be infrequent. The City and DEQ are discussing completion of a site source control evaluation, under DEQ oversight, to demonstrate how site pathways have been controlled.

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Conclusions and Next Steps

Results of the City's source investigation indicate the presence of sources of PCBs and cadmium to the eastern branch of the Basin 43 conveyance system. PCBs are believed to be affiliated with historical industrial operations in the area, including but not limited to a former Westinghouse facility and a former foundry. All specific sources of cadmium were not confirmed, though a glass manufacturing facility in this branch was identified as a suspected source and cadmium has been detected in foundry soils. During the course of the investigation, the City cleaned the majority of the eastern branch conveyance system and has just completed the diversion of the entire eastern branch to the eastside CSO tunnel. Basin data do not indicate that current discharges to the eastern branch exceed City wastewater discharge limits and prohibitions. Based on this weight-of-evidence, the current and future stormwater pathway is incomplete and no additional source tracing is needed in this branch.

The investigation results also suggest a potential low-level source of PCBs in the western branch, along N. Albina Avenue. No current PCB sources in this branch have been identified; it is possible that legacy contaminants related to historical industrial activities in the area are in basin erodible soils. Though erodible soils are not prevalent in the western branch, PacifiCorp investigation of active Albina Substation properties in the adjacent Basin 44 identified contaminated erodible soils in adjacent vegetated areas along City rights-of-way. Another possibility is that construction activities associated with recent upgrades at the active Albina Substation properties (BES, 2011c) may have resulted in the offsite migration and incidental drag-out of contaminated erodible soils from adjacent known source areas to this branch of Basin 43. Following completion of the CSO abatement project, the City will clean lines and associated catch basins between the railroad corridor and downstream end of the N. River Street line to remove any residual solids. Once these lines have been cleaned, the City will collect a sample from the most downstream accessible manhole to confirm that additional source control measures are not needed in the western branch.

Basin 43 data do not indicate that major current sources of other contaminants of interest are discharging to the basin. Findings supporting this conclusion are as follows:

- The sampling objectives defined in the SAP and SAP amendment were met, and the resulting data are considered representative of stormwater and solids discharging to the Basin 43 conveyance system.
- Stormwater data for the downstream sampling locations in the eastern and western branches were evaluated in a manner similar to that utilized in the *City Stormwater Evaluation Report* (BES, 2010f). With the exception of PCBs and cadmium in the N. Kerby line of the eastern branch, concentrations of analytes in stormwater discharging from the two branches are low, based on comparison of the basin geometric mean concentrations to the SLVs, DEQ default background concentrations (DEQ, 2002), harborwide concentration ranges, DEQ guidance (DEQ, 2010), and other screening factors.
- With regard to non-PCBs constituents, analyte concentrations in the sediment trap and inline solids are considered low relative to the JSCS SLVs (i.e., less than the SLVs or low

factors of exceedance) and/or relative to the range of data compiled by DEQ (DEQ, 2010), with the exception of cadmium and BEHP in the N. Kerby line in the eastern branch. Solids were removed from the N Kerby line and from all upstream connecting lines as part of the City's source control activities in the basin, and significant current sources of these constituents are not be believed to be present in the basin, as discussed in Section 6.4.

- For the branches that have recently been diverted to the eastside CSO tunnel, concentrations of all stormwater analytes are less than the City wastewater discharge limits.

Based on the source control measures that have been implemented or that are currently planned by the City, and the completed diversion of the entire eastern branch, the City does not propose additional source tracing activities in the basin. The City anticipates requesting a DEQ decision following completion of confirmation sampling in the western branch and development of a summary report that will refer to this investigation and cover City outfall basins 44, 44A and 45.

SECTION 9

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Table 1
Basin 43 Stormwater Sampling Event Summary

Storm Date	Sample Location	Sample Time (PST)	Sample Type	Antecedent Dry Period (days) ⁽¹⁾	Minimum Forecasted Rainfall Total (Inches) ⁽²⁾	First Flush Event? ⁽³⁾
Phase 1 Stormwater Sampling						
11/20/08 (Event 1)	MH ABC290, DS in 16” Line	09:32	Grab	6	0.29	Yes
	MH ABC539, Within MH	08:54	Grab			
	MH ABC552, DS in 62" Line	09:11	Grab			
12/12/08 (Event 2)	MH ABC290, DS in 16” Line	11:57	Grab	3	0.52	Yes
	MH ABC499, DS in 27" Line	13:10	Grab			No
	MH ABC539, Within MH	13:21	Grab			
	MH ABC552, DS in 62" Line	13:32	Grab			
02/23/09 (Event 3)	MH ABC290, DS in 16” Line	14:42	Grab	7	0.37	No
	MH ABC499, DS in 27" Line	13:58	Grab			
	MH ABC539, Within MH	14:10	Grab			
	MH ABC552, DS in 62" Line	15:18	Grab			
03/23/09 (Event 4)	MH ABC290, DS in 16” Line	13:48	Grab	5	0.21	Yes
	MH ABC499, DS in 27" Line	13:22	Grab			
	MH ABC539, Within MH	13:30	Grab			
	MH ABC552, DS in 62" Line	14:59	Grab			
Phase 2 Stormwater Sampling						
12/7/2010 (Event 5)	MH ABC499, US in 24" Line	17:03	Grab	>1	0.21	No
	MH ABC500, DS in 24" Line	17:10	Grab			
	MH ABC539, Within MH	17:28	Grab			

Notes:

PST = Pacific Standard Time

MH = manhole

US = upstream; DS = downstream

⁽¹⁾ Cumulative rainfall during this time less than 0.10 inches per 24 hours as recorded at the Albina Rain Gage, 2920 N. Larrabee Avenue.

⁽²⁾ Provided by Extended Range Forecasting, Inc.

⁽³⁾ Broadly defined for the purposes of basin-level monitoring as being within the first 3 hours of observed runoff.

Table 2
Basin 43 Stormwater Results -- Western Branch

		Manhole ABC290 Downstream in 16" Line				JSCS Stormwater SLVs ⁽¹⁾			
Class	Analyte	Units	Event 1	Event 2	Event 3	Event 4	Human Health	Human Health	Ecological ⁽⁴⁾
			FO081408	FO081475	FO095216	FO095371	Fish Consumption ⁽²⁾	Ingestion ⁽³⁾	
Field Measurements									
	Conductivity	µmhos/cm	49	56	41	122	--	--	--
	pH	units	7.4	7.9	7.1	7.3	--	--	--
	Temperature	Deg. C	9.5	7.8	9.0	9.8	--	--	--
Total Suspended Solids (SM 2540D)									
	TSS	mg/L	28	42	114	45	--	--	--
Metals (EPA 200.8)									
	Arsenic	µg/L	0.72	1.28	0.99	1.14	0.14	0.045	150
	Cadmium	µg/L	0.33	0.40	0.53	1.43	--	5	0.094
	Chromium	µg/L	2.10	3.23	5.20	2.95	--	100	--
	Copper	µg/L	12.6	16.8	20.5	27.5	--	1300	2.7
	Lead	µg/L	4.72	9.96	14.1	9.61	--	15	0.54
	Mercury ⁽⁵⁾	µg/L	0.0089	0.011	0.010	0.013	0.146	2	0.77
	Nickel	µg/L	1.85	2.45	3.99	4.28	4600	730	16
	Silver	µg/L	0.10 U	0.10 U	0.10 U	0.10 U	--	100	0.12
	Zinc	µg/L	78.2	86.6	135.0	210.0	26000	5000	36
Pesticides (EPA 8081A)									
	4,4'-DDE	µg/L	NA	0.00090 U	0.0027 U	0.0025 U	0.00031	0.28	0.011
	4,4'-DDD	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	0.00022	0.2	--
	4,4'-DDT	µg/L	NA	0.0031 U	0.011 U	0.0025 U	0.00022	0.2	0.001
	Estimated Total DDx ⁽⁶⁾	µg/L	NA	ND	ND	ND	--	0.2	--
	Aldrin	µg/L	NA	0.0020 U	0.0042	0.0025 U	0.00005	0.004	--
	alpha-BHC (α-BHC)	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	0.0049	0.011	2.2
	beta-BHC (β-BHC)	µg/L	NA	0.0012 U	0.0027 U	0.0025 U	0.017	0.037	--
	delta-BHC (δ-BHC)	µg/L	NA	0.0012 U	0.0027 U	0.0025 U	--	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	1.8	0.052	0.08
	alpha-Chlordane ⁽⁷⁾	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	--	--	--
	beta-Chlordane ⁽⁷⁾	µg/L	NA	0.00092 U	0.0038 U	0.0025 U	--	--	--
	Total Chlordane ⁽⁸⁾	µg/L	NA	ND	ND	ND	0.00081	0.19	0.0043
	Dieldrin	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	0.000054	0.0042	0.056
	Endosulfan I	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	89	220	0.051
	Endosulfan II	µg/L	NA	0.00057 U	0.0027 U	0.0025 U	89	220	0.051
	Endosulfan Sulfate	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	89	--	--
	Endrin	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	0.06	2	0.036
	Endrin Aldehyde	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	0.3	--	--
	Endrin Ketone	µg/L	NA	0.00062 U	0.0027 U	0.0025 U	--	--	--
	Heptachlor	µg/L	NA	0.0031 U	0.0027 U	0.039 U	0.000079	0.015	0.0038
	Heptachlor Epoxide	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	0.000039	0.0074	0.0038
	Methoxychlor	µg/L	NA	0.00052 U	0.0027 U	0.0025 U	--	40	0.03
	Toxaphene	µg/L	NA	0.086 U	0.14 U	0.13 U	0.00028	0.061	0.0002
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668M)									
	Total PCBs ⁽⁹⁾⁽¹⁰⁾	mg/L	0.0356	0.0152	0.0645	0.00195	0.000064	0.034	0.014
Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270-SIM)									
	Acenaphthene	µg/L	0.0200 U	0.0194 U	0.0200 U	0.0192 U	990	0.2	520
	Acenaphthylene	µg/L	0.0200 U	0.0194 U	0.0200 U	0.0192 U	--	0.2	--
	Anthracene	µg/L	0.0200 U	0.0194 U	0.0200 U	0.0192 U	40000	0.2	0.73
	Benzo(a)anthracene	µg/L	0.0129	0.0169	0.0245	0.0103	0.018	0.092	0.027
	Benzo(a)pyrene	µg/L	0.0122	0.0156	0.0303	0.00962 U	0.018	0.0092	0.014
	Benzo(b)fluoranthene	µg/L	0.0151	0.0224	0.0467	0.0141	0.018	0.092	--
	Benzo(g,h,i)perylene	µg/L	0.0257	0.0232	0.0587	0.0225	--	0.2	--
	Benzo(k)fluoranthene	µg/L	0.0105	0.0136	0.0257	0.0104	0.018	0.2	--
	Chrysene	µg/L	0.0324	0.0364	0.0893	0.0411	0.018	0.2	--
	Dibenzo(a,h)anthracene	µg/L	0.0100 U	0.00971 U	0.0107	0.00962 U	0.018	0.0092	--
	Fluoranthene	µg/L	0.0672	0.0544	0.136	0.0633	140	0.2	--
	Fluorene	µg/L	0.0200 U	0.0194 U	0.0200 U	0.0192 U	5300	0.2	3.9
	Indeno(1,2,3-cd)pyrene	µg/L	0.0114	0.0127	0.0243	0.0103	0.018	0.092	--
	Naphthalene	µg/L	0.0337	0.0898	0.0579	0.0288 U	--	0.2	620
	Phenanthrene	µg/L	0.0640	0.0793	0.128	0.0538	--	0.2	--
	Pyrene	µg/L	0.0749	0.0549	0.100	0.0746	4000	0.2	--
	Total PAHs ⁽¹⁰⁾	µg/L	0.360	0.419	0.732	0.300	--	--	--

Table 2
Basin 43 Stormwater Results -- Western Branch

		Manhole ABC290 Downstream in 16" Line				JSCS Stormwater SLVs ⁽¹⁾			
Class	Analyte	Units	Event 1	Event 2	Event 3	Event 4	Human Health Fish Consumption ⁽²⁾	Human Health Ingestion ⁽³⁾	Ecological ⁽⁴⁾
			FO081408 11/20/2008	FO081475 12/12/2008	FO095216 2/23/2009	FO095371 3/23/2009			
Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270C)									
	Acenaphthene	µg/L	0.23 U	1.1 U	1.1 U	0.20 U	990	0.2	520
	Acenaphthylene	µg/L	0.034 J	1.1 U	1.1 U	0.092 J	--	0.2	--
	Anthracene	µg/L	0.23 U	0.048 J	1.1 U	0.20 U	40000	0.2	0.73
	Benzo(a)anthracene	µg/L	0.23 U	0.054 J	1.1 U	0.20 U	0.018	0.092	0.027
	Benzo(a)pyrene	µg/L	0.23 U	0.21 U	1.1 U	0.20 U	0.018	0.0092	0.014
	Benzo(b)fluoranthene	µg/L	0.23 U	0.21 U	1.1 U	0.20 U	0.018	0.092	--
	Benzo(g,h,i)perylene	µg/L	0.23 U	0.062 J	1.1 U	0.20 U	--	0.2	--
	Benzo(k)fluoranthene	µg/L	0.23 U	0.21 U	1.1 U	0.20 U	0.018	0.2	--
	Chrysene	µg/L	0.23 U	0.10 J	1.1 U	0.20 U	0.018	0.2	--
	Dibenzo(a,h)anthracene	µg/L	0.23 U	0.21 U	1.1 U	0.20 U	0.018	0.0092	--
	Fluoranthene	µg/L	0.073 J	0.15 J	0.26 J	0.090 J	140	0.2	--
	Fluorene	µg/L	0.23 U	1.1 U	1.1 U	0.20 U	5300	0.2	3.9
	Indeno(1,2,3-cd)pyrene	µg/L	0.23 U	0.21 U	1.1 U	0.20 U	0.018	0.092	--
	Naphthalene	µg/L	0.23 U	0.062 J	1.1 U	0.20 U	--	0.2	620
	Phenanthrene	µg/L	0.079 J	0.073 J	1.1 U	0.20 U	--	0.2	--
	Pyrene	µg/L	0.11 J	0.19 J	0.39 J	0.15 J	4000	0.2	--
	Total PAHs ⁽¹⁰⁾	µg/L	0.30 J	0.74 J	0.65 J	0.33 J	--	--	--
Phthalates (EPA 8270-SIM)									
	Bis(2-ethylhexyl)phthalate	µg/L	1.23	0.924	2.54	1.78	2.2	4.8	3
	Butylbenzylphthalate	µg/L	1.00 U	0.971 U	1.00 U	0.962 U	1900	7300	3
	Di-n-butylphthalate	µg/L	1.00 U	0.971 U	1.00 U	0.962 U	4500	3700	3
	Di-n-octylphthalate	µg/L	1.00 U	0.971 U	4.00 U	0.962 U	--	1500	3
	Diethylphthalate	µg/L	1.00 U	0.971 U	1.00 U	0.962 U	44000	29000	3
	Dimethylphthalate	µg/L	1.00 U	0.971 U	1.00 U	0.962 U	1100000	370000	3
Phthalates (EPA 8270C)									
	(BEHP)	µg/L	1.9	3.1	4.8 J	2	2.2	4.8	3
	Butyl Benzyl Phthalate	µg/L	0.13 J	0.21 U	1.1 U	0.2 U	1,900	7,300	3
	Di-n-butyl phthalate	µg/L	0.18 J	0.26	0.21 J	0.2 U	4,500	3,700	3
	Di-n-octyl phthalate	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	--	1,500	3
	Diethyl phthalate	µg/L	0.11 J	1.1 U	1.1 U	0.23	44,000	29,000	3
	Dimethyl phthalate	µg/L	0.17 J	1.1 U	1.1 U	0.2 U	1,100,000	370,000	3
SVOCs (EPA 8270C)									
	1,2,4-Trichlorobenzene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	70	8.2	110
	1,2-Dichlorobenzene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	1,300	49	763
	1,3-Dichlorobenzene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	960	14	763
	1,4-Dichlorobenzene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	190	2.8	763
	2,4,5-Trichlorophenol	µg/L	0.56 U	2.6 U	2.6 U	0.5 U	3,600	3,700	--
	2,4,6-Trichlorophenol	µg/L	0.56 U	2.6 U	2.6 U	0.5 U	2	6.1	970
	2,4-Dichlorophenol	µg/L	0.56 U	0.51 U	2.6 U	0.5 U	290	110	365
	2,4-Dimethylphenol	µg/L	4.5 U	4.1 U	21 U	4.0 U	850	730	--
	2,4-Dinitrophenol	µg/L	4.5 U	21 U	21 U	4.0 U	5,300	73	150
	2,4-Dinitrotoluene	µg/L	0.23 U	1.1 U	1.1 U	0.2 U	3	73	--
	2,6-Dinitrotoluene	µg/L	0.23 U	1.1 U	1.1 U	0.2 U	--	37	--
	2-Chloronaphthalene	µg/L	0.23 U	1.1 U	1.1 U	0.2 U	1,600	490	--
	2-Chlorophenol	µg/L	0.56 U	0.51 U	2.6 U	0.5 U	150	30	2,000
	2-Methylnaphthalene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	--	0.2	2.1
	2-Methylphenol	µg/L	0.56 U	0.23 J	2.6 U	0.5 U	--	180	13
	2-Nitroaniline	µg/L	0.23 U	1.1 U	1.1 U	0.2 U	--	110	--
	2-Nitrophenol	µg/L	0.56 U	0.51 U	2.6 U	0.5 U	--	1,100	150
	3,3'-Dichlorobenzidine	µg/L	2.3 U	2.1 U	11 U	2.0 U	0.028	0.15	763
	3-Nitroaniline	µg/L	1.2 U	5.1 U	5.1 U	1.0 U	--	3.2	--
	4,6-Dinitro-2-methylphenol	µg/L	2.3 U	11 U	11 U	2.0 U	280	--	150
	4-Bromophenylphenyl ether	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	--	--	--
	4-Chloro-3-methylphenol	µg/L	0.56 U	0.51 U	2.6 U	0.5 U	--	--	--
	4-Chloroaniline	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	--	150	--
	4-Chlorophenyl phenyl ether	µg/L	0.23 U	1.1 U	1.1 U	0.2 U	--	0.06	--
	4-Methylphenol	µg/L	0.56 U	0.26 J	2.6 U	0.5 U	--	180	--
	4-Nitroaniline	µg/L	1.2 U	5.1 U	5.1 U	1.0 U	--	3.2	--
	4-Nitrophenol	µg/L	2.3 U	11 U	11 U	2.0 U	--	290	150
	Benzoic acid	µg/L	5.6 U	1.9 J	26 U	3.0 J	--	150,000	42
	Benzyl alcohol	µg/L	0.33 J	1.1	2.6 U	0.52	--	11,000	8.6
	Bis(2-chloroethoxy) methane	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	--	--	--
	Bis(2-chloroethyl) ether	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	0.53	0.06	--
	Bis(2-chloroisopropyl) ether	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	--	0.95	--
	Dibenzofuran	µg/L	0.23 U	1.1 U	1.1 U	0.2 U	--	12	3.7
	Hexachlorobenzene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	0.00029	0.042	100
	Hexachlorobutadiene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	18	0.86	9.3
	Hexachlorocyclopentadiene	µg/L	1.2 U	5.1 U	5.1 U	1.0 U	1100	50	5.2
	Hexachloroethane	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	3.3	4.8	540
	Isophorone	µg/L	0.23 U	0.21 U	1.1 U	0.2 J	960	71	--
	Nitrobenzene	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	690	3.4	--

Table 2
Basin 43 Stormwater Results -- Western Branch

Class	Analyte	Units	Manhole ABC290 Downstream in 16" Line				JSCS Stormwater SLVs ⁽¹⁾		
			Event 1 FO081408	Event 2 FO081475	Event 3 FO095216	Event 4 FO095371	Human Health Fish Consumption ⁽²⁾	Human Health Ingestion ⁽³⁾	Ecological ⁽⁴⁾
			11/20/2008	12/12/2008	2/23/2009	3/23/2009			
	N-Nitrosodi-n-propylamine	µg/L	0.23 U	0.21 U	1.1 U	0.2 U	0.51	0.0096	--
	N-Nitrosodiphenylamine	µg/L	0.069 J	1.1 U	1.1 U	0.2 U	6	14	210
	Pentachlorophenol	µg/L	0.61 J	0.37 J	5.1 U	1.0 U	3	0.56	15
	Phenol	µg/L	0.27 J	0.48 J	2.6 U	0.6	1,700,000	11,000	2,560

Notes:

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

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

-- No JSCS screening level available.

NA = Not analyzed

ND = Not detected.

µmhos/cm = micromhos per centimeter

µg/L = Micrograms per liter.

mg/L = Milligrams per liter.

⁽¹⁾ JSCS SLVs = Portland Harbor Joint Source Control Strategy Screening Level Values (DEQ/EPA Final December 2005, Amended July 2007).

⁽²⁾ The SLVs for chemicals in water taken up by fish for human consumption represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent.

⁽³⁾ The SLVs for chemicals in water for human ingestion represent the most conservative value between EPA's MCLs and Region 9 PRGs.

⁽⁴⁾ The SLVs for chemicals in water for ecological exposure represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent. If no AWQC values are available, then Oak Ridge National Laboratory Tier II SCV Technology Benchmark values are listed for the constituent.

⁽⁵⁾ Mercury analysis by WPCL SOP M-10.02.


⁽⁶⁾ Estimated Total DDX is the sum of DDE, DDD, and DDT.

⁽⁷⁾ Alpha-Chlordane also is known as cis-Chlordane. Beta-Chlordane also is known as trans-Chlordane and gamma-Chlordane.

⁽⁸⁾ Total Chlordane is the sum of alpha- and beta-Chlordane.

⁽⁹⁾ Refer to Table 5 for individual PCB congener results

⁽¹⁰⁾ Total PCBs and PAHs are calculated by assigning "0" to undetected constituents.

 = Highlighted values have been selected by DEQ for initial upland source control screening evaluations.

bold = Concentration exceeds DEQ's recommended SLV.

Table 3
Basin 43 Stormwater Results -- Eastern Branch

		N. Wheeler Line				N. Kerby Line														
		Manhole ABC552 ⁽¹⁾ Downstream in 62" Line				Manhole ABC539 ⁽¹⁾⁽²⁾ Within Manhole						Manhole ABC500 ⁽²⁾ Downstream in 24" Line		Manhole ABC499 ⁽¹⁾ Downstream in 27" Line		Manhole ABC499 ⁽²⁾ Upstream in 24" Line		JSCS Stormwater SLVs ⁽³⁾		
		Event 1 FO081410 11/20/2008	Event 2 FO081477 12/12/2008	Event 3 FO095218 2/23/2009	Event 4 FO095373 3/23/2009	Event 1 FO081409 11/20/2008	Event 1 Duplicate FO081414 11/20/2008	Event 2 FO081476 12/12/2008	Event 3 FO095217 2/23/2009	Event 4 FO095372 3/23/2009	Event 5 W10L058-01 12/7/2010	Event 5 W10L058-03 12/7/2010	Event 2 FO081478 12/12/2008	Event 3 FO095219 2/23/2009	Event 4 FO095374 3/23/2009	Event 5 W10L058-02 12/7/2010	Human Health Fish Consumption ⁽⁴⁾	Human Health Ingestion ⁽⁵⁾	Ecological ⁽⁶⁾	
Field Measurements																				
Conductivity	µmhos/cm	132	106	60	552	23	NA	29	31	90	NA	NA	34	24	122	NA	--	--	--	
pH	units	7.4	7.2	7.2	7.6	6.4	NA	7.1	7.2	6.9	NA	NA	7.5	7.5	7.1	NA	--	--	--	
Temperature	Deg. C	11.4	7.9	9.8	10.7	8.9	NA	7.7	9.1	10.5	NA	NA	7.8	9.4	10.7	NA	--	--	--	
Total Suspended Solids (SM 2540D)																				
TSS	mg/L	154	292	203	131	28	30	36	165	28	9	13	48	94	270	6	--	--	--	
Metals (EPA 200.8)																				
Arsenic	µg/L	0.86	3.46	0.93	2.87	1.4	1.3	1.9	1.7	1.1	NA	NA	1.8	1.2	0.68	NA	0.14	0.045	150	
Cadmium	µg/L	0.25	1.72	0.25	0.98	40	41	90	19	33	NA	NA	150	33	29	NA	--	5	0.094	
Chromium	µg/L	2.51	14.10	3.68	7.55	3.4	3.2	5.1	9.3	2.9	NA	NA	7.2	6.2	3.2	NA	--	100	--	
Copper	µg/L	33.2	40	32.2	26.1	20	20	23	43	29	NA	NA	32	36	28	NA	--	1,300	2.7	
Lead	µg/L	16.2	39	25.9	34.5	9.9	9.9	13.5	44.8	9.6	NA	NA	24	29	6.0	NA	--	15	0.54	
Mercury ⁽⁷⁾	µg/L	0.087	0.049	0.062	0.032	0.010	0.008	0.010	0.017	0.011	NA	NA	0.012	0.012	0.012	NA	0.146	2	0.77	
Nickel	µg/L	3.41	13.90	3.20	5.34	2.6	2.6	4.1	6.8	7.0	NA	NA	5.8	5.2	7.9	NA	4,600	730	16	
Silver	µg/L	0.19	0.14	0.75	0.11	0.10 U	0.10 U	0.14	0.23	0.10 U	NA	NA	0.30	0.29	0.10 U	NA	--	100	0.12	
Zinc	µg/L	217.0	174.0	232.0	118.0	132	137	193	227	338	NA	NA	286	209	380	NA	26,000	5,000	36	
Pesticides (EPA 8081A)																				
4,4'-DDE	µg/L	NA	0.00050 U	0.0050 U	0.0017 J	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00088 U	0.0088 U	0.0025 U	NA	0.00031	0.28	0.011	
4,4'-DDD	µg/L	NA	0.0014 U	0.011 U	0.0025 U	NA	NA	0.0011 U	0.0025 U	0.0025 U	NA	NA	0.0016 U	0.0031 U	0.0025 U	NA	0.00022	0.2	--	
4,4'-DDT	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.0053 U	0.018 U	0.0037 U	NA	NA	0.00088 U	0.018 U	0.0025 U	NA	0.00022	0.2	0.001	
Estimated Total DDx ⁽⁸⁾	µg/L	NA	ND	ND	0.0017 J	NA	NA	ND	ND	ND	NA	NA	ND	ND	ND	NA	--	0.2	--	
Aldrin	µg/L	NA	0.0055 J	0.0050 U	0.0025 U	NA	NA	0.0014 U	0.0025 U	0.0025 U	NA	NA	0.0048 U	0.0025 U	0.0025 U	NA	0.00005	0.004	--	
alpha-BHC (α-BHC)	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.0022 U	0.0025 U	0.0025 U	NA	0.0049	0.011	2.2	
beta-BHC (β-BHC)	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	0.017	0.037	--	
delta-BHC (δ-BHC)	µg/L	NA	0.015 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.0052 U	0.0025 U	0.0025 U	NA	--	--	--	
gamma-BHC (γ-BHC, Lindane)	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	1.8	0.052	0.08	
alpha-Chlordane ⁽⁹⁾	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	--	--	--	
beta-Chlordane ⁽⁹⁾	µg/L	NA	0.00096 U	0.0050 U	0.0025 U	NA	NA	0.00080 U	0.0033 U	0.0025 U	NA	NA	0.0055 U	0.0025 U	0.0025 U	NA	--	--	--	
Total Chlordane ⁽¹⁰⁾	µg/L	NA	ND	ND	ND	NA	NA	ND	ND	ND	NA	NA	ND	ND	ND	NA	0.00081	0.19	0.0043	
Dieldrin	µg/L	NA	0.005 J	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	0.000054	0.0042	0.056	
Endosulfan I	µg/L	NA	0.00058 U	0.0054	0.0025 U	NA	NA	0.00050 U	0.0033 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	89	220	0.051	
Endosulfan II	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	89	220	0.051	
Endosulfan Sulfate	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	89	--	--	
Endrin	µg/L	NA	0.00074 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	0.06	2	0.036	
Endrin Aldehyde	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.0010 U	0.0025 U	0.0025 U	NA	NA	0.0067 U	0.0033 U	0.0025 U	NA	0.3	--	--	
Endrin Ketone	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.0032	0.0038 U	0.0025 U	NA	NA	0.0063 J	0.0084 J	0.0025 U	NA	--	--	--	
Heptachlor	µg/L	NA	0.0061 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.0011 U	0.0017 J	0.0025 U	NA	0.000079	0.015	0.0038	
Heptachlor Epoxide	µg/L	NA	0.00049 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00062 U	0.0025 U	0.0025 U	NA	0.000039	0.0074	0.0038	
Methoxychlor	µg/L	NA	0.00078 U	0.0050 U	0.0025 U	NA	NA	0.00050 U	0.0025 U	0.0025 U	NA	NA	0.00050 U	0.0059 U	0.0025 U	NA	--	40	0.03	
Toxaphene	µg/L	NA	0.14 U	0.25 U	0.13 U	NA	NA	0.15 U	0.36 U	0.13 U	NA	NA	0.95 U	0.3 U	0.13 U	NA	0.00028	0.061	0.0002	
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668M)																				
Total PCBs ⁽¹¹⁾⁽¹²⁾	µg/L	0.0200	0.0330	0.00200	0.0501	0.0360	0.0432	0.0487	0.126	0.0533	NA	NA	0.133	0.133	0.00636	NA	0.000064	0.034	0.014	
Polychlorinated Biphenyls(PCBs) (EPA 8082)																				
Aroclor 1016	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.96	--	
Aroclor 1221	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.034	--	
Aroclor 1232	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.034	--	
Aroclor 1242	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.034	--	
Aroclor 1248	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.034	--	
Aroclor 1254	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.034	--	
Aroclor 1260	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	0.034	--	
Aroclor 1262	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	--	--	
Aroclor 1268	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0250 U	0.0250 U	NA	NA	NA	0.0250 U	--	--	--	
Total PCBs ⁽¹²⁾	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA	ND	0.000064	0.034	0.014	
Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270-SIM)																				
Acenaphthene	µg/L	0.0194 U	0.0194 U	0.0200 U	0.0192 U	0.0200 U	0.0196 U	0.0194 U	0.0192 U	0.0192 U	NA	NA	0.0194 U	0.0192 U	0.0190 U	NA	990	0.2	520	
Acenaphthylene	µg/L	0.0464	0.0194 U	0.0200 U	0.0192 U	0.0200 U	0.0196 U	0.0194 U	0.0192 U	0.0192 U	NA	NA	0.0194	0.0192 U	0.0190 U	NA	--	0.2	--	
Anthracene	µg/L	0.0917	0.0194 U	0.0200 U	0.0192 U	0.0200 U	0.0196 U	0.0194 U	0.0192 U	0.0192 U	NA	NA	0.0194 U	0.0192 U	0.0190 U	NA	40,000	0.2	0.73	
Benzo(a)anthracene	µg/L	0.0571	0.0165	0.0287	0.0279	0.0260	0.0409	0.0213	0.0446	0.00962 U	NA	NA	0							

Table 3
Basin 43 Stormwater Results -- Eastern Branch

			N. Wheeler Line				N. Kerby Line											JSCS Stormwater SLVs ⁽³⁾		
			Manhole ABC552 ⁽¹⁾ Downstream in 62" Line				Manhole ABC539 ⁽¹⁾⁽²⁾ Within Manhole					Manhole ABC500 ⁽²⁾ Downstream in 24" Line		Manhole ABC499 ⁽¹⁾ Downstream in 27" Line		Manhole ABC499 ⁽²⁾ Upstream in 24" Line				
			Event 1 FO081410	Event 2 FO081477	Event 3 FO095218	Event 4 FO095373	Event 1 FO081409	Event 1 Duplicate FO081414	Event 2 FO081476	Event 3 FO095217	Event 4 FO095372	Event 5 W10L058-01	Event 5 W10L058-03	Event 2 FO081478	Event 3 FO095219	Event 4 FO095374	Event 5 W10L058-02			
Class	Analyte	Units	11/20/2008	12/12/2008	2/23/2009	3/23/2009	11/20/2008	11/20/2008	12/12/2008	2/23/2009	3/23/2009	12/7/2010	12/7/2010	12/12/2008	2/23/2009	3/23/2009	12/7/2010	Human Health Fish Consumption ⁽⁴⁾	Human Health Ingestion ⁽⁵⁾	Ecological ⁽⁶⁾
Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270C)																				
	Acenaphthene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	990	0.2	520
	Acenaphthylene	µg/L	0.13 J	0.98 U	1.1 U	0.067 J	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	--	0.2	--
	Anthracene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	40,000	0.2	0.73
	Benzo(a)anthracene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.076 J	0.036 J	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.092	0.027
	Benzo(a)pyrene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.0092	0.014
	Benzo(b)fluoranthene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.092	--
	Benzo(g,h,i)perylene	µg/L	0.21 U	0.98 U	1.1 U	0.058 J	0.2 U	0.052 J	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	--	0.2	--
	Benzo(k)fluoranthene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.2	--
	Chrysene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.1 J	0.058 J	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.2	--
	Dibenzo(a,h)anthracene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.0092	--
	Fluoranthene	µg/L	0.042 J	0.14 J	1.1 U	0.16 J	0.14 J	0.11 J	0.16 J	0.32 J	0.2 U	NA	NA	1.1 U	0.4 J	0.2 U	NA	140	0.2	--
	Fluorene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	5300	0.2	3.9
	Indeno(1,2,3-cd)pyrene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.018	0.092	--
	Naphthalene	µg/L	0.056 J	0.98 U	1.1 U	0.2 U	0.14 J	0.46	0.25 J	0.34 J	0.2 U	NA	NA	0.86 J	0.78 J	0.08 J	NA	--	0.2	620
	Phenanthrene	µg/L	0.057 J	0.98 U	1.1 U	0.12 J	0.11 J	0.062 J	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.25 J	0.2 U	NA	--	0.2	--
	Pyrene	µg/L	0.068 J	0.15 J	1.1 U	0.26	0.17 J	0.15 J	0.21 J	0.4 J	0.2 U	NA	NA	0.18 J	0.48 J	0.096 J	NA	4,000	0.2	--
	Total PAHs ⁽¹⁾⁽²⁾	µg/L	0.353 J	0.29 J	ND	0.665 J	0.736 J	0.888 J	0.62 J	1.06 J	ND	NA	NA	1.04 J	1.91 J	0.176 J	NA	--	--	--
Phthalates (EPA 8270-SIM)																				
	Bis(2-ethylhexyl)phthalate	µg/L	1.2	0.519	1.28	0.872 J	1.35	2.23	1.46	2.84	1.18	NA	NA	2.34	5.93	2.48	NA	2.2	4.8	3
	Butylbenzylphthalate	µg/L	0.97 U	0.97 U	1.00 U	0.96 U	0.63	0.65	0.97 U	1.92 U	0.96 U	NA	NA	0.97 U	1.04	0.95 U	NA	1,900	7,300	3
	Di-n-butylphthalate	µg/L	0.97 U	0.97 U	1.00 U	0.96 U	1.00 U	0.98 U	0.97 U	1.92 U	0.96 U	NA	NA	0.97 U	0.96 U	0.95 U	NA	4,500	3,700	3
	Di-n-octylphthalate	µg/L	0.97 U	0.97 U	1.00 U	0.96 U	1.00 U	0.52	0.97 U	1.92 U	0.96 U	NA	NA	0.97 U	0.89 J	0.95 U	NA	--	1,500	3
	Diethylphthalate	µg/L	1.14	0.97 U	0.57	0.96 U	1.00 U	0.98 U	0.97 U	1.92 U	1.82	NA	NA	0.97 U	0.96 U	0.95 U	NA	44,000	29,000	3
	Dimethylphthalate	µg/L	0.97 U	0.97 U	1.00 U	0.96 U	1.00 U	0.98 U	0.97 U	1.92 U	0.96 U	NA	NA	0.97 U	0.96 U	0.95 U	NA	1,100,000	370,000	3
Phthalates (EPA 8270C)																				
	(BEHP)	µg/L	2	4.9 U	2 J	0.85 J	2.4	2	3.8 J	6.3	1.4	NA	NA	6.7	120	3.2	NA	2	5	3
	Butyl Benzyl Phthalate	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.35	0.34	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	1.2	0.2 U	NA	1,900	7,300	3
	Di-n-butyl phthalate	µg/L	0.17 J	0.98 U	0.36 J	0.15 J	0.19 J	0.15 J	0.17 J	0.16 J	0.2 U	NA	NA	1.1 U	0.35 J	0.078 J	NA	4,500	3,700	3
	Di-n-octyl phthalate	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	--	1,500	3
	Diethyl phthalate	µg/L	1.2	0.98 U	0.71 J	0.077 J	0.093 J	0.088 J	1.1 U	0.2 J	2.2	NA	NA	1.1 U	0.98 U	12	NA	44,000	29,000	3
	Dimethyl phthalate	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.079 J	0.085 J	1.1 U	1.1 U	0.062 J	NA	NA	1.1 U	0.98 U	0.095 J	NA	1,100,000	370,000	3
SVOCs (EPA 8270C)																				
	1,2,4-Trichlorobenzene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	70	8.2	110
	1,2-Dichlorobenzene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	1,300	49	763
	1,3-Dichlorobenzene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	960	14	763
	1,4-Dichlorobenzene	µg/L	0.14 J	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	190	2.8	763
	2,4,5-Trichlorophenol	µg/L	0.53 U	2.5 U	2.6 U	0.5 U	0.5 U	0.53 U	2.6 U	2.7 U	0.5 U	NA	NA	2.6 U	2.5 U	0.49 U	NA	3,600	3,700	--
	2,4,6-Trichlorophenol	µg/L	0.53 U	2.5 U	2.6 U	0.5 U	0.5 U	0.53 U	2.6 U	2.7 U	0.5 U	NA	NA	2.6 U	2.5 U	0.49 U	NA	2.4	6.1	970
	2,4-Dichlorophenol	µg/L	0.53 U	2.5 U	2.6 U	0.5 U	0.5 U	0.53 U	2.6 U	2.7 U	0.5 U	NA	NA	2.6 U	2.5 U	0.49 U	NA	290	110	365
	2,4-Dimethylphenol	µg/L	4.2 U	20 U	21 U	4 U	4 U	4.2 U	21 U	22 U	4 U	NA	NA	21 U	20 U	3.9 U	NA	850	730	--
	2,4-Dinitrophenol	µg/L	4.2 U	20 U	21 U	4 U	4 U	4.2 U	21 U	22 U	4 U	NA	NA	21 U	20 U	3.9 U	NA	5,300	73	150
	2,4-Dinitrotoluene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	3.4	73	--
	2,6-Dinitrotoluene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	--	37	--
	2-Chloronaphthalene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	1600	490	--
	2-Chlorophenol	µg/L	0.53 U	2.5 U	2.6 U	0.5 U	0.5 U	0.53 U	2.6 U	2.7 U	0.5 U	NA	NA	2.6 U	2.5 U	0.49 U	NA	150	30	2000
	2-Methylnaphthalene	µg/L	0.054 J	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	--	0.2	2.1
	2-Methylphenol	µg/L	0.34 J	2.5 U	2.6 U	0.5 U	0.5 U	0.53 U	2.2 J	2.7 U	0.5 U	NA	NA	2.6 U	2.5 U	0.27 J	NA	--	1	

Table 3
Basin 43 Stormwater Results -- Eastern Branch

		N. Wheeler Line					N. Kerby Line														
		Manhole ABC552 ⁽¹⁾ Downstream in 62" Line				Manhole ABC539 ⁽¹⁾⁽²⁾ Within Manhole					Manhole ABC500 ⁽²⁾ Downstream in 24" Line		Manhole ABC499 ⁽¹⁾ Downstream in 27" Line			Manhole ABC499 ⁽²⁾ Upstream in 24" Line		JSCS Stormwater SLVs ⁽³⁾			
		Event 1 FO081410	Event 2 FO081477	Event 3 FO095218	Event 4 FO095373	Event 1 FO081409	Event 1 Duplicate FO081414	Event 2 FO081476	Event 3 FO095217	Event 4 FO095372	Event 5 W10L058-01	Event 5 W10L058-03	Event 2 FO081478	Event 3 FO095219	Event 4 FO095374	Event 5 W10L058-02	Human Health	Human Health			
Class	Analyte	Units	11/20/2008	12/12/2008	2/23/2009	3/23/2009	11/20/2008	11/20/2008	12/12/2008	2/23/2009	3/23/2009	12/7/2010	12/7/2010	12/12/2008	2/23/2009	3/23/2009	12/7/2010	Fish Consumption ⁽⁴⁾	Ingestion ⁽⁵⁾	Ecological ⁽⁶⁾	
	Hexachlorobenzene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.00029	0.042	100	
	Hexachlorobutadiene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	18	0.86	9.3	
	Hexachlorocyclopentadiene	µg/L	1.1 U	4.9 U	5.2 U	1 U	1 U	1.1 U	5.2 U	5.4 U	1 U	NA	NA	5.2 U	4.9 U	0.98 U	NA	1100	50	5.2	
	Hexachloroethane	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	0.21 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	3.3	4.8	540	
	Isophorone	µg/L	0.21 U	0.98 U	1.1 U	0.11 J	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	960	71	--	
	Nitrobenzene	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	0.21 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	690	3.4	--	
	N-Nitrosodi-n-propylamine	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	0.21 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	0.51	0.0096	--	
	N-Nitrosodiphenylamine	µg/L	0.21 U	0.98 U	1.1 U	0.2 U	0.2 U	0.21 U	1.1 U	1.1 U	0.2 U	NA	NA	1.1 U	0.98 U	0.2 U	NA	6	14	210	
	Pentachlorophenol	µg/L	1.1 U	4.9 U	5.2 U	0.57 J	0.42 J	0.4 J	5.2 U	5.4 U	0.58 J	NA	NA	5.2 U	4.9 U	0.67 J	NA	3	0.56	15	
	Phenol	µg/L	1.3	2.5 U	2.6 U	0.23 J	0.13 J	0.12 J	0.38 J	2.7 U	0.32 J	NA	NA	0.39 J	2.5 U	0.94	NA	1,700,000	11,000	2,560	

Notes:

- U = The analyte was not detected above the reported sample quantification limit.
- J = The result is an estimated concentration. The value is less than the MRL but greater than or equal to the MDL, or, for some organochlorine pesticides, the RPD between results from the primary and verification columns varied by more than 40 percent.
- No JSCS screening level available.
- NA = Not analyzed
- ND = Not detected.
- µmhos/cm = micromhos per centimeter
- µg/L = Micrograms per liter.
- mg/L = Milligrams per liter.
- ⁽¹⁾ 2008/2009 sampling (events 1 - 4) were conducted in accordance with the December 2008 SAP (BES, 2008).
- ⁽²⁾ The December 2010 sampling was conducted in accordance with the SAP submitted to DEQ on December 6, 2010 (BES, 2010b).
- ⁽³⁾ JSCS SLVs = Portland Harbor Joint Source Control Strategy Screening Level Values (DEQ/EPA Final December 2005, Amended July 2007).
- ⁽⁴⁾ The SLVs for chemicals in water taken up by fish for human consumption represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent.
- ⁽⁵⁾ The SLVs for chemicals in water for human ingestion represent the most conservative value between EPA's MCLs and Region 9 PRGs.
- ⁽⁶⁾ The SLVs for chemicals in water for ecological exposure represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent. If no AWQC values are available, then Oak Ridge National Laboratory Tier II SCV Technology Benchmark values are listed for the constituent.
- ⁽⁷⁾ Mercury analysis by WPCL SOP M-10.02.
- ⁽⁸⁾ Estimated Total DDX is the sum of DDE, DDD, and DDT.
- ⁽⁹⁾ Alpha-Chlordane also is known as cis-Chlordane. Beta-Chlordane also is known as trans-Chlordane and gamma-Chlordane.
- ⁽¹⁰⁾ Total Chlordane is the sum of alpha- and beta-Chlordane.
- ⁽¹⁾ Refer to Table 5 for individual PCB congener results
- ⁽¹²⁾ Total PCBs and PAHs are calculated by assigning "0" to undetected constituents.
- █ = Highlighted values have been selected by DEQ for initial upland source control screening evaluations.
- bold** = Concentration exceeds DEQ's recommended SLV.

Table 4
Basin 43 Stormwater Results - PCB Congeners

IUPAC Number ⁽¹⁾		Chemical Name		Units		Western Branch								Eastern Branch												JSCS Stormwater SLVs ⁽²⁾											
						Manhole ABC290 Downstream in 16" Line				Manhole ABC552 Downstream in 62" Line				Manhole ABC539 Within Manhole				Manhole ABC499 Downstream in 27" Line																			
						Event 1 FO081408	Event 2 FO081475	Event 3 FO095216	Event 4 FO095371	Event 1 FO081410	Event 2 FO081477	Event 3 FO095218	Event 4 FO095373	Event 1 FO081409	Event 1 Duplicate FO081414	Event 2 FO081476	Event 3 FO095217	Event 4 FO095372	Event 2 FO081478	Event 3 FO095219	Event 4 FO095374	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾													
Chlorinated Biphenyl Congeners (EPA 1668A)																																					
PCB 1	2-MoCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 2	3-MoCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 3	4-MoCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 4	2,2'-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 5	2,3-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 6	2,3'-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 7	2,4-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 8	2,4'-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 9	2,5-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 10	2,6-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 11	3,3'-DiCB	µg/L	0.000581	U	0.000623	U	0.00151	U	0.00194	U	0.000613	U	0.000593	U	0.00145	U	0.00146	U	0.000615	U	0.000631	U	0.000599	U	0.00153	U	0.00155	U	0.000617	U	0.00152	U	0.00151	U	--	--	--
PCB 12/13	3,4-DiCB + 3,4'-DiCB	µg/L	0.000484	U	0.000519	U	0.000504	U	0.000498	U	0.000511	U	0.000494	U	0.000485	U	0.000486	U	0.000512	U	0.000526	U	0.000499	U	0.000511	U	0.000516	U	0.000514	U	0.000506	U	0.000505	U	--	--	--
PCB 14	3,5-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 15	4,4'-DiCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 16	2,2',3-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 17	2,2',4-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 18/30	2,2',5-TrCB + 2,4,6-TrCB	µg/L	0.000484	U	0.000519	U	0.000504	U	0.000498	U	0.000511	U	0.000494	U	0.000485	U	0.00486	U	0.000512	U	0.000526	U	0.000499	U	0.000511	U	0.000516	U	0.000514	U	0.000506	U	0.000505	U	--	--	--
PCB 19	2,2',6-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 20/28	2,3,3'-TrCB + 2,4,4'-TrCB	µg/L	0.000581	U	0.000623	U	0.000554	U	0.000498	U	0.000613	U	0.000593	U	0.000485	U	0.000486	U	0.000615	U	0.000631	U	0.000599	U	0.000583	U	0.000516	U	0.000617	U	0.000524	U	0.000505	U	--	--	--
PCB 21/33	2,3,4-TrCB + 2',3,4'-TrCB	µg/L	0.000484	U	0.000519	U	0.000504	U	0.000498	U	0.000511	U	0.000494	U	0.000485	U	0.000486	U	0.000512	U	0.000526	U	0.000499	U	0.000511	U	0.000516	U	0.000514	U	0.000506	U	0.000505	U	--	--	--
PCB 22	2,3,4'-TrCB	µg/L	0.000484	U	0.000519	U	0.000279	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000279	U	0.000252	U	--	--	--
PCB 23	2,3,5-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 24	2,3,6-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 25	2,3,4'-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 26/29	2,3',5-TrCB + 2,4,5'-TrCB	µg/L	0.000484	U	0.000519	U	0.000504	U	0.000498	U	0.000511	U	0.000494	U	0.000485	U	0.000486	U	0.000512	U	0.000526	U	0.000499	U	0.000511	U	0.000516	U	0.000514	U	0.000506	U	0.000505	U	--	--	--
PCB 27	2,3',6-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 31	2,4',5-TrCB	µg/L	0.000484	U	0.000519	U	0.000402	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000437	U	0.000258	U	0.000514	U	0.000427	U	0.000252	U	--	--	--
PCB 32	2,4',6-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 34	2',3,5-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 35	3,3',4-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 36	3,3',5-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 37	3,4,4'-TrCB	µg/L	0.000484	U	0.000519	U	0.000306	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000385	U	0.000252	U	--	--	--
PCB 38	3,4,5-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U	0.000249	U	0.000511	U	0.000494	U	0.000242	U	0.000243	U	0.000512	U	0.000526	U	0.000499	U	0.000255	U	0.000258	U	0.000514	U	0.000253	U	0.000252	U	--	--	--
PCB 39	3,4',5-TrCB	µg/L	0.000484	U	0.000519	U	0.000252	U																													

Table 4
Basin 43 Stormwater Results - PCB Congeners

			Western Branch				Eastern Branch												JSCS Stormwater SLVs ⁽²⁾			
			Manhole ABC290 Downstream in 16" Line				Manhole ABC552 Downstream in 62" Line				Manhole ABC539 Within Manhole					Manhole ABC499 Downstream in 27" Line						
			Event 1 FO081408	Event 2 FO081475	Event 3 FO095216	Event 4 FO095371	Event 1 FO081410	Event 2 FO081477	Event 3 FO095218	Event 4 FO095373	Event 1 FO081409	Event 1 Duplicate FO081414	Event 2 FO081476	Event 3 FO095217	Event 4 FO095372	Event 2 FO081478	Event 3 FO095219	Event 4 FO095374				
IUPAC Number ⁽¹⁾	Chemical Name	Units	11/20/2008	12/12/2008	2/23/2009	3/23/2009	11/20/2008	12/12/2008	2/23/2009	3/23/2009	11/20/2008	11/20/2008	12/12/2008	2/23/2009	3/23/2009	12/12/2008	2/23/2009	3/23/2009	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾	
PCB 99	2,2',4,4',5-PeCB	µg/L	0.00123	0.000633	0.00187	0.000498 U	0.000804	0.000648	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.00117	0.000516 U	0.000792	0.000936	0.000505 U	--	--	--	
PCB 103	2,2',4,5',6-PeCB	µg/L	0.000484 U	0.000519 U	0.00202 U	0.000498 U	0.000485 U	0.000486 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 104	2,2',4,6,6'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 105	2,3,3',4,4'-PeCB	µg/L	0.00209	0.000753	0.00266	0.000498 U	0.000704	0.000562	0.000485 U	0.000534	0.000512 U	0.000526 U	0.000499 U	0.00122	0.000516 U	0.000915	0.00128	0.000505 U	--	--	--	
PCB 106	2,3,3',4,5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 107/124	2,3,3',4',5'-PeCB + 2',3,4,5,5'-PeCB	µg/L	0.000484 U	0.000519 U	0.00101 U	0.000996 U	0.000511 U	0.000494 U	0.000969 U	0.000973 U	0.000512 U	0.000526 U	0.000499 U	0.00102 U	0.00103 U	0.000514 U	0.00101 U	0.00101 U	--	--	--	
PCB 109	2,3,3',4,6'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 110/115	2,3,3',4',6'-PeCB + 2,3,4,4',6'-PeCB	µg/L	0.00450	0.00219	0.00652	0.000996 U	0.00225	0.00208	0.000969 U	0.00187	0.00138	0.00146	0.00190	0.00392	0.00103 U	0.00306	0.00352	0.00101 U	--	--	--	
PCB 111	2,3,3',5,5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 112	2,3,3',5,6'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000485 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 114	2,3,4,4',5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000485 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 118	2,3,4,4',5'-PeCB	µg/L	0.00452	0.00164	0.00560	0.000923	0.00186	0.00138	0.000725	0.00134	0.00106	0.00127	0.00117	0.00301	0.00118	0.00222	0.00291	0.000505 U	--	--	--	
PCB 120	2,3',4,5,5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 121	2,3',4,5',6'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 122	2',3,3',4,5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 123	2',3,4,4',5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 126	3,3',4,4',5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 127	3,3',4,5,5'-PeCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	µg/L	0.00968	0.00104	0.00128	0.000996 U	0.00102 U	0.000988	0.000969 U	0.000973 U	0.00102 U	0.00105 U	0.000998 U	0.00104	0.00103 U	0.00103 U	0.00102	0.00101 U	--	--	--	
PCB 129/138/163	2,2',3,3',4,5-HxCB + 2,2',3,4,4',5'-HxCB + 2,3,3',4',5,6-HxCB	µg/L	0.00476	0.00215	0.00681	0.000996 U	0.00476	0.00225	0.000969 U	0.00145	0.00225	0.00492	0.00522	0.0116	0.00638	0.0128	0.0121	0.00151 U	--	--	--	
PCB 130	2,2',3,3',4,5'-HxCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000551	0.000516 U	0.000660	0.000579	0.000505 U	--	--	--	
PCB 131	2,2',3,3',4,6'-HxCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 132	2,2',3,3',4,6'-HxCB	µg/L	0.00154	0.000731	0.00227	0.000498 U	0.000855	0.00116	0.000485 U	0.00170	0.00126	0.00139	0.00168	0.00342	0.00210	0.00426	0.00369	0.000505 U	--	--	--	
PCB 133	2,2',3,3',5,5'-HxCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000486 U	0.000512 U	0.000526 U	0.000499 U	0.000511 U	0.000516 U	0.000514 U	0.000506 U	0.000505 U	--	--	--	
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	µg/L	0.000484 U	0.000519 U	0.00101 U	0.000996 U	0.000511 U	0.000494 U	0.000969 U	0.000973 U	0.000512 U	0.000526 U	0.000499 U	0.00102 U	0.00103 U	0.000514 U	0.00101 U	0.00101 U	--	--	--	
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6'-HxCB	µg/L	0.00612	0.00530	0.00112	0.000996 U	0.000540	0.00136	0.000969 U	0.00293	0.00151	0.00174	0.00242	0.00414	0.00287	0.00669	0.00463	0.00101 U	--	--	--	
PCB 136	2,2',3,3',6,6'-HxCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000485 U	0.000701	0.000512 U	0.000535	0.000702	0.00143	0.00910	0.00185	0.00154	0.000505 U	--	--	--	
PCB 137	2,2',3,4,4',5'-HxCB	µg/L	0.000484 U	0.000519 U	0.000504 U	0.000498 U	0.000511 U	0.000494 U	0.000													

Table 4
Basin 43 Stormwater Results - PCB Congeners

			Western Branch				Eastern Branch												JSCS Stormwater SLVs ⁽²⁾		
			Manhole ABC290 Downstream in 16" Line				Manhole ABC552 Downstream in 62" Line				Manhole ABC539 Within Manhole				Manhole ABC499 Downstream in 27" Line						
			Event 1 FO081408	Event 2 FO081475	Event 3 FO095216	Event 4 FO095371	Event 1 FO081410	Event 2 FO081477	Event 3 FO095218	Event 4 FO095373	Event 1 FO081409	Event 1 Duplicate FO081414	Event 2 FO081476	Event 3 FO095217	Event 4 FO095372	Event 2 FO081478	Event 3 FO095219	Event 4 FO095374			
IUPAC Number ⁽¹⁾	Chemical Name	Units	11/20/2008	12/12/2008	2/23/2009	3/23/2009	11/20/2008	12/12/2008	2/23/2009	3/23/2009	11/20/2008	11/20/2008	12/12/2008	2/23/2009	3/23/2009	12/12/2008	2/23/2009	3/23/2009	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾
PCB 202	2,2',3,3',5,5',6,6'-O ₂ CB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
PCB 203	2,2',3,4,4',5,5',6-O ₂ CB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000739 U	0.000536 U	0.000590 U	0.000645 U	0.00169 U	0.000747 U	0.00146 U	0.00171 U	0.000757 U	--	--	--
PCB 204	2,2',3,4,4',5,6,6'-O ₂ CB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
PCB 205	2,3,3',4,4',5,5',6-O ₂ CB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
PCB 209	Decachlorobiphenyl	µg/L	0.000484 U	0.000519 U	0.000756 U	0.000747 U	0.000511 U	0.000494 U	0.000727 U	0.000729 U	0.000512 U	0.000526 U	0.000499 U	0.000766 U	0.000747 U	0.000514 U	0.000759 U	0.000757 U	--	--	--
Total Monochlorobiphenyls			µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--
Total Dichlorobiphenyls			µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--
Total Trichlorobiphenyls			µg/L	ND	ND	0.00154	ND	ND	ND	ND	ND	ND	ND	0.00102	ND	ND	0.00163	ND	--	--	--
Total Tetrachlorobiphenyls			µg/L	0.00191	0.000703	0.00721	ND	0.00218	0.00141	ND	ND	0.000554	0.000595	0.000574	0.00486	ND	0.00174	0.00550	ND	--	--
Total Pentachlorobiphenyls			µg/L	0.0203	0.00834	0.0303	0.00195	0.0112	0.00871	0.000557	0.00638	0.00466	0.00564	0.00584	0.0189	0.00616	0.0137	0.0168	ND	--	--
Total Hexachlorobiphenyls			µg/L	0.0128	0.00555	0.0210	ND	0.00667	0.0137	0.00148	0.0237	0.0160	0.0195	0.0226	0.0493	0.0284	0.0623	0.0531	0.00286	--	--
Total Heptachlorobiphenyls			µg/L	0.000623	0.000603	0.00447	ND	ND	0.00855	ND	0.0183	0.0125	0.0150	0.0171	0.0419	0.0188	0.0468	0.0464	0.00351	--	--
Total Octachlorobiphenyls			µg/L	ND	ND	ND	ND	ND	0.000628	ND	0.00172	0.00220	0.00248	0.00253	0.00967	ND	0.00816	0.0101	ND	--	--
Total Nonachlorobiphenyls			µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--
Total Decachlorobiphenyls			µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--
Total PCBs			µg/L	0.0356	0.0152	0.0645	0.00195	0.0200	0.0330	0.00200	0.0501	0.0360	0.0432	0.0487	0.126	0.0533	0.133	0.133	0.00636	0.000064	0.034

Notes:

MoCB = Monochlorobiphenyl
DiCB = Dichlorobiphenyl
TriCB = Trichlorobiphenyl
TeCB = Tetrachlorobiphenyl
PeCB = Pentachlorobiphenyl
HeCB = Hexachlorobiphenyl
HpCB = Heptachlorobiphenyl
OcCB = Octachlorobiphenyl
NoCB = Nonachlorobiphenyl
-- No JSCS screening level available.

U = The analyte was not detected above the reported sample quantification limit.
µg/L = Micrograms per liter
ND = Not detected.

⁽¹⁾ IUPAC = International Union of Pure and Applied Chemistry
⁽²⁾ JSCS SLVs = Portland Harbor Joint Source Control Strategy Screening Level Values (DEQ/EPA Final December 2005, Amended July 2007)
⁽³⁾ The SLVs for chemicals in water taken up by fish for human consumption represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent
⁽⁴⁾ The SLVs for chemicals in water for human ingestion represent the most conservative value between EPA's MCLs and Region 9 PRGs
⁽⁵⁾ The SLVs for chemicals in water for ecological exposure represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent. If no AWQC values are available, then Oak Ridge National Laboratory Tier II SCV Technology Benchmark values are listed for the constituent

 : Highlighted values have been selected by DEQ for initial upland source control screening evaluations.
bold = Concentration exceeds DEQ's recommended SLV.

Table 5
Basin 43 Inline Solids Results - Western Branch

		Manhole ABC363 Downstream in 16" Line				Manhole ABC363 Within Manhole	Manhole ABC290 Downstream in 16" Line	Catch Basins ANE064 and ANE065 Composite		Manhole ABC270 Upstream in 8" Line	JSCS ⁽³⁾ Screening Level Value		
		Sediment Trap Solids (SIFT Design)	Sediment Trap Solids (SIFT Design)	Parent/Duplicate Sample Average ⁽¹⁾	Sediment Trap Solids (SIFT Design)	Inline Solids	Sediment Trap Solids	Inline Solids (Sieved)	Inline Solids (Unsieved)	Sediment Trap Solids (SIFT Design)			
		ST6: FO105681	Duplicate ST6: FO105701	ST6: FO105681 & FO105701	ST6: FO105682	FO080310 ⁽²⁾	ST1: FO095657	FO095559	FO095560	ST5: FO105680			
Class	Analyte	Units	4/16/2010	4/16/2010	4/16/2010	6/15/2010	2/26/2008	5/29/2009	4/29/2009	4/29/2009	4/16/2010	Toxicity	Bioaccumulation
Total Organic Carbon (ASTM D4129-82M)													
	TOC	mg/Kg	100,000	100,000	100,000	96,000	NA	77,800	36,800	30,300	85,000	--	--
Total Solids (EPA 160.3M)													
	TS	%	42.1	NA	42.1	46.6	NA	51.6	62.7	71.2	50.3	--	--
Grain Size (ASTM D421/422)													
	Gravel (>4750 µm)	Fract %	NA	NA	NA	NA	NA	NA	0.1	NA	NA	--	--
	Coarse Sand (4750-2000 µm)	Fract %	NA	NA	NA	NA	NA	NA	0.1	NA	NA	--	--
	Medium Sand (2000-425 µm)	Fract %	NA	NA	NA	NA	NA	NA	33.4	NA	NA	--	--
	Fine Sand (425-75 µm)	Fract %	NA	NA	NA	NA	NA	NA	34.2	NA	NA	--	--
	Silt (75-3.2 µm)	Fract %	NA	NA	NA	NA	NA	NA	27.2	NA	NA	--	--
	Clay (<3.2 µm)	Fract %	NA	NA	NA	NA	NA	NA	5.3	NA	NA	--	--
Metals (EPA 6020)													
	Arsenic	mg/Kg	NA	NA	NA	NA	1.81	3.03	3.04	NA	NA	33	7
	Cadmium	mg/Kg	NA	NA	NA	NA	0.42	2.20	0.61	NA	NA	4.98	1
	Chromium	mg/Kg	NA	NA	NA	NA	33.1	47.5	33.4	NA	NA	111	--
	Copper	mg/Kg	NA	NA	NA	NA	51	80.4	62.9	NA	NA	149	--
	Lead	mg/Kg	NA	NA	NA	NA	14.7	82.3	27.8	NA	NA	128	17
	Mercury (EPA 7471A)	mg/Kg	NA	NA	NA	NA	0.016	0.058	0.03	NA	NA	1.06	0.07
	Nickel	mg/Kg	NA	NA	NA	NA	19.6	39.5	28.4	NA	NA	48.6	--
	Silver	mg/Kg	NA	NA	NA	NA	0.10 U	0.12	0.13	NA	NA	5	--
	Zinc (EPA 6010B)	mg/Kg	NA	NA	NA	NA	114	519	185	NA	NA	459	--
Organochlorine Pesticides (EPA 8081A)													
	4,4'-DDD	µg/Kg	NA	NA	NA	NA	NA	1.1 U	NA	NA	NA	28	0.33
	4,4'-DDE	µg/Kg	NA	NA	NA	NA	NA	1.1 U	NA	NA	NA	31.3	0.33
	4,4'-DDT	µg/Kg	NA	NA	NA	NA	NA	56 U	NA	NA	NA	62.9	0.33
	Estimated Total DDx ⁽⁴⁾	µg/Kg	NA	NA	NA	NA	NA	ND	NA	NA	NA	--	0.33
	Aldrin	µg/Kg	NA	NA	NA	NA	NA	4.8	NA	NA	NA	40	--
	alpha-BHC (α-BHC)	µg/Kg	NA	NA	NA	NA	NA	0.95 U	NA	NA	NA	--	--
	beta-BHC (β-BHC)	µg/Kg	NA	NA	NA	NA	NA	0.95 U	NA	NA	NA	--	--
	delta-BHC (δ-BHC)	µg/Kg	NA	NA	NA	NA	NA	0.95 U	NA	NA	NA	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	NA	NA	NA	NA	NA	6.1	NA	NA	NA	4.99	--
	alpha-Chlordane ⁽⁵⁾	µg/Kg	NA	NA	NA	NA	NA	1.8 U	NA	NA	NA	--	--
	beta-Chlordane ⁽⁵⁾	µg/Kg	NA	NA	NA	NA	NA	0.95 U	NA	NA	NA	--	--
	Total Chlordane ⁽⁶⁾	µg/Kg	NA	NA	NA	NA	NA	ND	NA	NA	NA	17.6	0.37
	Dieldrin	µg/Kg	NA	NA	NA	NA	NA	5.6 U	NA	NA	NA	61.8	0.0081
	Endosulfan I	µg/Kg	NA	NA	NA	NA	NA	6.3	NA	NA	NA	--	--
	Endosulfan II	µg/Kg	NA	NA	NA	NA	NA	8.5 U	NA	NA	NA	--	--
	Endosulfan sulfate	µg/Kg	NA	NA	NA	NA	NA	2.3 U	NA	NA	NA	--	--
	Endrin	µg/Kg	NA	NA	NA	NA	NA	3.3	NA	NA	NA	207	--
	Endrin aldehyde	µg/Kg	NA	NA	NA	NA	NA	3.4	NA	NA	NA	--	--
	Endrin ketone	µg/Kg	NA	NA	NA	NA	NA	1.1	NA	NA	NA	--	--
	Heptachlor	µg/Kg	NA	NA	NA	NA	NA	65	NA	NA	NA	10	--
	Heptachlor epoxide	µg/Kg	NA	NA	NA	NA	NA	0.57 J	NA	NA	NA	16	--
	Methoxychlor	µg/Kg	NA	NA	NA	NA	NA	2.4	NA	NA	NA	--	--
	Toxaphene	µg/Kg	NA	NA	NA	NA	NA	880 U	NA	NA	NA	--	--

Table 5
Basin 43 Inline Solids Results - Western Branch

		Manhole ABC363 Downstream in 16" Line				Manhole ABC363 Within Manhole	Manhole ABC290 Downstream in 16" Line	Catch Basins ANE064 and ANE065 Composite		Manhole ABC270 Upstream in 8" Line			
Class	Analyte	Units	Sediment Trap Solids (SIFT Design)	Sediment Trap Solids (SIFT Design)	Parent/Duplicate Sample Average ⁽¹⁾	Sediment Trap Solids (SIFT Design)	Inline Solids	Sediment Trap Solids	Inline Solids (Sieved)	Inline Solids (Unsieved)	Sediment Trap Solids (SIFT Design)	Toxicity	Bioaccumulation
			ST6: FO105681	Duplicate ST6: FO105701	ST6: FO105681 & FO105701	ST6: FO105682	FO080310 ⁽²⁾	ST1: FO095657	FO095559	FO095560	ST5: FO105680		
			4/16/2010	4/16/2010	4/16/2010	6/15/2010	2/26/2008	5/29/2009	4/29/2009	4/29/2009	4/16/2010		
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668A)													
	Total PCBs ⁽⁷⁾⁽⁸⁾	µg/Kg	142	234	188	496	50.9	971	NA	NA	51.5	676	0.39
Polychlorinated Biphenyls(PCBs) (EPA 8082)													
	Aroclor 1016	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	10 U	NA	530	--
	Aroclor 1221	µg/Kg	40 U	40 U	40 U	40 U	20 U	20 U	20 U	20 U	NA	--	--
	Aroclor 1232	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	10 U	NA	--	--
	Aroclor 1242	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	10 U	NA	--	--
	Aroclor 1248	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	10 U	NA	1,500	--
	Aroclor 1254	µg/Kg	20 U	20 U	20 U	20 U	26	90	10 U	10 U	NA	300	--
	Aroclor 1260	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	20	NA	200	--
	Aroclor 1262	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	10 U	NA	--	--
	Aroclor 1268	µg/Kg	20 U	20 U	20 U	20 U	10 U	10 U	10 U	10 U	NA	--	--
	Total PCBs ⁽⁸⁾	µg/Kg	ND	ND	ND	ND	26	90	ND	20	NA	676	0.39
Polycyclic Aromatic Hydrocarbons (EPA 8270-SIM)													
	Acenaphthene	µg/Kg	NA	NA	NA	NA	NA	155 U	112 U	NA	NA	300	--
	Acenaphthylene	µg/Kg	NA	NA	NA	NA	NA	155 U	112 U	NA	NA	200	--
	Anthracene	µg/Kg	NA	NA	NA	NA	NA	155 U	112 U	NA	NA	845	--
	Benzo(a)anthracene	µg/Kg	NA	NA	NA	NA	NA	157	112 U	NA	NA	1,050	--
	Benzo(a)pyrene	µg/Kg	NA	NA	NA	NA	NA	180	176	NA	NA	1,450	--
	Benzo(b)fluoranthene	µg/Kg	NA	NA	NA	NA	NA	253	258	NA	NA	--	--
	Benzo(g,h,i)perylene	µg/Kg	NA	NA	NA	NA	NA	348	196	NA	NA	300	--
	Benzo(k)fluoranthene	µg/Kg	NA	NA	NA	NA	NA	155	200	NA	NA	13,000	--
	Chrysene	µg/Kg	NA	NA	NA	NA	NA	429	343	NA	NA	1,290	--
	Dibenzo(a,h)anthracene	µg/Kg	NA	NA	NA	NA	NA	155 U	112 U	NA	NA	1,300	--
	Fluoranthene	µg/Kg	NA	NA	NA	NA	NA	609	182	NA	NA	2,230	37,000
	Fluorene	µg/Kg	NA	NA	NA	NA	NA	155 U	112 U	NA	NA	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	NA	NA	NA	NA	NA	155 U	154	NA	NA	100	--
	Naphthalene	µg/Kg	NA	NA	NA	NA	NA	513	112 U	NA	NA	561	--
	Phenanthrene	µg/Kg	NA	NA	NA	NA	NA	505	112 U	NA	NA	1,170	--
	Pyrene	µg/Kg	NA	NA	NA	NA	NA	517	167	NA	NA	1,520	1,900
	Total PAH ⁽⁸⁾	µg/Kg	NA	NA	NA	NA	NA	3670	1680	NA	NA	--	--
Polynuclear Aromatic Hydrocarbons (EPA 8270C)													
	2-Methylnaphthalene	µg/Kg	NA	NA	NA	NA	2200 U	NA	100 U	NA	NA	200	--
	Acenaphthene	µg/Kg	NA	NA	NA	NA	2200 U	NA	100 U	NA	NA	300	--
	Acenaphthylene	µg/Kg	NA	NA	NA	NA	2200 U	NA	37 J	NA	NA	200	--
	Anthracene	µg/Kg	NA	NA	NA	NA	2200 U	NA	64 J	NA	NA	845	--
	Benzo(a)anthracene	µg/Kg	NA	NA	NA	NA	2200 U	NA	95 J	NA	NA	1,050	--
	Benzo(a)pyrene	µg/Kg	NA	NA	NA	NA	2200 U	NA	150	NA	NA	1,450	--
	Benzo(b)fluoranthene	µg/Kg	NA	NA	NA	NA	2200 U	NA	290	NA	NA	--	--
	Benzo(g,h,i)perylene	µg/Kg	NA	NA	NA	NA	2200 U	NA	160	NA	NA	300	--
	Benzo(k)fluoranthene	µg/Kg	NA	NA	NA	NA	2200 U	NA	75 J	NA	NA	13,000	--
	Chrysene	µg/Kg	NA	NA	NA	NA	2200 U	NA	300	NA	NA	1,290	--
	Dibenzo(a,h)anthracene	µg/Kg	NA	NA	NA	NA	2200 U	NA	58 J	NA	NA	1,300	--
	Dibenzofuran	µg/Kg	NA	NA	NA	NA	2200 U	NA	100 U	NA	NA	--	--
	Fluoranthene	µg/Kg	NA	NA	NA	NA	2200 U	NA	130	NA	NA	2,230	37,000
	Fluorene	µg/Kg	NA	NA	NA	NA	2200 U	NA	100 U	NA	NA	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	NA	NA	NA	NA	2200 U	NA	170	NA	NA	100	--
	Naphthalene	µg/Kg	NA	NA	NA	NA	2200 U	NA	30 J	NA	NA	561	--
	Phenanthrene	µg/Kg	NA	NA	NA	NA	2200 U	NA	52 J	NA	NA	1,170	--
	Pyrene	µg/Kg	NA	NA	NA	NA	2200 U	NA	130	NA	NA	1,520	1,900
	Total PAH ⁽⁸⁾	µg/Kg	NA	NA	NA	NA	ND	NA	1740 J	NA	NA	--	--

Table 5
Basin 43 Inline Solids Results - Western Branch

		Manhole ABC363 Downstream in 16" Line				Manhole ABC363 Within Manhole	Manhole ABC290 Downstream in 16" Line	Catch Basins ANE064 and ANE065 Composite		Manhole ABC270 Upstream in 8" Line	JSCS ⁽³⁾ Screening Level Value	
		Sediment Trap Solids (SIFT Design)	Sediment Trap Solids (SIFT Design)	Parent/Duplicate Sample Average ⁽¹⁾	Sediment Trap Solids (SIFT Design)	Inline Solids	Sediment Trap Solids	Inline Solids (Sieved)	Inline Solids (Unsieved)	Sediment Trap Solids (SIFT Design)	Toxicity	Bioaccumulation
		ST6: FO105681	Duplicate ST6: FO105701	ST6: FO105681 & FO105701	ST6: FO105682	FO080310 ⁽²⁾	ST1: FO095657	FO095559	FO095560	ST5: FO105680		
Class	Analyte	Units	4/16/2010	4/16/2010	4/16/2010	6/15/2010	2/26/2008	5/29/2009	4/29/2009	4/29/2009	4/16/2010	
Phthalates (EPA 8270-SIM)												
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	NA	NA	NA	NA	NA	16,500	840	NA	800	330
	Butyl Benzyl Phthalate	µg/Kg	NA	NA	NA	NA	NA	5,160 U	224 U	NA	--	--
	Diethyl phthalate	µg/Kg	NA	NA	NA	NA	NA	5,160 U	224 U	NA	600	--
	Dimethyl phthalate	µg/Kg	NA	NA	NA	NA	NA	5,160 U	224 U	NA	--	--
	Di-n-butyl phthalate	µg/Kg	NA	NA	NA	NA	NA	5,160 U	224 U	NA	100	60
	Di-n-octyl phthalate	µg/Kg	NA	NA	NA	NA	NA	5,160 U	1,120 U	NA	--	--
Phthalates (EPA8270C)												
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	NA	NA	NA	NA	1,330 U	NA	280 J	NA	800	330
	Butyl Benzyl Phthalate	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	Diethyl phthalate	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	600	--
	Dimethyl phthalate	µg/Kg	NA	NA	NA	NA	2,200 U	NA	530	NA	--	--
	Di-n-butyl phthalate	µg/Kg	NA	NA	NA	NA	6,660 U	NA	200 U	NA	100	60
	Di-n-octyl phthalate	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
Semi-Volatile Organic Compounds (EPA8270C)												
	1,2,4-Trichlorobenzene	µg/Kg	NA	NA	NA	NA	6,660 U	NA	100 U	NA	9,200	--
	1,2-Dichlorobenzene	µg/Kg	NA	NA	NA	NA	6,660 U	NA	100 U	NA	1,700	--
	1,3-Dichlorobenzene	µg/Kg	NA	NA	NA	NA	6,660 U	NA	100 U	NA	300	--
	1,4-Dichlorobenzene	µg/Kg	NA	NA	NA	NA	6,660 U	NA	100 U	NA	300	--
	2,4,5-Trichlorophenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	2,4,6-Trichlorophenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	2,4-Dichlorophenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	2,4-Dimethylphenol	µg/Kg	NA	NA	NA	NA	6,660 U	NA	500 U	NA	--	--
	2,4-Dinitrophenol	µg/Kg	NA	NA	NA	NA	13,300 U	NA	2,000 U	NA	--	--
	2,4-Dinitrotoluene	µg/Kg	NA	NA	NA	NA	3,330 U	NA	100 U	NA	--	--
	2,6-Dinitrotoluene	µg/Kg	NA	NA	NA	NA	3,330 U	NA	100 U	NA	--	--
	2-Chloronaphthalene	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	2-Chlorophenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	2-Methyl-4,6-dinitrophenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	1,000 U	NA	--	--
	2-Methylphenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	2-Nitroaniline	µg/Kg	NA	NA	NA	NA	2,200 U	NA	200 U	NA	--	--
	2-Nitrophenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	3,3'-Dichlorobenzidine	µg/Kg	NA	NA	NA	NA	6,660 U	NA	1,000 U	NA	--	--
	3-Nitroaniline	µg/Kg	NA	NA	NA	NA	6,660 U	NA	200 U	NA	--	--
	4-Bromophenylphenyl ether	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	4-Chloro-3-methylphenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	4-Chloroaniline	µg/Kg	NA	NA	NA	NA	13,300 U	NA	100 U	NA	--	--
	4-Chlorophenyl phenyl ether	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	4-Methylphenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	4-Nitroaniline	µg/Kg	NA	NA	NA	NA	2,200 U	NA	200 U	NA	--	--
	4-Nitrophenol	µg/Kg	NA	NA	NA	NA	6,660 U	NA	1,000 U	NA	--	--
	Benzoic acid	µg/Kg	NA	NA	NA	NA	6,660 U	NA	2,000 U	NA	--	--
	Benzyl alcohol	µg/Kg	NA	NA	NA	NA	6,660 U	NA	200 U	NA	--	--
	Bis(2-chloroethoxy) methane	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	Bis(2-chloroethyl) ether	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	Bis(2-chloroisopropyl) ether	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	--	--
	Hexachlorobenzene	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	100	19
	Hexachlorobutadiene	µg/Kg	NA	NA	NA	NA	6,660 U	NA	100 U	NA	600	--

Table 5
Basin 43 Inline Solids Results - Western Branch

			Manhole ABC363 Downstream in 16" Line				Manhole ABC363 Within Manhole	Manhole ABC290 Downstream in 16" Line	Catch Basins ANE064 and ANE065 Composite		Manhole ABC270 Upstream in 8" Line	JSCS ⁽³⁾ Screening Level Value	
			Sediment Trap Solids (SIFT Design)	Sediment Trap Solids (SIFT Design)	Parent/Duplicate Sample Average ⁽¹⁾	Sediment Trap Solids (SIFT Design)	Inline Solids	Sediment Trap Solids	Inline Solids (Sieved)	Inline Solids (Unsieved)	Sediment Trap Solids (SIFT Design)		
			ST6: FO105681	Duplicate ST6: FO105701	ST6: FO105681 & FO105701	ST6: FO105682	FO080310 ⁽²⁾	ST1: FO095657	FO095559	FO095560	ST5: FO105680		
Class	Analyte	Units	4/16/2010	4/16/2010	4/16/2010	6/15/2010	2/26/2008	5/29/2009	4/29/2009	4/29/2009	4/16/2010	Toxicity	Bioaccumulation
	Hexachlorocyclopentadiene	µg/Kg	NA	NA	NA	NA	6,660 U	NA	500 U	NA	NA	400	--
	Hexachloroethane	µg/Kg	NA	NA	NA	NA	6,660 U	NA	100 U	NA	NA	--	--
	Isophorone	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	NA	--	--
	Nitrobenzene	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	NA	--	--
	N-Nitrosodi-n-propylamine	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	NA	--	--
	N-Nitrosodiphenylamine	µg/Kg	NA	NA	NA	NA	2,200 U	NA	100 U	NA	NA	--	--
	Pentachlorophenol	µg/Kg	NA	NA	NA	NA	6,660 U	NA	1,000 U	NA	NA	1,000	250
	Phenol	µg/Kg	NA	NA	NA	NA	2,200 U	NA	300 U	NA	NA	50	--

Notes:

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

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL

-- No JSCS screening level available.

NA = Not analyzed

ND = Not detcteted.

µmhos/cm = micromhos per centimeter

µg/L = Micrograms per liter.

mg/L = Milligrams per liter.

⁽¹⁾ The average concentration for the parent and duplicate samples was calculated following guidelines used by the LWG for data reporting (Kennedy/Jenks, 2004).

⁽²⁾ Inline solids samples collected on 2/26 and 2/27/2008 also were analyzed for volatile organic compounds, dioxin/furans, total petroleum hydrocarbons (TPH), and additional metals. Data and laboratory reports for these samples were previously reported (*Former Westinghouse Property Storm System Investigation and Source Control Activities Report* ; BES, April 2010).

⁽³⁾ JSCS - Portland Harbor Joint Source Control Strategy (DEQ/EPA Final December 2005, Amended July 2007).


⁽⁴⁾ Estimated Total DDx is the sum of 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT.

⁽⁵⁾ Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane.

⁽⁶⁾ Total Chlordane is the sum of alpha- and beta-isomers.

⁽⁷⁾ Refer to Table 4 for individual PCB congener results

⁽⁸⁾ Total PCBs and PAHs are calculated by assigning "0" to undetected constituents.

 = Concentration exceeds JSCS Toxicity Screening Level Value.

bold = Concentration exceeds JSCS Bioaccumulation Screening Level Value.

Table 6
Basin 43 Inline Solids Results - Eastern Branch

		N. Wheeler Branch			N. Kerby Branch										
		Manhole ABC552 Downstream in 62" Line		Manhole ABC539 Within Manhole				Catch Basin ADZ339 Within Catch Basin	Catch Basin APG303 Within Catch Basin	Catch Basin ADZ264 Within Catch Basin	Manhole ABC500 Upstream in 24" Line	Manhole ABC488 Within Manhole	Manhole ABC479 Upstream in 15" Line		
		Sediment Trap Solids		Inline Solids (Unsieved)	Sediment Trap Solids	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Sediment Trap Solids	Inline Solids (Unsieved)	Inline Solids (Sieved)	JSCS ⁽¹⁾ Screening Level Value	
		ST3: FO095659		FO080312 ⁽²⁾	ST2: FO095658	FO105484	W11A090-01	LAB060406 ⁽³⁾	LAB060405 ⁽³⁾	LAB060404 ⁽³⁾	ST4: FO095660	FO080311 ⁽²⁾	FO095558		
Class	Analyte	Units	5/29/2009	2/27/2008	5/29/2009	4/28/2010	1/11/2011	4/12/2006	4/12/2006	4/12/2006	6/1/2009	2/26/2008	4/29/2009	Toxicity	Bioaccumulation
Total Organic Carbon (ASTM D4129-82M)															
	TOC	mg/Kg	62,800	NA	104,000	15,800	15,600	79,500	138,000	81,700	76,000	NA	25,000	--	--
Total Solids (EPA 160.3M)															
	TS	%	49.9	NA	44.7	81.4	85.1	61	58	70	63.9	NA	52.8	--	--
Grain Size (ASTM D421/422)															
	Gravel (>4750 µm)	Fract %	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	--	--
	Coarse Sand (4750-2000 µm)	Fract %	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	--	--
	Medium Sand (2000-425 µm)	Fract %	22.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.1	--	--
	Fine Sand (425-75 µm)	Fract %	46.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	56.2	--	--
	Silt (75-3.2 µm)	Fract %	21.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	31.6	--	--
	Clay (<3.2 µm)	Fract %	6.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	--	--
Metals (EPA 6020)															
	Arsenic	mg/Kg	2.17	1.65	9.37	6.24	NA	NA	NA	NA	NA	2.38	4.86	33	7
	Cadmium	mg/Kg	0.60	15.5	106	37.50	NA	NA	NA	NA	NA	17.1	27.0	4.98	1
	Chromium	mg/Kg	21.8	16.8	75.2	97.4	NA	NA	NA	NA	NA	85.7	82.2	111	--
	Copper	mg/Kg	76.9	34.5	280	235	NA	NA	NA	NA	NA	103	233	149	--
	Lead	mg/Kg	82.2	222	301	162	NA	NA	NA	NA	NA	413	296	128	17
	Mercury (EPA 7471A)	mg/Kg	0.168	0.023	0.141	1.06	NA	NA	NA	NA	NA	0.091	0.17	1.06	0.07
	Nickel	mg/Kg	17.3	14.9	88.3	45	NA	NA	NA	NA	NA	43.3	60.4	48.6	--
	Silver	mg/Kg	0.85	0.37	2.98	0.5	NA	NA	NA	NA	NA	2.58	2.07	5	--
	Zinc (EPA 6010B)	mg/Kg	303	232	1,060	496	NA	NA	NA	NA	NA	410	544	459	--
Organochlorine Pesticides (EPA 8081A)															
	4,4'-DDD	µg/Kg	1.3 U	NA	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	28	0.33
	4,4'-DDE	µg/Kg	2.6	NA	2.4 U	NA	NA	NA	NA	NA	NA	NA	NA	31.3	0.33
	4,4'-DDT	µg/Kg	3.9 U	NA	120 U	NA	NA	NA	NA	NA	NA	NA	NA	62.9	0.33
	Estimated Total DDx ⁽⁴⁾	µg/Kg	2.6	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	--	0.33
	Aldrin	µg/Kg	1.0 U	NA	4.2	NA	NA	NA	NA	NA	NA	NA	NA	40	--
	alpha-BHC (α-BHC)	µg/Kg	1.0 U	NA	1.2 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	beta-BHC (β-BHC)	µg/Kg	1.0 U	NA	1.2 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	delta-BHC (δ-BHC)	µg/Kg	1.0 U	NA	11	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	1.0 U	NA	17 U	NA	NA	NA	NA	NA	NA	NA	NA	4.99	--
	alpha-Chlordane ⁽³⁾	µg/Kg	1.0 U	NA	7.6 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	beta-Chlordane ⁽⁵⁾	µg/Kg	1.0	NA	6.5 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Total Chlordane ⁽⁶⁾	µg/Kg	1.0	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	17.6	0.37
	Dieldrin	µg/Kg	0.91 J	NA	4.7 U	NA	NA	NA	NA	NA	NA	NA	NA	61.8	0.0081
	Endosulfan I	µg/Kg	2.0	NA	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Endosulfan II	µg/Kg	1.4 U	NA	16 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Endosulfan sulfate	µg/Kg	1.0 U	NA	1.2 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Endrin	µg/Kg	1.2 U	NA	1.2 U	NA	NA	NA	NA	NA	NA	NA	NA	207	--
	Endrin aldehyde	µg/Kg	1.0 U	NA	1.4 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Endrin ketone	µg/Kg	1.0 U	NA	1.4 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Heptachlor	µg/Kg	1.0 U	NA	1.2 U	NA	NA	NA	NA	NA	NA	NA	NA	10	--
	Heptachlor epoxide	µg/Kg	1.0 U	NA	3.2	NA	NA	NA	NA	NA	NA	NA	NA	16	--
	Methoxychlor	µg/Kg	1.1 U	NA	13 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Toxaphene	µg/Kg	50 U	NA	1,100 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668A)															
	Total PCBs ⁽⁷⁾⁽⁸⁾	µg/Kg	4.71	1,430	1,290	19,900	NA	NA	NA	NA	714	306	NA	676	0.39
Polychlorinated Biphenyls (PCBs) (EPA 8082)															
	Aroclor 1016	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	150 U	340 U	13 U	10 U	10 U	20 U	530	--
	Aroclor 1221	µg/Kg	40 U	20 U	40 U	10,000 U	100 U	150 U	340 U	13 U	20 U	20 U	40 U	--	--
	Aroclor 1232	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	150 U	340 U	13 U	10 U	10 U	20 U	--	--
	Aroclor 1242	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	150 U	340 U	13 U	10 U	10 U	20 U	--	--
	Aroclor 1248	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	150 U	340 U	13 U	10 U	10 U	20 U	1,500	--
	Aroclor 1254	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	150 U	340 U	13 U	125	10 U	50	300	--
	Aroclor 1260	µg/Kg	20 U	489	173	40,500	489	3,100	9,100	470	324	88	118	200	--
	Aroclor 1262	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	NA	NA	NA	10 U	10 U	20 U	--	--
	Aroclor 1268	µg/Kg	20 U	10 U	20 U	5,000 U	50.0 U	NA	NA	NA	10 U	10 U	20 U	--	--
	Total PCBs ⁽⁸⁾	µg/Kg	ND	489	173 ⁽⁹⁾	40,500 ⁽⁹⁾	489	3,100	9,100	470	449	88	168	676	0.39

Table 6
Basin 43 Inline Solids Results - Eastern Branch

		N. Wheeler Branch			N. Kerby Branch										
		Manhole ABC552 Downstream in 62" Line	Manhole ABC539 Within Manhole				Catch Basin ADZ339 Within Catch Basin	Catch Basin APG303 Within Catch Basin	Catch Basin ADZ264 Within Catch Basin	Manhole ABC500 Upstream in 24" Line	Manhole ABC488 Within Manhole	Manhole ABC479 Upstream in 15" Line			
		Sediment Trap Solids	Inline Solids (Unsieved)	Sediment Trap Solids	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Sediment Trap Solids	Inline Solids (Unsieved)	Inline Solids (Sieved)	JSCS ⁽¹⁾ Screening Level Value		
		ST3: FO095659	FO080312 ⁽²⁾	ST2: FO095658	FO105484	W11A090-01	LAB060406 ⁽³⁾	LAB060405 ⁽³⁾	LAB060404 ⁽³⁾	ST4: FO095660	FO080311 ⁽²⁾	FO095558			
Class	Analyte	Units	5/29/2009	2/27/2008	5/29/2009	4/28/2010	1/11/2011	4/12/2006	4/12/2006	4/12/2006	6/1/2009	2/26/2008	4/29/2009	Toxicity	Bioaccumulation
Polycyclic Aromatic Hydrocarbons (EPA 8270-SIM)															
	Acenaphthene	µg/Kg	107 U	NA	586 U	NA	NA	NA	NA	NA	209 U	NA	107 U	300	--
	Acenaphthylene	µg/Kg	107 U	NA	586 U	NA	NA	NA	NA	209 U	NA	NA	107 U	200	--
	Anthracene	µg/Kg	107 U	NA	691	NA	NA	NA	NA	223	NA	NA	107 U	845	--
	Benzo(a)anthracene	µg/Kg	213	NA	1,560	NA	NA	NA	NA	530	NA	NA	107 U	1,050	--
	Benzo(a)pyrene	µg/Kg	194	NA	1,210	NA	NA	NA	NA	468	NA	NA	107 U	1,450	--
	Benzo(b)fluoranthene	µg/Kg	173	NA	1,140	NA	NA	NA	NA	565	NA	NA	107 U	--	--
	Benzo(g,h,i)perylene	µg/Kg	158	NA	854	NA	NA	NA	NA	620	NA	NA	154	300	--
	Benzo(k)fluoranthene	µg/Kg	156	NA	1,100	NA	NA	NA	NA	425	NA	NA	107 U	13,000	--
	Chrysene	µg/Kg	258	NA	2,040	NA	NA	NA	NA	956	NA	NA	180	1,290	--
	Dibenzo(a,h)anthracene	µg/Kg	107 U	NA	586 U	NA	NA	NA	NA	209 U	NA	NA	107 U	1,300	--
	Fluoranthene	µg/Kg	437	NA	3,510	NA	NA	NA	NA	1,440	NA	NA	337	2,230	37,000
	Fluorene	µg/Kg	107 U	NA	586 U	NA	NA	NA	NA	209 U	NA	NA	107 U	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	131	NA	645	NA	NA	NA	NA	347	NA	NA	107 U	100	--
	Naphthalene	µg/Kg	107 U	NA	4,320	NA	NA	NA	NA	7,900	NA	NA	308	561	--
	Phenanthrene	µg/Kg	236	NA	2,460	NA	NA	NA	NA	1,390	NA	NA	332	1,170	--
	Pyrene	µg/Kg	313	NA	2,930	NA	NA	NA	NA	1,310	NA	NA	295	1,520	1,900
	Total PAH ⁽⁸⁾	µg/Kg	2,270	NA	22,500	NA	NA	NA	NA	NA	16,200	NA	1,610	--	--
Polynuclear Aromatic Hydrocarbons (EPA 8270C)															
	2-Methylnaphthalene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	180 J	200	--
	Acenaphthene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	300	--
	Acenaphthylene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	200	--
	Anthracene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	845	--
	Benzo(a)anthracene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	200 J	1,050	--
	Benzo(a)pyrene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	1,450	--
	Benzo(b)fluoranthene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	350 J	--	--
	Benzo(g,h,i)perylene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	300	--
	Benzo(k)fluoranthene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	13,000	--
	Chrysene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	450 J	1,290	--
	Dibenzo(a,h)anthracene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	1,300	--
	Dibenzofuran	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--
	Fluoranthene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	720	2,230	37,000
	Fluorene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	100	--
	Naphthalene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	690	561	--
	Phenanthrene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	680	1,170	--
	Pyrene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	840	1,520	1,900
	Total PAH ⁽⁸⁾	µg/Kg	NA	ND	NA	NA	NA	NA	NA	NA	NA	ND	4,110 J	--	--
Phthalates (EPA 8270-SIM)															
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	5,030	NA	90,400	NA	NA	NA	NA	58,900	NA	16,800	800	330	
	Butyl Benzyl Phthalate	µg/Kg	2,140 U	NA	6,590	NA	NA	NA	NA	4,310	NA	4,400	--	--	
	Diethyl phthalate	µg/Kg	2,140 U	NA	5,860 U	NA	NA	NA	NA	4,170 U	NA	214 U	600	--	--
	Dimethyl phthalate	µg/Kg	2,140 U	NA	5,860 U	NA	NA	NA	NA	4,170 U	NA	214 U	--	--	
	Di-n-butyl phthalate	µg/Kg	2,140 U	NA	5,860 U	NA	NA	NA	NA	4,170 U	NA	214 U	100	60	
	Di-n-octyl phthalate	µg/Kg	2,140 U	NA	20,500 U	NA	NA	NA	NA	12,500 U	NA	3,210 U	--	--	
Phthalates (EPA8270C)															
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	NA	12,700 U	NA	NA	NA	NA	NA	NA	13,000	19,000	800	330	
	Butyl Benzyl Phthalate	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	2.25	5,300	--	--	
	Diethyl phthalate	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	2,080 U	580 U	600	--	--
	Dimethyl phthalate	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	2,080 U	840	--	--	
	Di-n-butyl phthalate	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	6,310 U	1,200 U	100	60	
	Di-n-octyl phthalate	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
Semi-Volatile Organic Compounds (EPA8270C)															
	1,2,4-Trichlorobenzene	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	6,310 U	580 U	9,200	--	
	1,2-Dichlorobenzene	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	6,310 U	580 U	1,700	--	
	1,3-Dichlorobenzene	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	6,310 U	580 U	300	--	
	1,4-Dichlorobenzene	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	6,310 U	580 U	300	--	
	2,4,5-Trichlorophenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	2,4,6-Trichlorophenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	

Table 6
Basin 43 Inline Solids Results - Eastern Branch

			N. Wheeler Branch			N. Kerby Branch										
			Manhole ABC552 Downstream in 62" Line	Manhole ABC539 Within Manhole				Catch Basin ADZ339 Within Catch Basin	Catch Basin APG303 Within Catch Basin	Catch Basin ADZ264 Within Catch Basin	Manhole ABC500 Upstream in 24" Line	Manhole ABC488 Within Manhole	Manhole ABC479 Upstream in 15" Line			
			Sediment Trap Solids	Inline Solids (Unsieved)	Sediment Trap Solids	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Inline Solids (Unsieved)	Sediment Trap Solids	Inline Solids (Unsieved)	Inline Solids (Sieved)	JSCS ⁽¹⁾ Screening Level Value		
			ST3: FO095659	FO080312 ⁽²⁾	ST2: FO095658	FO105484	W11A090-01	LAB060406 ⁽³⁾	LAB060405 ⁽³⁾	LAB060404 ⁽³⁾	ST4: FO095660	FO080311 ⁽²⁾	FO095558			
Class	Analyte	Units	5/29/2009	2/27/2008	5/29/2009	4/28/2010	1/11/2011	4/12/2006	4/12/2006	4/12/2006	6/1/2009	2/26/2008	4/29/2009	Toxicity	Bioaccumulation	
	2,4-Dichlorophenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	2,4-Dimethylphenol	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	2,900 U	2,900 U	--	--	
	2,4-Dinitrophenol	µg/Kg	NA	12,700 U	NA	NA	NA	NA	NA	NA	NA	12,600 U	12,000 U	--	--	
	2,4-Dinitrotoluene	µg/Kg	NA	3,170 U	NA	NA	NA	NA	NA	NA	NA	3,160 U	580 U	--	--	
	2,6-Dinitrotoluene	µg/Kg	NA	3,170 U	NA	NA	NA	NA	NA	NA	NA	3,160 U	580 U	--	--	
	2-Chloronaphthalene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	2-Chlorophenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	2-Methyl-4,6-dinitrophenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	5,800 U	--	--	
	2-Methylphenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	2-Nitroaniline	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	1,200 U	--	--	
	2-Nitrophenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	3,3'-Dichlorobenzidine	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	5,800 U	--	--	
	3-Nitroaniline	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	1,200 U	--	--	
	4-Bromophenylphenyl ether	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	4-Chloro-3-methylphenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	4-Chloroaniline	µg/Kg	NA	12,700 U	NA	NA	NA	NA	NA	NA	NA	12,600 U	580 U	--	--	
	4-Chlorophenyl phenyl ether	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	4-Methylphenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	900	--	--	
	4-Nitroaniline	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	1,200 U	--	--	
	4-Nitrophenol	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	5,800 U	--	--	
	Benzoic acid	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	12,000 U	--	--	
	Benzyl alcohol	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	1,200 U	--	--	
	Bis(2-chloroethoxy) methane	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	Bis(2-chloroethyl) ether	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	Bis(2-chloroisopropyl) ether	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	Hexachlorobenzene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	100	19	
	Hexachlorobutadiene	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	580 U	600	--	
	Hexachlorocyclopentadiene	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	2,900 U	400	--	
	Hexachloroethane	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	580 U	--	--	
	Isophorone	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	Nitrobenzene	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	N-Nitrosodi-n-propylamine	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	N-Nitrosodiphenylamine	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	580 U	--	--	
	Pentachlorophenol	µg/Kg	NA	6,350 U	NA	NA	NA	NA	NA	NA	NA	6,310 U	5,800 U	1,000	250	
	Phenol	µg/Kg	NA	2,100 U	NA	NA	NA	NA	NA	NA	NA	2,080 U	240 J	50	--	

Notes:

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

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL

-- No JSCS screening level available.

NA = Not analyzed

ND = Not detected.

µmhos/cm = micromhos per centimeter

µg/L = Micrograms per liter.

mg/L = Milligrams per liter.

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

⁽²⁾ Inline solids samples collected on 2/26 and 2/27/2008 also were analyzed for volatile organic compounds, dioxin/furans, total petroleum hydrocarbons (TPH), and additional metals. Data and laboratory reports for these samples were previously reported (*Former Westinghouse Property Storm System Investigation and Source Control Activities Report* ; BES, April 2010).

⁽³⁾ Data and laboratory reports for the 4/12/2006 catch basin samples were previously reported (*Former Westinghouse Property Storm System Investigation and Source Control Activities Report* ; BES, April 2010).

⁽⁴⁾ Estimated Total DDx is the sum of 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT.

⁽⁵⁾ Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane.

⁽⁶⁾ Total Chlordane is the sum of alpha- and beta-isomers.

⁽⁷⁾ Refer to Table 4 for individual PCB congener results

⁽⁸⁾ Total PCBs and PAHs are calculated by assigning "0" to undetected constituents.

⁽⁹⁾ Total PCB Aroclor was reanalyzed in duplicate to verify the initial detection, with results of 23,200 and 18,200 µg/kg.

 = concentration exceeds JSCS Toxicity Screening Level Value.

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value.

Table 7
Basin 43 Inline Solids Results - PCB Congeners

			Western Branch					Eastern Branch						
			Manhole ABC363 Downstream in 16" Line			Manhole ABC290 Downstream in 16" Line		Manhole ABC270 Upstream in 8" Line	Manhole ABC552 Downstream in 62" Line		Manhole ABC539 Within Manhole		Manhole ABC500 Upstream in 24" Line	
			Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		Sediment Trap Solids	Sediment Trap Solids		Sediment Trap Solids	Inline Solids	Sediment Trap Solids	
			ST6: FO105681	ST6: FO105701	ST6: FO105682	ST1: FO095657		ST5: FO105680	ST3: FO095659		ST2: FO095658	FO105484	ST4: FO095660	
IUPAC Number ⁽¹⁾	Chemical Name	Units	4/16/2010	4/16/2010	6/15/2010	5/29/2009		4/16/2010	5/29/2009		5/29/2009	4/28/2010	6/1/2009	
Chlorinated Biphenyl Congeners (EPA 1668A)														
PCB 1	2-MoCB	µg/Kg	0.0273 U	0.0475	0.0445 U	0.0289 U		0.0596	0.0296 U		0.0365	0.132 J	0.0303 U	
PCB 2	3-MoCB	µg/Kg	0.0273 U	0.130	0.0445 U	0.0289 U		0.0943	0.0296 U		0.0336 U	0.0327	0.0303 U	
PCB 3	4-MoCB	µg/Kg	0.0273 U	0.0799	0.0445 U	0.0289 U		0.0604	0.0296 U		0.0336 U	0.0806 J	0.0601	
PCB 4	2,2'-DiCB	µg/Kg	0.0615	0.0910	0.0445 U	0.0666		0.0826	0.0296 U		0.120	0.326 J	0.113	
PCB 5	2,3-DiCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 6	2,3'-DiCB	µg/Kg	0.0622	0.207	0.0669	0.0398		0.0779	0.0296 U		0.0647	0.208	0.0678	
PCB 7	2,4-DiCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0328 EMPC	0.0303 U	
PCB 8	2,4'-DiCB	µg/Kg	0.165	0.273	0.131	0.155		0.197	0.0296 U		0.277	0.853	0.301	
PCB 9	2,5-DiCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0645	0.0303 U	
PCB 10	2,6-DiCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 11	3,3'-DiCB	µg/Kg	1.35	1.79	2.41	1.37		1.61	0.214		1.20	0.246 B	2.20	
PCB 12/13	3,4-DiCB + 3,4'-DiCB	µg/Kg	0.0547 U	0.119	0.0889 U	0.0578 U		0.0813	0.0593 U		0.0671 U	0.122	0.0680	
PCB 14	3,5-DiCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 15	4,4'-DiCB	µg/Kg	0.134	0.171	0.175	0.22		0.394	0.0296 U		0.394	0.522	0.522	
PCB 16	2,2',3'-TriCB	µg/Kg	0.0837	0.110	0.0788	0.237		0.128	0.0296 U		0.353	0.379	0.472	
PCB 17	2,2',4'-TriCB	µg/Kg	0.0869	0.110	0.0796	0.201		0.146	0.0296 U		0.356	0.663	0.385	
PCB 18/30	2,2',5'-TriCB + 2,4,6-TriCB	µg/Kg	0.186	0.231	0.161	0.425		0.276	0.0593 U		0.602	1.04	0.778	
PCB 19	2,2',6'-TriCB	µg/Kg	0.0299	0.0328	0.0445 U	0.0462		0.0364	0.0296 U		0.0729	0.197	0.0786	
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	µg/Kg	0.489	0.578	0.583	1.01		0.654	0.0843		1.71	6.09	1.62	
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	µg/Kg	0.265	0.309	0.313	0.439		0.355	0.0593 U		0.606	1.22	0.800	
PCB 22	2,3,4'-TriCB	µg/Kg	0.199	0.231	0.246	0.394		0.246	0.0343		0.540	0.769	0.696	
PCB 23	2,3,5'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 24	2,3,6'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 25	2,3',4'-TriCB	µg/Kg	0.0315	0.0431	0.0456	0.0626		0.0530	0.0296 U		0.0927	0.296	0.0939	
PCB 26/29	2,3',5'-TriCB + 2,4,5-TriCB	µg/Kg	0.0820	0.0953	0.101	0.158		0.118	0.0593 U		0.208	0.815	0.222	
PCB 27	2,3',6'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.035		0.0305	0.0296 U		0.0498	0.105	0.0618	
PCB 31	2,4',5'-TriCB	µg/Kg	0.419	0.509	0.540	0.866		0.586	0.0749		1.13	3.97	1.22	
PCB 32	2,4',6'-TriCB	µg/Kg	0.0854	0.103	0.0868	0.153		0.119	0.0296 U		0.588	1.60	0.248	
PCB 34	2',3,5'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0264	0.0303 U	
PCB 35	3,3',4'-TriCB	µg/Kg	0.0348	0.0509	0.105	0.0932		0.0552	0.0296 U		0.0578	0.111	0.0906	
PCB 36	3,3',5'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 37	3,4,4'-TriCB	µg/Kg	0.218	0.267	0.479	0.551		0.281	0.0296 U		0.798	2.08	1.28	
PCB 38	3,4,5'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0247 U	0.0303 U	
PCB 39	3,4',5'-TriCB	µg/Kg	0.0273 U	0.0229 U	0.0445 U	0.0289 U		0.0250 U	0.0296 U		0.0336 U	0.0406	0.0303 U	
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4'-TeCB + 2,3',4',6'-TeCB	µg/Kg	0.360	0.575	0.907	2.15		0.512	0.178 U		2.08	8.54	1.81	
PCB 42	2,2',3,4'-TeCB	µg/Kg	0.162	0.257	0.381	0.917		0.244	0.0593 U		0.811	3.76	0.732	
PCB 43	2,2',3,5'-TeCB	µg/Kg	NA	NA	NA	0.0733		NA	0.0593 U		0.205	NA	0.0626	
PCB 43/73	2,2',3,5'-TeCB + 2,3',5',6'-TeCB	µg/Kg	0.109 U	0.0459 U	0.178 U	NA		0.100 U	NA		NA	0.0988 U	NA	
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6'-TeCB	µg/Kg	1.11	1.90	3.50	9.15		0.991	0.178 U		9.57	30.5	2.99	
PCB 45/51	2,2',3,6'-TeCB + 2,2',4,6'-TeCB	µg/Kg	0.109 U	0.114	0.178 U	0.276		0.156	0.119 U		2.97	6.01	0.430	
PCB 46	2,2',3,6'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.113		0.0542	0.0593 U		0.242	0.754	0.163	
PCB 48	2,2',4,5'-TeCB	µg/Kg	0.0906	0.145	0.166	0.461		0.173	0.0593 U		0.392	1.43	0.511	
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6'-TeCB	µg/Kg	0.542	0.914	1.55	4.53		0.555	0.119 U		4.57	20.1	1.53	
PCB 50/53	2,2',4,6'-TeCB + 2,2',5,6'-TeCB	µg/Kg	0.109 U	0.108	0.178 U	0.339		0.113	0.119 U		1.89	4.96	0.291	
PCB 52	2,2',5,5'-TeCB	µg/Kg	2.33	4.35	7.69	18		1.52	0.221		7.97	70.3	4.14	
PCB 54	2,2',6,6'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U		0.0500 U	0.0593 U		0.194	0.447	0.0605 U	
PCB 55	2,3,3',4'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.167	0.0578 U		0.0500 U	0.0593 U		0.0671 U	0.0494 U	0.0605 U	
PCB 56	2,3,3',4'-TeCB	µg/Kg	0.550	0.838	1.92	3.35		0.387	0.0593 U		1.72	10.9	2.03	
PCB 57	2,3,3',5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0778 EMPC		0.0500 U	0.0593 U		0.0671 U	0.710	0.0605 U	
PCB 58	2,3,3',5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U		0.0500 U	0.0593 U		0.0671 U	0.0494 U	0.0605 U	
PCB 59/62/75	2,3,3',6'-TeCB + 2,3,4,6'-TeCB + 2,4,4',6'-TeCB	µg/Kg	0.164 U	0.138 U	0.267 U	0.208		0.150 U	0.178 U		0.299	1.21	0.239	
PCB 60	2,3,4,4'-TeCB	µg/Kg	0.240	0.335	0.825	1.25		0.190	0.0593 U		0.780	2.15	1.11	
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	µg/Kg	3.97	6.23	14.3	29.8		1.84	0.269		8.29	90.9	7.07	
PCB 63	2,3,4',5'-TeCB	µg/Kg	0.0547 U	0.0706	0.133	0.256		0.0500 U	0.0593 U		0.171	0.894	0.105	
PCB 64	2,3,4',6'-TeCB	µg/Kg	0.445	0.725	1.35	3.12		0.440	0.0593 U		1.35	8.75	1.28	
PCB 66	2,3',4,4'-TeCB	µg/Kg	1.31	1.94	4.25	7.71		0.844	0.0964		3.21	45.0	3.30	
PCB 67	2,3',4,5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0917	0.145		0.0500 U	0.0593 U		0.0680	0.335	0.105	
PCB 68	2,3',4,5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U		0.0500 U	0.0593 U		0.0900	0.367	0.0605 U	
PCB 72	2,3',5,5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0677		0.0500 U	0.0593 U		0.0671 U	0.298	0.0605 U	
PCB 73	2,3',5',6'-TeCB	µg/Kg	NA	NA	NA	0.0578 U		NA	0.0593 U		0.0671 U	NA	0.0605 U	
PCB 77	3,3',4,4'-TeCB	µg/Kg	0.498	0.703	2.26	3.41		0.141	0.0593 U		0.674	5.3	1.32	
PCB 78	3,3',4,5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.349		0.0500 U	0.0593 U		0.0671 U	0.0494 U	0.0605 U	
PCB 79	3,3',4,5'-TeCB	µg/Kg	0.140	0.218	0.438	0.46		0.0500 U	0.0593 U		0.124	3.99	0.0605 U	
PCB 80	3,3',5,5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U		0.0500 U	0.0593 U		0.0671 U	0.0494 U	0.0605 U	
PCB 81	3,4,4',5'-TeCB	µg/Kg	0.0547 U	0.0459 U	0.0903 EMPC	0.0772 EMPC		0.0500 U	0.0593 U		0.0671 U	0.231 EMPC	0.0605 U	
PCB 82	2,2',3,3',4-PeCB	µg/Kg	1.22	2.02	4.87	10.6		0.281	0.0593 U		2.31	29.9	2.21	
PCB 83	2,2',3,3',5-PeCB	µg/Kg	0.439	0.889	1.76	3.64		0.125	0.0593 U		1.24	14.0	0.728	
PCB 84	2,2',3,3',6-PeCB	µg/Kg	1.85	3.43	6.94	17.3		0.727	0.0952		5.05	63.4	3.51	
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6-PeCB	µg/Kg	1.30	2.84	5.51	14.3		0.357	0.178 U		3.74	47.3	2.66	
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	µg/Kg	6.51	11.5	24.6	56.1		1.67	0.356 U		16.2	211	11.4	
PCB 88/91	2,													

Table 7
Basin 43 Inline Solids Results - PCB Congeners

			Western Branch			Eastern Branch							
			Manhole ABC363 Downstream in 16" Line	Manhole ABC290 Downstream in 16" Line	Manhole ABC270 Upstream in 8" Line	Manhole ABC552 Downstream in 62" Line	Manhole ABC539 Within Manhole		Manhole ABC500 Upstream in 24" Line				
			Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	JSCS ⁽²⁾ Screening Level Value		
			ST6: FO105681	ST6: FO105701	ST6: FO105682	ST1: FO095657	ST5: FO105680	ST3: FO095659	ST2: FO095658	FO105484	ST4: FO095660	Toxicity	Bioaccumulation
IUPAC Number ⁽¹⁾	Chemical Name	Units	4/16/2010	4/16/2010	6/15/2010	5/29/2009	4/16/2010	5/29/2009	5/29/2009	4/28/2010	6/1/2009	Toxicity	Bioaccumulation
PCB 90/101/113	2,2',3,4',5'-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6'-PeCB	µg/Kg	7.40	13.5	26.6	65.9	2.46	0.302	43.4	660	17.9	--	--
PCB 92	2,2',3,5,5'-PeCB	µg/Kg	1.25	2.32	4.42	10.6	0.457	0.0593 U	6.94	112	2.80	--	--
PCB 93/98/100/102	2,2',3,5,6'-PeCB + 2,2',3',4,6'-PeCB + 2,2',4,4',6'-PeCB + 2,2',4,5,6'-PeCB	µg/Kg	0.219 U	0.272	0.522	1.43	0.200 U	0.237 U	1.64	8.26	0.288	--	--
PCB 94	2,2',3,5,6'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.146	0.0500 U	0.0593 U	0.767	2.03	0.0605 U	--	--
PCB 95	2,2',3,5',6'-PeCB	µg/Kg	4.64	8.99	16.3	37	2.20	0.254	29.1	498	12.8	--	--
PCB 96	2,2',3,6,6'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.191	0.0500 U	0.0593 U	0.372	1.41	0.0702	--	--
PCB 99	2,2',4,4',5'-PeCB	µg/Kg	3.44	6.08	12.4	32.3	0.894	0.165	9.86	134	5.26	--	--
PCB 103	2,2',4,5',6'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.177	0.0500 U	0.0593 U	0.511	5.31	0.0605 U	--	--
PCB 104	2,2',4,6,6'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0821	0.0605 U	--	--
PCB 105	2,3,3',4,4'-PeCB	µg/Kg	5.21	8.42	20.9	37.3	0.900	0.155	6.75	86.3	11.3	--	0.17
PCB 106	2,3,3',4,5'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0494 U	0.0605 U	--	--
PCB 107/124	2,3,3',4',5'-PeCB + 2',3,4,5,5'-PeCB	µg/Kg	0.481	0.767	1.80	3.22	0.100 U	0.119 U	0.780	16.1	0.893	--	--
PCB 109	2,3,3',4,6'-PeCB	µg/Kg	0.930	1.50	3.37	4.5	0.113	0.0593 U	1.16	16.5	1.23	--	--
PCB 110/115	2,3,3',4',6'-PeCB + 2,3,4,4',6'-PeCB	µg/Kg	11.3	19.2	43.2	101	2.54	0.459	31.7	417	22.3	--	--
PCB 111	2,3,3',5,5'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	1.80	0.0494 U	0.684	--	--
PCB 112	2,3,3',5,6'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0494 U	0.0605 U	--	--
PCB 114	2,3,4,4',5'-PeCB	µg/Kg	0.277	0.425	1.06	1.95	0.0500 U	0.0593 U	0.298	3.24	0.452	--	0.17
PCB 118	2,3',4,4',5'-PeCB	µg/Kg	11.6	18.0	43.9	84.2	1.88	0.372	19.7	293	22.8	--	0.12
PCB 120	2,3',4,5,5'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0836	0.0500 U	0.0593 U	0.0806	1.12	0.0605 U	--	--
PCB 121	2,3',4,5',6'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0731	0.0605 U	--	--
PCB 122	2',3,3',4,5'-PeCB	µg/Kg	0.148	0.232	0.595	1.01	0.0500 U	0.0593 U	0.286	3.58	0.294	--	--
PCB 123	2',3,4,4',5'-PeCB	µg/Kg	0.182	0.296	0.793	1.51	0.0500 U	0.0593 U	0.278	4.10	0.311	--	0.21
PCB 126	3,3',4,4',5'-PeCB	µg/Kg	0.0700	0.253	0.435	2.03	0.0500 U	0.0593 U	0.640	1.98	0.820	--	0.00005
PCB 127	3,3',4,5,5'-PeCB	µg/Kg	0.0547 U	0.0459 U	0.115	0.204	0.0500 U	0.0593 U	0.0671 U	0.510	0.0605 U	--	--
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6'-HxCB	µg/Kg	2.45	3.51	9.48	19.5	0.382	0.119 U	9.08	95.8	9.62	--	--
PCB 129/138/163	2,2',3,3',4,5'-HxCB + 2,2',3,4,4',5'-HxCB + 2,3,3',4',5,6'-HxCB	µg/Kg	15.5	23.8	56.1	90.8	3.28	0.494	117	1870	68.3	--	--
PCB 130	2,2',3,3',4,5'-HxCB	µg/Kg	0.935	1.53	3.67	6.15	0.196	0.0593 U	4.52	52.3	3.87	--	--
PCB 131	2,2',3,3',4,6'-HxCB	µg/Kg	0.203	0.400	0.823	1.42	0.0500 U	0.0593 U	0.921	7.84	0.636	--	--
PCB 132	2,2',3,3',4,6'-HxCB	µg/Kg	4.33	7.69	17.1	31.9	1.16	0.169	40.0	501	22.8	--	--
PCB 133	2,2',3,3',5,5'-HxCB	µg/Kg	0.140	0.239	0.501	0.777	0.0500 U	0.0593 U	1.59	15.0	0.996	--	--
PCB 134/143	2,2',3,3',5,6'-HxCB + 2,2',3,4,5,6'-HxCB	µg/Kg	0.613	1.39	2.35	3.94	0.192	0.119 U	4.73	59.9	2.46	--	--
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6'-HxCB	µg/Kg	2.32	4.14	7.78	16.1	1.24	0.119 U	68.1	928	27.5	--	--
PCB 136	2,2',3,3',6,6'-HxCB	µg/Kg	0.945	1.87	3.29	6.94	0.512	0.0593 U	21.5	270	8.54	--	--
PCB 137	2,2',3,4,4',5'-HxCB	µg/Kg	0.887	1.87	4.15	7.13	0.128	0.0593 U	2.87	11.5	2.65	--	--
PCB 139/140	2,2',3,4,4',6'-HxCB + 2,2',3,4,4',6'-HxCB	µg/Kg	0.229	0.459	0.966	1.8	0.100 U	0.119 U	0.680	6.84	0.599	--	--
PCB 141	2,2',3,4,5,5'-HxCB	µg/Kg	1.81	2.78	6.53	11.8	0.640	0.088	30.9	429	13.6	--	--
PCB 142	2,2',3,4,5,6'-HxCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0494 U	0.0605 U	--	--
PCB 144	2,2',3,4,5',6'-HxCB	µg/Kg	0.273	0.709	0.552	2.33	0.176	0.0593 U	8.17	105	2.96	--	--
PCB 145	2,2',3,4,6,6'-HxCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.139	0.0605 U	--	--
PCB 146	2,2',3,4',5,5'-HxCB	µg/Kg	1.50	2.42	5.41	8.17	0.425	0.0593 U	17.1	188	8.64	--	--
PCB 147/149	2,2',3,4',5,6'-HxCB + 2,2',3,4',5',6'-HxCB	µg/Kg	7.44	13.2	26.1	45.8	2.69	0.335	124	1800	54.6	--	--
PCB 148	2,2',3,4',5,6'-HxCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.206	1.01	0.0605 U	--	--
PCB 150	2,2',3,4',6,6'-HxCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.291	1.32	0.0797	--	--
PCB 152	2,2',3,5,6,6'-HxCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.123	0.455	0.0605 U	--	--
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6'-HxCB	µg/Kg	9.20	14.8	32.4	48.1	2.46	0.345	126	1900	58.2	--	--
PCB 154	2,2',4,4',5,6'-HxCB	µg/Kg	0.0547 U	0.113	0.244	0.492	0.0500 U	0.0593 U	0.935	7.00	0.419	--	--
PCB 155	2,2',4,4',6,6'-HxCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0494 U	0.0605 U	--	--
PCB 156/157	2,3,3',4,4',5'-HxCB + 2,3,3',4,4',5'-HxCB	µg/Kg	2.07	3.39	7.91	13.2	0.408	0.119 U	7.45	114	9.06	--	0.21
PCB 158	2,3,3',4,4',6'-HxCB	µg/Kg	1.46	2.23	5.36	10.1	0.298	0.0593 U	10.5	123	6.55	--	--
PCB 159	2,3,3',4,5,5'-HxCB	µg/Kg											

Table 7
Basin 43 Inline Solids Results - PCB Congeners

		Western Branch					Eastern Branch						
		Manhole ABC363 Downstream in 16" Line			Manhole ABC290 Downstream in 16" Line		Manhole ABC270 Upstream in 8" Line	Manhole ABC552 Downstream in 62" Line		Manhole ABC539 Within Manhole		Manhole ABC500 Upstream in 24" Line	
		Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	JSCS ⁽²⁾ Screening Level Value	
		ST6: FO105681	ST6: FO105701	ST6: FO105682	ST1: FO095657	ST5: FO105680	ST3: FO095659	ST2: FO095658	FO105484	ST4: FO095660	Toxicity	Bioaccumulation	
IUPAC Number ⁽¹⁾	Chemical Name	Units	4/16/2010	4/16/2010	6/15/2010	5/29/2009	4/16/2010	5/29/2009	5/29/2009	4/28/2010	6/1/2009		
PCB 190	2,3,3',4,4',5,6-HpCB	µg/Kg	0.232	0.259	0.551	1.17	0.139	0.0593 U	8.70	167	3.52	--	--
PCB 191	2,3,3',4,4',5',6-HpCB	µg/Kg	0.0622	0.0689	0.150	0.255	0.0500 U	0.0593 U	1.90	37.0	0.784	--	--
PCB 192	2,3,3',4,5,5',6-HpCB	µg/Kg	0.0547 U	0.0459 U	0.0889 U	0.0578 U	0.0500 U	0.0593 U	0.0671 U	0.0494 U	0.0605 U	--	--
PCB 194	2,2',3,3',4,4',5,5'-OcCB	µg/Kg	0.445	0.611	1.05	1.22	0.418	0.0889 U	19.7	357	8.85	--	--
PCB 195	2,2',3,3',4,4',5,6-OcCB	µg/Kg	0.173	0.235	0.372	0.442	0.151	0.0889 U	8.91	114	3.74	--	--
PCB 196	2,2',3,3',4,4',5,6'-OcCB	µg/Kg	0.204	0.298	0.432	0.669	0.203	0.0889 U	13.0	203	5.75	--	--
PCB 197/200	2,2',3,3',4,4',6,6'-OcCB + 2,2',3,3',4,5,6,6'-OcCB	µg/Kg	0.164 U	0.138 U	0.267 U	0.199	0.150 U	0.178 U	4.71	61.4	2.23	--	--
PCB 198/199	2,2',3,3',4,5,5',6-OcCB + 2,2',3,3',4,5,5',6'-OcCB	µg/Kg	0.404	0.555	0.812	1.38	0.396	0.178 U	25.9	364	13.4	--	--
PCB 201	2,2',3,3',4,5',6,6'-OcCB	µg/Kg	0.0820 U	0.110	0.150	0.158	0.0750 U	0.0889 U	3.59	49.8	1.71	--	--
PCB 202	2,2',3,3',5,5',6,6'-OcCB	µg/Kg	0.0971	0.148	0.187	0.183	0.105	0.0889 U	3.68	58.3	2.10	--	--
PCB 203	2,2',3,4,4',5,5',6-OcCB	µg/Kg	0.249	0.329	0.474	0.659	0.255	0.0889 U	13.8	214	6.65	--	--
PCB 204	2,2',3,4,4',5,6,6'-OcCB	µg/Kg	0.0820 U	0.0688 U	0.133 U	0.0867 U	0.0750 U	0.0889 U	0.101 U	0.0741 U	0.0908 U	--	--
PCB 205	2,3,3',4,4',5,5',6-OcCB	µg/Kg	0.0820 U	0.0688 U	0.133 U	0.0867 U	0.0750 U	0.0889 U	1.31	18.0	0.580	--	--
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	µg/Kg	0.190	0.320	0.482	0.467	0.224	0.0889 U	4.54	65.3	2.88	--	--
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	µg/Kg	0.0820 U	0.0688 U	0.133 U	0.0867 U	0.0750 U	0.0889 U	0.632	9.99	0.421	--	--
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	µg/Kg	0.0820 U	0.0907	0.133 U	0.108	0.0750 U	0.0889 U	0.714	11.3	0.702 EMPC	--	--
PCB 209	Decachlorobiphenyl	µg/Kg	0.0820 U	0.0931	0.134	0.325	0.0832	0.0889 U	0.245	1.67	0.406	--	--
	Total Monochlorobiphenyls	µg/Kg	0	0.257	0	0	0.214	0	0.0365	0.245	0.0601	--	--
	Total Dichlorobiphenyls	µg/Kg	1.77	2.65	2.78	1.85	2.24	0.214	2.06	3.39	3.27	--	--
	Total Trichlorobiphenyls	µg/Kg	2.21	2.67	2.82	4.67	3.08	0.194	7.16	19.4	8.05	--	--
	Total Tetrachlorobiphenyls	µg/Kg	11.7	19.4	39.9	86.1	8.16	0.586	47.7	318	29.2	--	--
	Total Pentachlorobiphenyls	µg/Kg	59.1	103	223	495	15.0	1.8	189	2,660	122	--	--
	Total Hexachlorobiphenyls	µg/Kg	54.0	88.8	196	336	14.5	1.43	609	8,640	311	--	--
	Total Heptachlorobiphenyls	µg/Kg	11.2	14.5	27.3	41.5	6.45	0.481	433	6,760	192	--	--
	Total Octachlorobiphenyls	µg/Kg	1.57	2.29	3.48	4.91	1.53	0	94.6	1,440	45	--	--
	Total Nonachlorobiphenyls	µg/Kg	0.190	0.411	0.482	0.575	0.224	0	5.89	86.6	3.30	--	--
	Total Decachlorobiphenyls	µg/Kg	0	0.0931	0.134	0.325	0.0832	0	0.245	1.67	0.406	--	--
Total PCBs ⁽³⁾		µg/Kg	142	234	496	971	51.5	4.71	1,390	19,900	714	676	0.39

Notes:

MoCB = Monochlorobiphenyl
DiCB = Dichlorobiphenyl
TriCB = Trichlorobiphenyl
TeCB = Tetrachlorobiphenyl
PeCB = Pentachlorobiphenyl
HeCB = Hexachlorobiphenyl
HpCB = Heptachlorobiphenyl
OcCB = Octachlorobiphenyl
NoCB = Nonachlorobiphenyl
-- No JSCS screening level available.
EMPC = Estimated Maximum Possible Concentration.
U = The analyte was not detected above the reported sample quantification limit.
µg/Kg = micrograms per kilogram.
NA = not analyzed.
ND = not detected.

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

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

⁽³⁾ Total homologs and total congener concentrations are calculated by assigning "0" to undetected and EMPC-qualified constituents.

■ = concentration exceeds JSCS Toxicity Screening Level Value.

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value.

Table 8
Basin 43 - Western Branch Stormwater Evaluation Summary (Manhole ABC290)

Analytes with Detection(s) Exceeding JSCS SLVs ⁽¹⁾	Geometric Mean ⁽²⁾ of Concentrations (µg/L)	JSCS SLV ⁽³⁾ (µg/L)	Geometric Mean > SLV?	Additional Screening Factors		Data Indicate Potential for Major Current Source?	Rationale
				DEQ Background ⁽⁴⁾ (µg/L)	Harborwide Source Tracing Category ⁽⁵⁾		
PCB Congeners							
Total PCBs	0.016	0.000064	Yes	--	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Metals							
Arsenic	1.01	0.045	Yes	2	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010) and is less than the DEQ estimated background concentration.
Cadmium	0.562	0.094	Yes	<1	2	No	Basin geometric mean concentration is less than 10X the JSCS SLV and is less than the DEQ estimated background concentration.
Copper	18.6	2.7	Yes	9	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010) and is less than 10X the JSCS SLV.
Lead	8.93	0.54	Yes	13.3	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010), is less than the DEQ estimated background concentration.
Zinc	118	36	Yes	38	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010) and is less than 10X the JSCS SLV.
Pesticides							
Aldrin	0.00174	0.00081	Yes	--	NA	No	Analyte was detected in only one stormwater sample, and the basin geometric mean concentration is less than 10X the JSCS SLV.
PAHs (EPA 8270-SIM)							
Benzo(a)anthracene	0.0153	0.018	No	----- Note ⁽⁶⁾ -----		No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(a)pyrene	0.0129	0.018	No	----- Note ⁽⁶⁾ -----		No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(b)fluoranthene	0.0217	0.018	Yes	--	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Benzo(k)fluoranthene	0.0140	0.018	No	----- Note ⁽⁶⁾ -----		No	Basin geometric mean concentration is less than the JSCS SLV.
Chrysene	0.0456	0.018	Yes	--	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Indeno(1,2,3-cd)pyrene	0.0138	0.018	No	----- Note ⁽⁶⁾ -----		No	Basin geometric mean concentration is less than the JSCS SLV.
Total PAHs	0.427	--	--	--	1	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Phthalates (EPA 8270-SIM)							
Bis(2-ethylhexyl)phthalate	1.51	2.2	No	----- Note ⁽⁶⁾ -----		No	Basin geometric mean concentration is less than the JSCS SLV.
SVOCs (EPA 8270C)							
Pentachlorophenol	0.73	0.56	Yes	--	NA	No	Analyte was detected in only two stormwater samples, and both results were qualified (flagged). Basin geometric mean concentration only slightly exceeds the JSCS SLV.

Notes:

NA: Harborwide source tracing categories were not developed for this constituent.

⁽¹⁾ Stormwater analytes for which at least one detected concentration exceeded the corresponding JSCS SLV in the samples collected from manhole ABC290. See Table 2.

⁽²⁾ Geometric mean values were calculated using the following conventions: (1) averaging the concentrations for primary and duplicate samples to calculate a single concentration (for each analyte) for the event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting (MRL) limit to 1/2 the value of the laboratory MRL; 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

⁽³⁾ DEQ/EPA 2005, as updated in July 2007. SLVs shown are highlighted values (i.e., recommended SLVs) from Table 3-1.

⁽⁴⁾ Oregon Department of Environmental Quality (DEQ, 2002). Default background concentrations for metals. Internal DEQ memorandum, to DEQ Cleanup Project Managers, from: Toxicology Workgroup. Dated October 28, 2002.

⁽⁵⁾ Based on data from City and non-City outfalls discharging to the Portland Harbor. Category 1 corresponds to lower concentrations, Category 3 to higher concentrations. See City Stormwater Data Evaluation Report (BES, 2010) for detailed description of source tracing category significance and development.

⁽⁶⁾ No additional screening is warranted (geometric mean concentration is less than JSCS SLV).

Table 9
Basin 43 - Eastern Branch (N. Wheeler Line) Stormwater Evaluation Summary (Manhole ABC552)

Analytes with Detection(s) Exceeding JSCS SLVs ⁽¹⁾	Geometric Mean ⁽²⁾ of Concentrations (µg/L)	JSCS SLV ⁽³⁾ (µg/L)	Geometric Mean > SLV?	Additional Screening Factors		City Discharge Standards ⁽⁶⁾ (µg/L)	Data Indicate Potential for Major Current Source?	Rationale
				DEQ Background ⁽⁴⁾ (µg/L)	Harborwide Source Tracing Category ⁽⁵⁾			
PCB Congeners								
Total PCBs	0.016	0.000064	Yes	--	1	<1 ⁽⁷⁾	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Metals								
Arsenic	1.68	0.045	Yes	2	1	200	No	Basin geometric mean concentration is less than the DEQ estimated background concentration and falls within the lowest source tracing category (BES, 2010).
Cadmium	0.570	0.094	Yes	<1	2	700	No	Basin geometric mean concentration is less than 10X the JSCS SLV and is less than the DEQ estimated background concentration.
Copper	32.5	2.7	Yes	9	2	3700	No	Basin geometric mean concentration is within the lower range of the "2-moderate" source tracing category (BES, 2010) and only slightly exceeds 10X the JSCS SLV.
Lead	27.4	0.54	Yes	13.3	2	700	No	Basin geometric mean concentration is within the lower range of the "2-moderate" source tracing category (BES, 2010) and not significantly greater than the DEQ estimated background concentration.
Silver	0.216	0.12	Yes	<1	3	400	No	Basin geometric mean concentration is less than 10X the JSCS SLV and is less than the DEQ estimated background concentration.
Zinc	179	36	Yes	38	1	3700	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Pesticides								
4,4'-DDD	0.00187	0.00022	Yes	--	NA	1	No	Analyte was detected in only one sample, and the detected result was qualified (flagged).
Aldrin	0.00258	0.00005	Yes	--	NA	400	No	Analyte was detected in only one sample, and was not detected in the last two samples.
Dieldrin	0.00250	0.000054	Yes	--	NA	1	No	Analyte was detected in only one sample, and was not detected in the last two samples.
PAHs (EPA 8270-SIM)								
Benzo(a)anthracene	0.0295	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Benzo(a)pyrene	0.0283	0.018	Yes	--	1	10,000	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Benzo(b)fluoranthene	0.0243	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Benzo(k)fluoranthene	0.0223	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Chrysene	0.0433	0.018	Yes	--	1	4700	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Indeno(1,2,3-cd)pyrene	0.0207	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Total PAHs	0.482	--	--	--	1	--	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Phthalates (EPA 8270-SIM)								
Bis(2-ethylhexyl)phthalate	0.91	2.2	No	Note ⁽⁸⁾			No	Basin geometric mean concentration is less than the JSCS SLV.
SVOCs (EPA 8270C)								
Benzyl alcohol	1.40	8.6	No	Note ⁽⁸⁾			No	Basin geometric mean concentration is less than the JSCS SLV.
Pentachlorophenol	1.19	0.56	Yes	--	NA	40	No	Analyte was detected in only one sample, and the detected result was qualified (flagged). Basin geometric mean concentration is less than 10X the JSCS SLV.

Notes:

NA: Harborwide source tracing categories were not developed for this constituent.

⁽¹⁾ Stormwater analytes for which at least one detected concentration exceeded the corresponding JSCS SLV in the samples collected from manhole ABC552. See Table 3.

⁽²⁾ Geometric mean values were calculated using the following conventions: (1) averaging the concentrations for primary and duplicate samples to calculate a single concentration (for each analyte) for the event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting (MRL) limit to 1/2 the value of the laboratory MRL; 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

⁽³⁾ DEQ/EPA 2005, as updated in July 2007. SLVs shown are highlighted values (i.e., recommended SLVs) from Table 3-1.

⁽⁴⁾ Oregon Department of Environmental Quality (DEQ, 2002). Default background concentrations for metals. Internal DEQ memorandum, to DEQ Cleanup Project Managers, from: Toxicology Workgroup. Dated October 28, 2002.

⁽⁵⁾ Based on data from City and non-City outfalls discharging to the Portland Harbor. Category 1 corresponds to lower concentrations, Category 3 to higher concentrations. See City Stormwater Data Evaluation Report (BES, 2010) for detailed description of source tracing category significance and development.

⁽⁶⁾ City of Portland Discharge Control Values, representing upper concentration limits for discharges to the municipal wastewater treatment facility. These standards are used in the Basin 43 source investigation as a final check to ensure discharges currently routed to the sanitary system do not exceed the acceptable limits.

⁽⁷⁾ PCBs are a prohibited discharge. Analytical detection level required to demonstrate compliance is 1 µg/L for each individual Aroclor.

⁽⁸⁾ No additional screening is warranted (geometric mean concentration is less than JSCS SLV).

Table 10
Basin 43 - Eastern Branch (N. Kerby Line) Stormwater Evaluation Summary (Manhole ABC539)

Analytes with Detection(s) Exceeding JSCS SLVs ⁽¹⁾	Geometric Mean ⁽²⁾ of Concentrations (µg/L)	JSCS SLV ⁽³⁾ (µg/L)	Geometric Mean > SLV?	Additional Screening Factors		City Discharge Standards ⁽⁶⁾ (µg/L)	Data Indicate Potential for Major Current Source?	Rationale
				DEQ Background ⁽⁴⁾ (µg/L)	Harborwide Source Tracing Category ⁽⁵⁾			
PCB Congeners								
Total PCBs	0.060	0.000064	Yes	--	2	<1 ⁽⁷⁾	Yes ⁽⁸⁾	Basin geometric mean concentration falls within the intermediate ("2-moderate") source tracing category (BES, 2010). However, the City discharge standard is not exceeded.
Metals								
Arsenic	1.49	0.045	Yes	2	1	200	No	Basin geometric mean concentration is less than the DEQ estimated background concentration.
Cadmium	38.9	0.094	Yes	<1	3	700	Yes ⁽⁸⁾	Basin geometric mean concentration exceeds JSCS SLV by more than 2 orders of magnitude and falls within the highest source tracing category (BES, 2010). However, the City discharge standard is not exceeded.
Copper	27.5	2.7	Yes	9	2	3700	No	Basin geometric mean concentration is within the lower range of the "2-moderate" source tracing category (BES, 2010) and not appreciably greater than 10X the JSCS SLV.
Lead	15.5	0.54	Yes	13.3	1	700	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Silver	0.0947	0.12	No	----- Note ⁽⁹⁾ -----			No	Basin geometric mean concentration is less than the JSCS SLV.
Zinc	211	36	Yes	38	2	3700	No	Basin geometric mean concentration is within the lower range of the "2-moderate" source tracing category (BES, 2010) and is less than 10X the JSCS SLV.
PAHs (EPA 8270-SIM)								
Benzo(a)anthracene	0.0198	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Benzo(a)pyrene	0.0194	0.018	Yes	--	1	10,000	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Benzo(b)fluoranthene	0.0221	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Benzo(k)fluoranthene	0.0189	0.018	Yes	--	1	--	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Chrysene	0.0444	0.018	Yes	--	1	4700	No	Basin geometric mean concentration is less than 10X the JSCS SLV and falls within the lowest source tracing category (BES, 2010).
Fluoranthene	0.0682	0.2	No	----- Note ⁽⁹⁾ -----			No	Basin geometric mean concentration is less than the JSCS SLV.
Indeno(1,2,3- cd)pyrene	0.0149	0.018	No	----- Note ⁽⁹⁾ -----			No	Basin geometric mean concentration is less than the JSCS SLV.
Naphthalene	0.168	0.2	No	----- Note ⁽⁹⁾ -----			No	Basin geometric mean concentration is less than the JSCS SLV.
Total PAHs	0.495	--	--	--	1	--	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Phthalates (EPA 8270-SIM)								
Bis(2-ethylhexyl)phthalate	1.72	2.2	No	----- Note ⁽⁹⁾ -----			No	Basin geometric mean concentration is less than the JSCS SLV.
SVOCs (EPA 8270C)								
Pentachlorophenol	1.14	0.56	Yes	--	NA	40	No	Analyte was not detected in all samples, and all detected results were qualified (flagged). Basin geometric mean concentration is less than 10X the JSCS SLV.

Notes:

NA: Harborwide source tracing categories were not developed for this constituent.

⁽¹⁾ Stormwater analytes for which at least one detected concentration exceeded the corresponding JSCS SLV in the samples collected from manhole ABC539. See Table 3.

⁽²⁾ Geometric mean values were calculated using the following conventions: (1) averaging the concentrations for primary and duplicate samples to calculate a single concentration (for each analyte) for the event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting (MRL) limit to 1/2 the value of the laboratory MRL; 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

⁽³⁾ DEQ/EPA 2005, as updated in July 2007. SLVs shown are highlighted values (i.e., recommended SLVs) from Table 3-1.

⁽⁴⁾ Oregon Department of Environmental Quality (DEQ, 2002). Default background concentrations for metals. Internal DEQ memorandum, to DEQ Cleanup Project Managers, from: Toxicology Workgroup. Dated October 28, 2002.

⁽⁵⁾ Based on data from City and non-City outfalls discharging to the Portland Harbor. Category 1 corresponds to lower concentrations, Category 3 to higher concentrations. See City Stormwater Data Evaluation Report (BES, 2010) for detailed description of source tracing category significance and development.

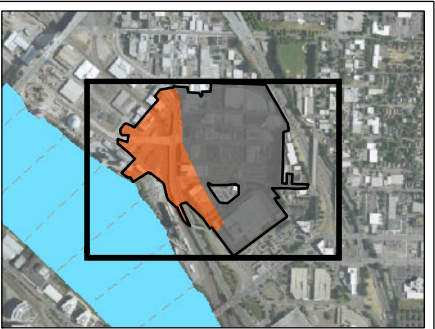
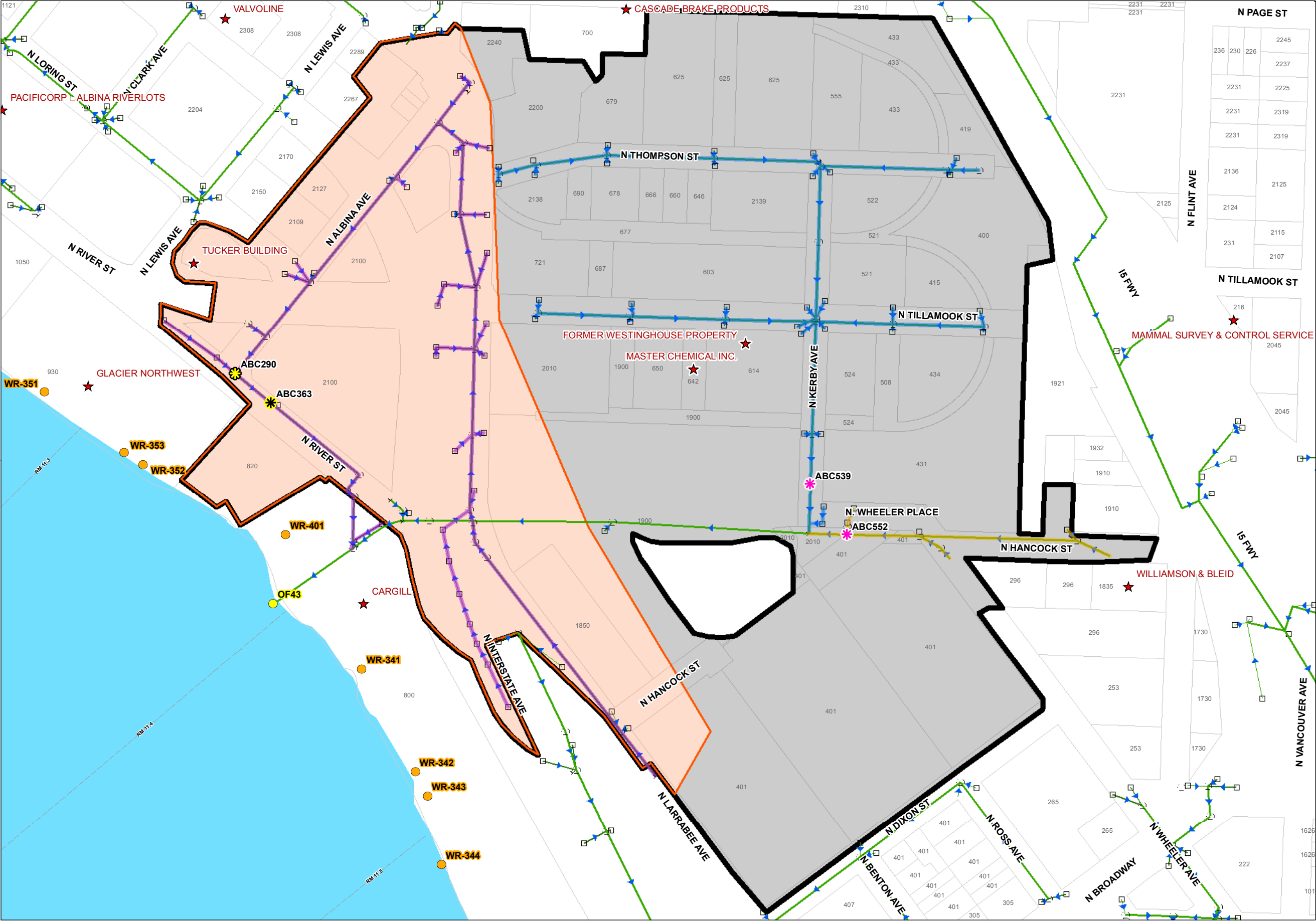
⁽⁶⁾ City of Portland Discharge Control Values, representing upper concentration limits for discharges to the municipal wastewater treatment facility. These standards are used in the Basin 43 source investigation as a final check to ensure discharges currently routed to the sanitary system do not exceed the acceptable limits.

⁽⁷⁾ PCBs are a prohibited discharge. Analytical detection level required to demonstrate compliance is 1 µg/L for each individual Aroclor.

⁽⁸⁾ Potential for major current source was identified relative to the stormwater pathway only; with the recent diversion of this branch to the eastside CSO tunnel, the stormwater pathway for this branch is no longer complete (except in the case of extreme wet weather events).

⁽⁹⁾ No additional screening is warranted (geometric mean concentration is less than JSCS SLV).

Figures



- LEGEND**
- Pre-CSO Control Basin Boundary
 - Post-CSO Control Basin Boundary
- Stormline Branches**
- Eastern Branch (N. Kerby Avenue)
 - Eastern Branch (N. Wheeler Place)
 - Western Branch
- Sample Screening Locations**
- Eastern Branch Stormwater and Solids Sample Screening Location
 - Western Branch Stormwater Sample Screening Location
 - Western Branch Solids Sample Screening Location
- All Other Features**
- City Outfall
 - Non-City Outfall
 - Storm Line
 - Manhole (MH)
 - Catch Basin (CB)
 - DEQ ECSI Site
 - Tax Lot
 - Street Address
 - River Mile Tents

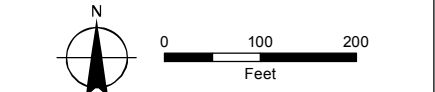


FIGURE 1
Outfall 43 - Drainage Basin Overview and Phase 1 Sample Locations

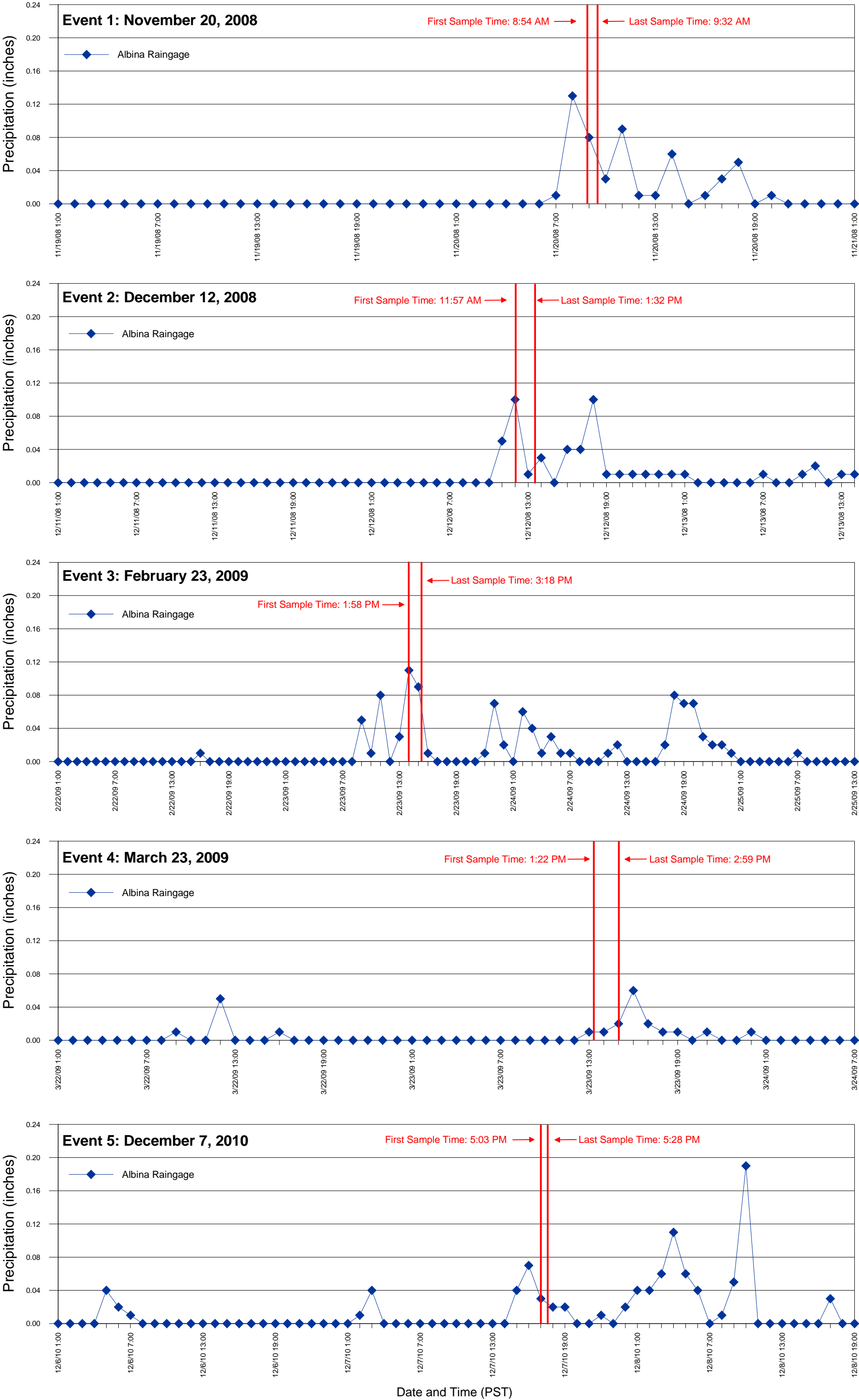
Disclaimer:
Information contained on this map is accurate according to available records, however the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published.

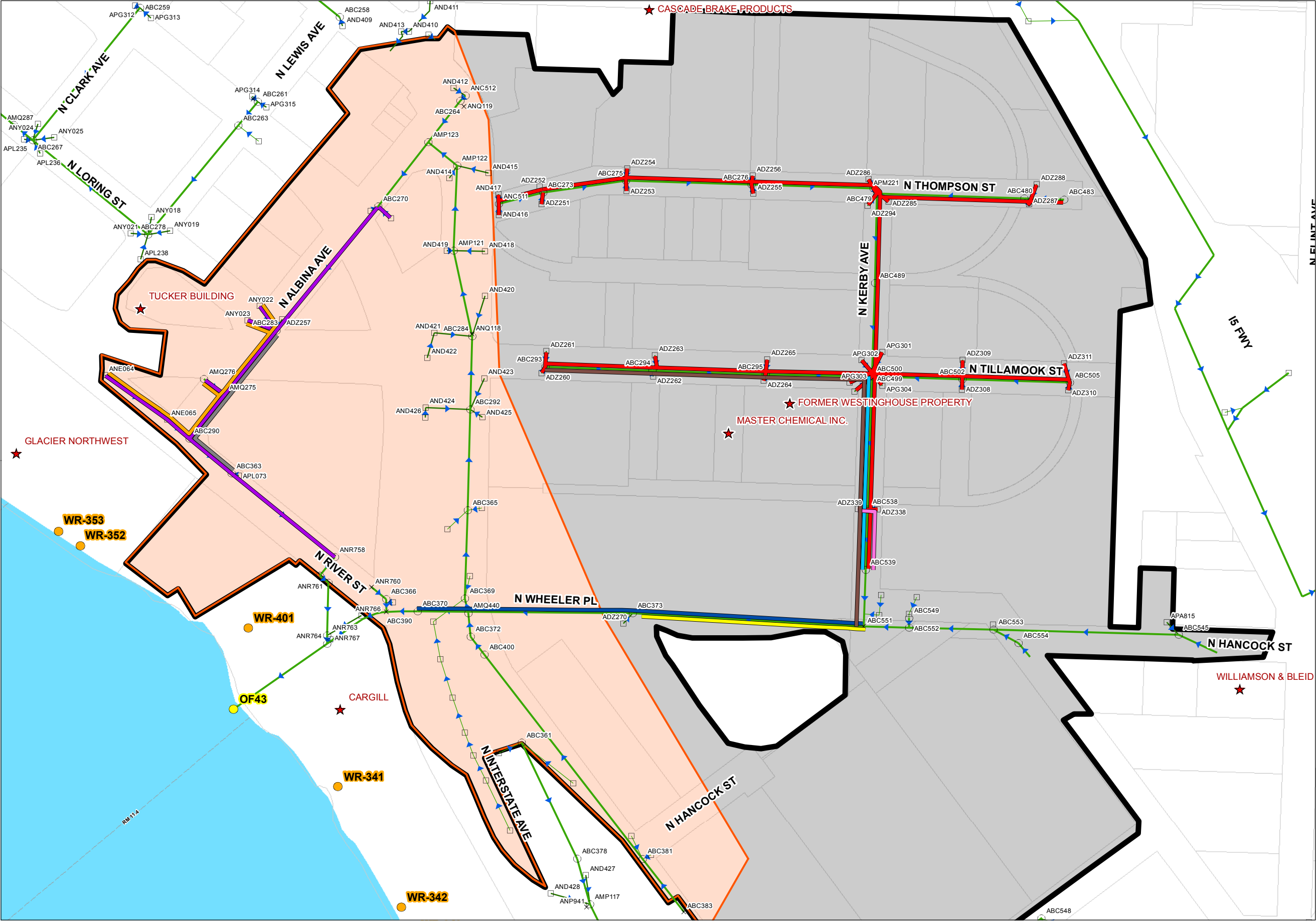
Prepared By:
GSI, December 20, 2011
005_SC/RI/OF_Basin_43

Source:
City of Portland BES,
Aerial Photo 2009

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
1120 SW Fifth Avenue, Room 1000
Portland Oregon, 97204-1912

Figure 3
Basin 43
Storm Event Precipitation Graphs





DRAFT

LEGEND

- Pre-CSO Control Basin Boundary
- Post-CSO Control Basin Boundary

Conveyance System Cleanings

- Cleaned in 2002
- Cleaned in October 2007
- Cleaned in March/November 2008
- Video Surveyed November 2008
- Cleaned in Fall 2009
- Cleaned in January 2010
- Cleaned in October 2010
- Video Surveyed in November 2010
- Scheduled for Cleaning in 2012

All Other Features

- City Outfall
- Non-City Outfall
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- DEQ ECSI Site
- Tax Lot
- River Mile Tenth

NOTE:
Line cleaning locations that are not adjacent to known or suspected sources are not shown.

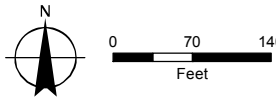


FIGURE 5
Basin 43
Source Control Line Cleaning and Surveying

Disclaimer:
Information contained on this map is accurate according to available records, however the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published.
Prepared By:
GSI, December 20, 2011
005_SC\RI\OF_Basin_43
Source:
City of Portland BES,
Aerial Photo 2010
ENVIRONMENTAL SERVICES
CITY OF PORTLAND
1120 SW Fifth Avenue, Room 1000
Portland Oregon, 97204-1912

APPENDIX A

Field Photographs

Phase 1 2008-2009 Stormwater Sampling



Photo 1 (November 20, 2008). Manhole ABC290 (sample location 43_SW1) at the intersection of N. River Street and N. Albina Avenue; western branch screening location. View is to the northeast.



Photo 2 (November 20, 2008). Stormwater flowing through Manhole ABC290 (43_SW1) during sampling event.

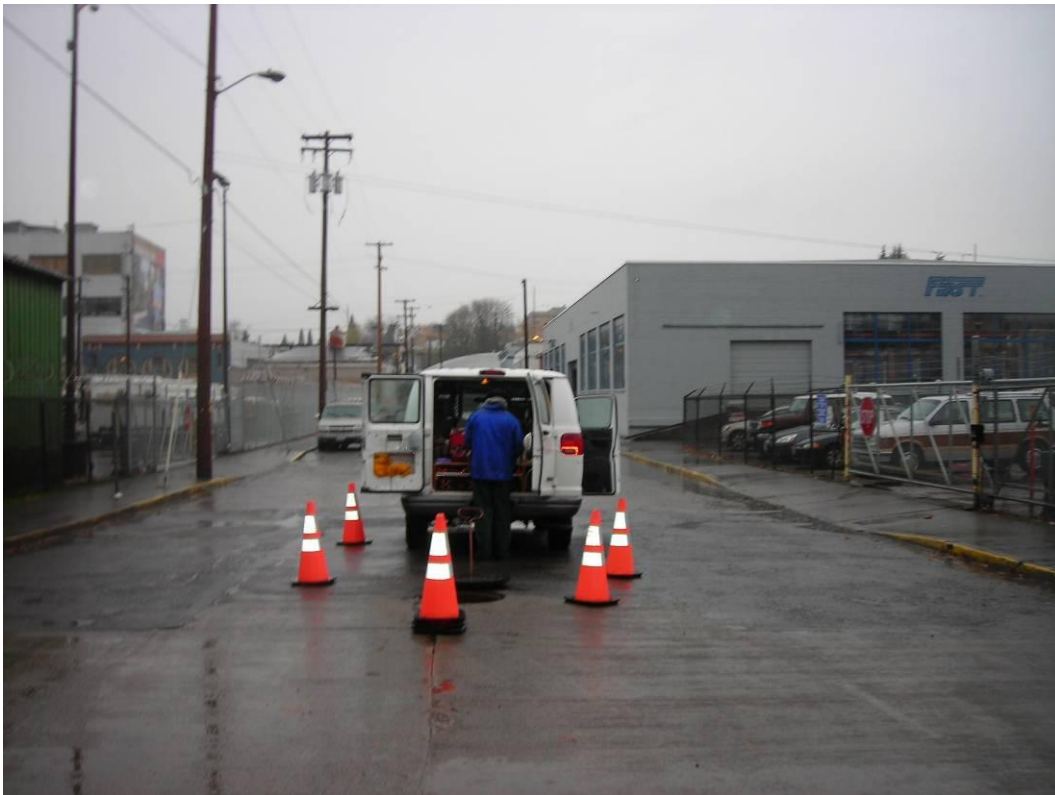


Photo 3 (November 20, 2008). Manhole ABC539 (sampling location 43_SW2), in N. Kerby Avenue line; screening sampling location for discharges from this line to the eastern branch. View is to the north.



Photo 4 (February 23, 2009). Stormwater flowing through Manhole ABC539 (43_SW2).



Photo 5 (March 23, 2009). Manhole ABC552 (sample location 43_SW3), in N Wheeler Place line; screening sampling location for discharges from this line to the eastern branch.



Photo 6 (November 20, 2008). View into Manhole ABC552 (43_SW3).



Photo 7 (December 12, 2008). Manhole ABC499 (sampling location 43_SW4), at the intersection of N. Kerby Avenue and N. Tillamook Street. View is to the northwest.



Photo 8 (December 12, 2008). Stormwater flow into Manhole ABC499 (43_SW4).

Phase 1 (2008-2009) Sediment Trap Deployment



Photo 9 (November 25, 2008). Deployed sediment traps at sampling location ST1 (Manhole ABC290).

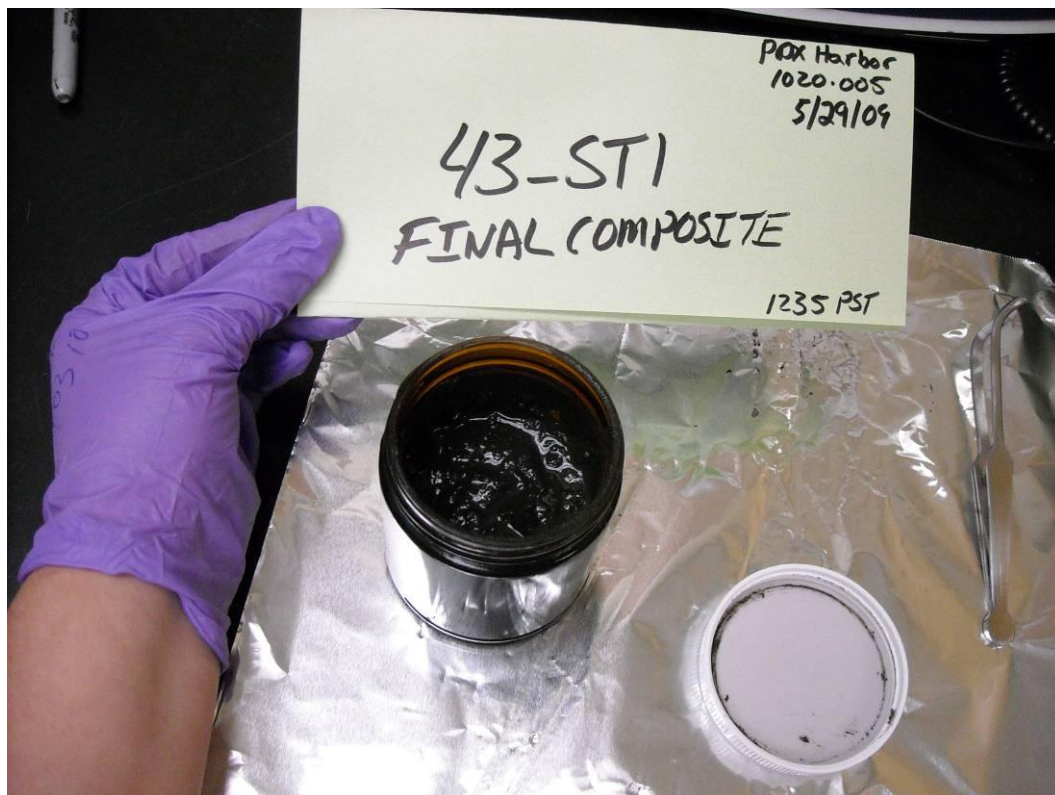


Photo 10 (May 29, 2009). Final composited sediment trap sample ST1.



Photo 11 (November 24, 2008). Deployed sediment traps at sampling location ST2 (Manhole ABC539). Traps are mounted on the wall of the manhole, just below the outgoing 27" line.

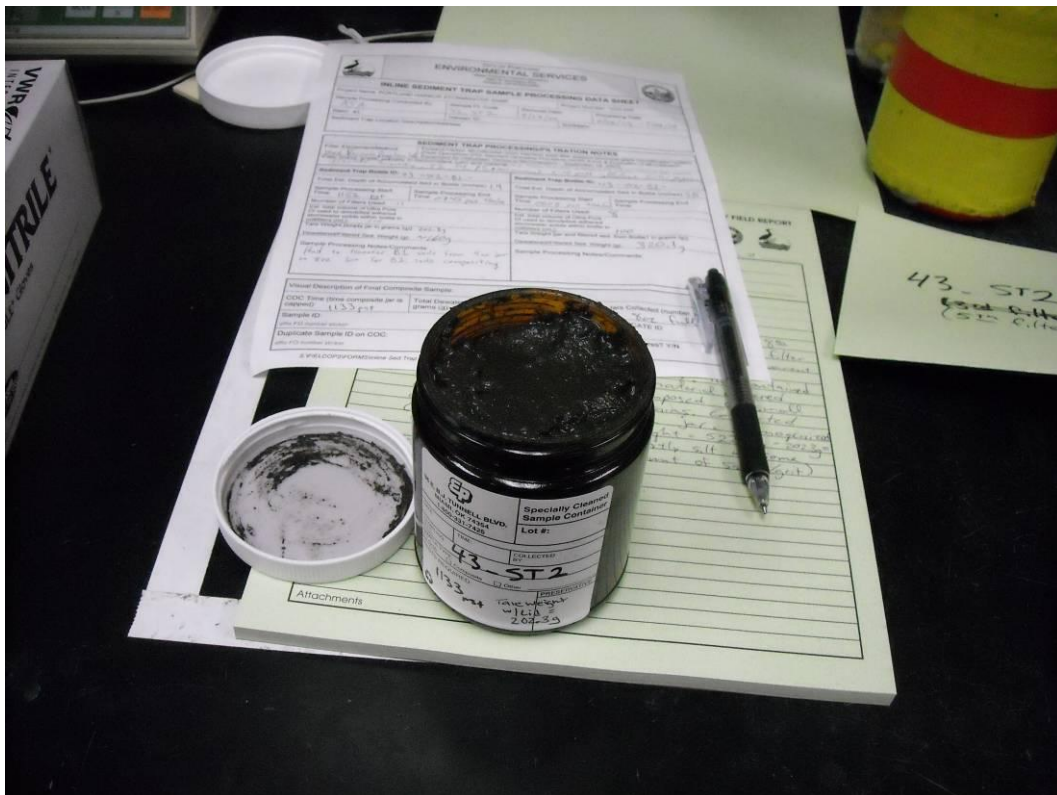


Photo 12 (May 29, 2009). Final composited sediment trap sample from ST2.



Photo 13 (November 25, 2008). Deployed sediment traps at sampling location ST3 (Manhole ABC552).

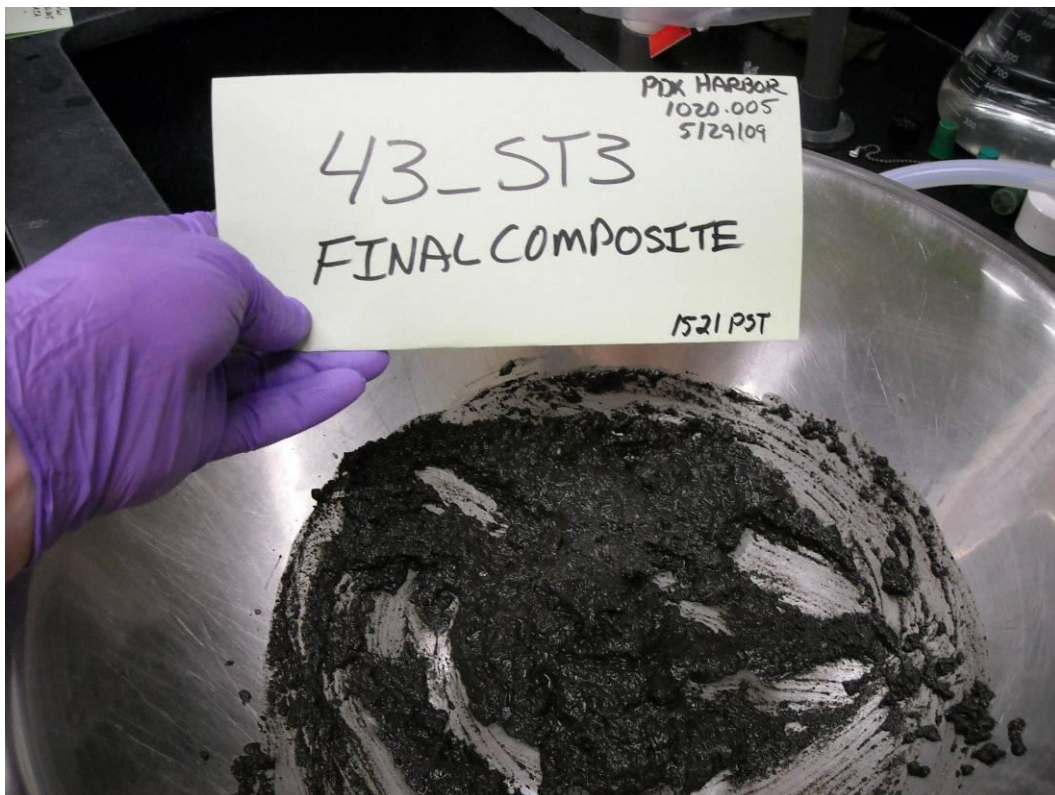


Photo 14 (May 29, 2009). Final composited sediment trap sample from ST3.



Photo 15 (November 24, 2008). Deployed sediment traps at sampling location ST4 (Manhole ABC500).

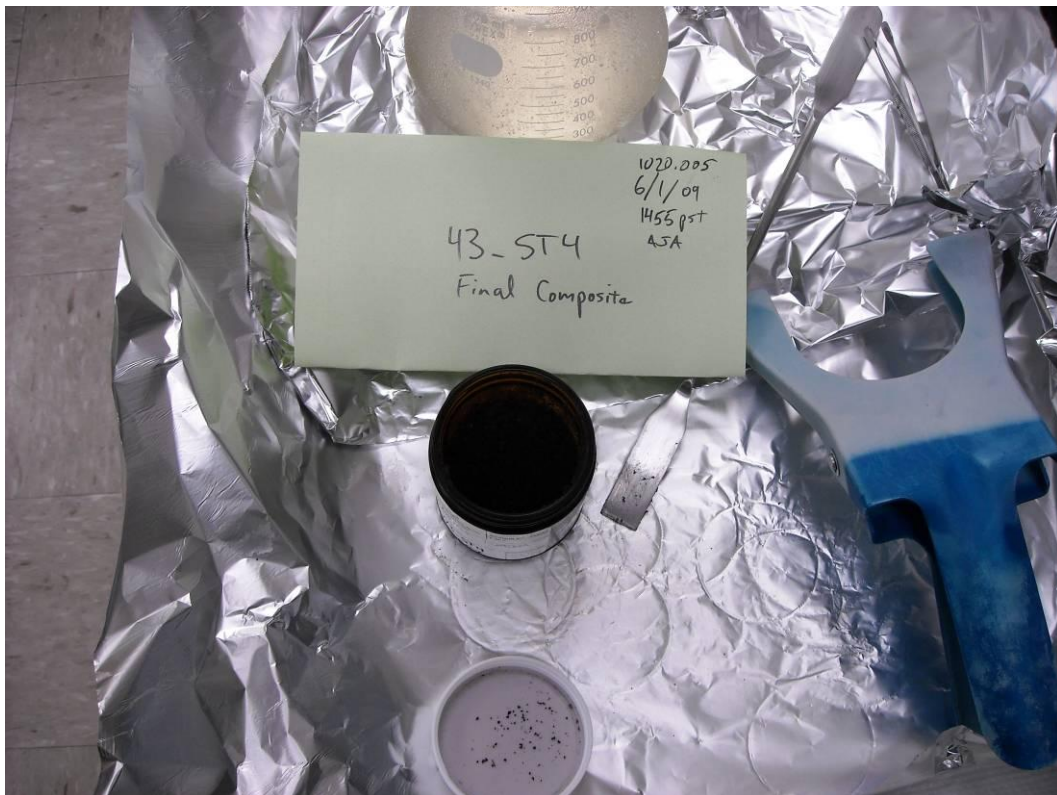


Photo 16 (June 1, 2009). Final composited sediment trap sample from ST4.

Phase 2 Source Investigations

April 2009 Inline Solids Sampling



Photo 17 (April 29, 2009). Preparing to collect solids sample from Manhole ABC479 (in foreground). View is to the north at intersection of N. Thompson Street and N. Kerby Avenue.



Photo 18 (April 29, 2009). View of solids sampled from the 15-inch line entering Manhole ABC479 from the west.

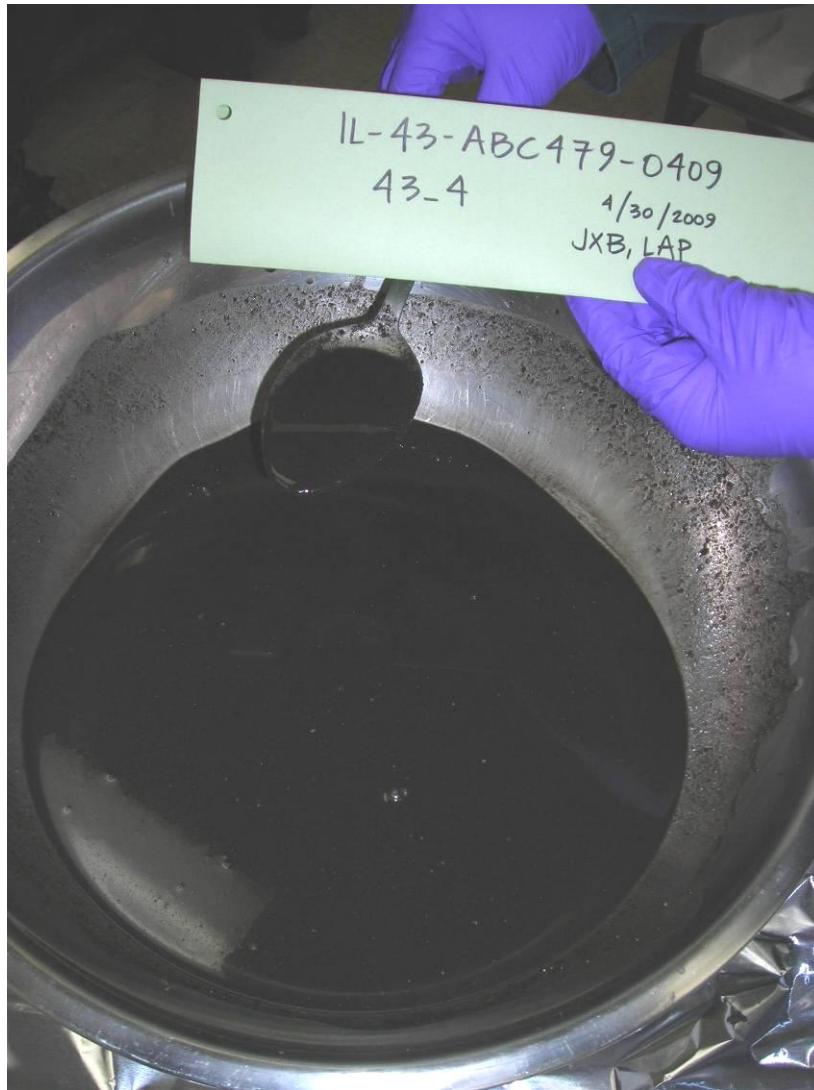


Photo 19 (April 30, 2009). Final sieved solids sample collected at Manhole ABC479.



Photo 20 (April 29, 2009). Preparing to collect subsample at Catch Basin ANE064, west-northwest of Manhole ABC290.



Photo 21 (April 29, 2009). View inside Catch Basin ANE064, showing accumulated solids.

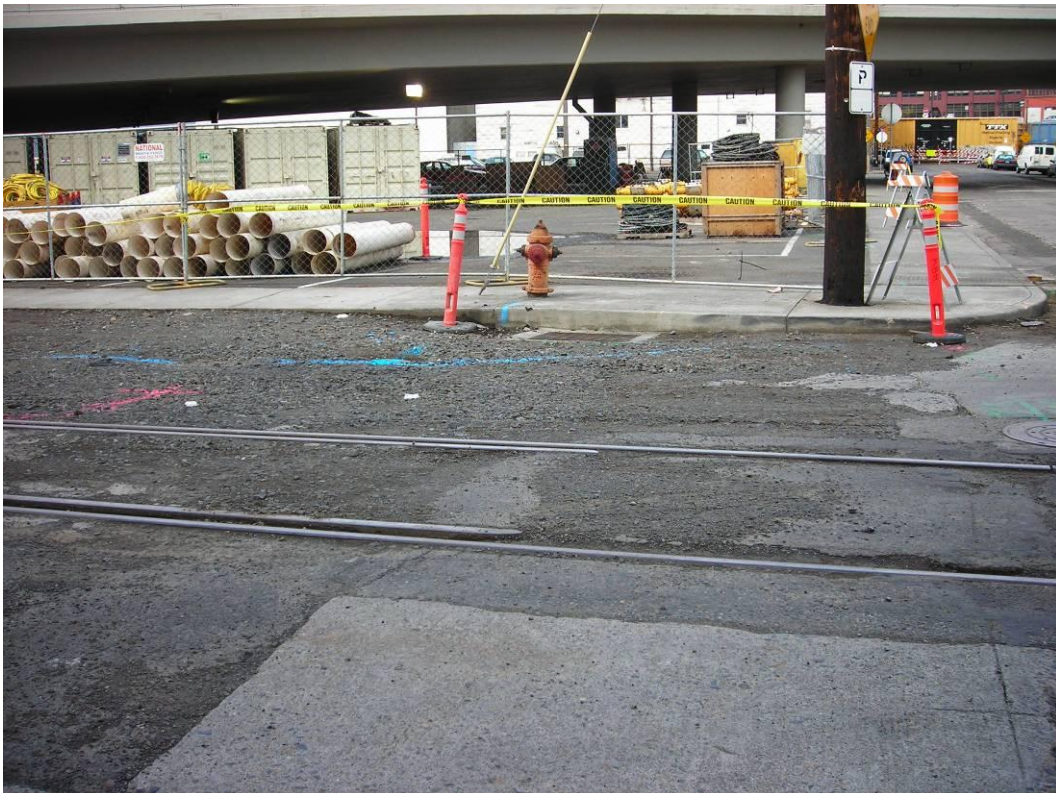


Photo 22 (April 29, 2009). Subsample sampling location at Catch Basin ANE065, west-northwest of Manhole ABC290.



Photo 23 (April 29, 2009). View inside Catch Basin ANE065, showing accumulated solids.

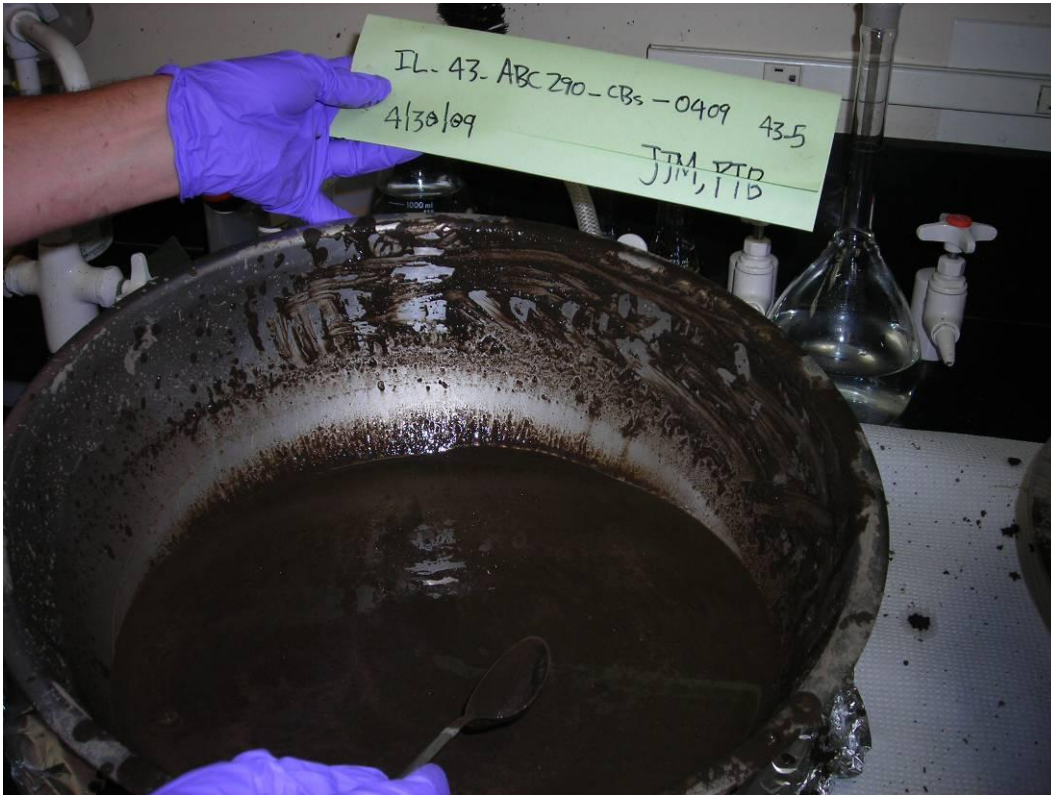


Photo 24 (April 30, 2009). Final sieved composited solids sample from Catch Basins ANE064 and ANE065.

April 2010 Inline Solids Sampling



Photo 25 (April 28, 2010). Sampling setup at Manhole ABC539. A vactor truck was utilized to decant stormwater from the manhole.



Photo 26 (April 28, 2010). Homogenized sample from Manhole ABC539.

2009 - 2010 Sediment Trap Deployment



Photo 27 (December 30, 2009). Preparing for sediment trap deployment at ST5 (Manhole ABC270). View is to the northeast.



Photo 28 (December 30, 2009). SIFT^{©1} sediment trap deployed at ST5 (Manhole ABC270) in incoming 8-inch line.

¹ © 2009 City of Portland. Confidential and Proprietary.



Photo 29 (April 15, 2010). Primary and secondary chambers of SIFT© trap with accumulated solids at time of April 15 field check at ST5 (Manhole ABC270).



Photo 30 (June 16, 2010). Final homogenized sediment trap sample from ST5 (Manhole ABC270).



Photo 31 (December 30, 2009). SIFT© type sediment trap deployed at ST6 (downstream of Manhole ABC363 in 16-inch line).



Photo 32 (January 11, 2010). Secondary chamber of SIFT© trap at time of first field check at ST6 (Manhole ABC363).



Photo 33 (June 15, 2010). Solids present in secondary chamber in SIFT© sediment trap from ST6 (Manhole ABC363) at time of trap removal.



Photo 34 (June 15, 2010). Homogenized sample of solids from ST6 (Manhole ABC363) that accumulated between the April 15, 2010, field check and trap removal on June 15, 2010.

January 2011 Inline Solids Sampling



Photo 35 (January 11, 2011). View of solids sample location inside Manhole ABC539.



Photo 36 (January 11, 2011). Final composited sample from Manhole ABC539.

APPENDIX B

Field Notes

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Phase 1 Stormwater Sampling

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Event 1: November 20, 2008

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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: 11/20/08
Page: 1 of 1
Collected By: PCB/PHA

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code Sample Date Sample Time Sample Type

PCB Congeners (All 209)
PAH + Phthalates (TA)
SVOC's (CAS)
TSS

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)
Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO 081408

SW-43-ABC290-1108
N ALBINA & RIVER

43_SW1

11/20/08

0932

G

FO 081409

SW-43-ABC339-1108
N KERBY & WHEELER

43_SW2

11/20/08

0854

G

FO 081410

SW-43-ABC552-1108
N WHEELER PL & KERBY

43_SW3

11/20/08

0911

G

FO 081411

SW-44-ABC352-1108
N HARDING & RIVER

44_SW1

11/20/08

0941

G

FO 081412

SW-44-ABC311-1108
N LARABEE & RANDOLPH

44A_SW1

11/20/08

0956

G

FO 081413

FIELD DECON BLANK

FDB

11/20/08

1006

G

FO 081414

DUPLICATE

DUP

11/20/08

G

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 1. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 2. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 3. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 4. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08

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Page 1 of 1

Project Portland Harbor Stormwater Sump
Location Basins 43, 44, 44A
Subject 1st sampling event

Project No. 1020.005
Date 11/20/08
By LEB/PTA

²
0852: Arrived at 43-SW²B to heavy steady rain. Rain began this morning at approx 0700. Visible flow of ~ 0.5fps in manhole. Collected sample plus duplicate. Took photos (1) Flow in MH (2) Drainage area. Off-site @ 0905.

0908 Arrived @ 43-SW3 to steady moderate rain. Collected sample at 0911. ~~Strong~~ Sewage odor in MH and sample. Sample had lots of solids, was turbid and brown in color.

0925 Offsite

0928 Arrive at 43-SW1 to steady rain. Collected sample @ 0930. Sanitary seep evident in MH, but does not appear to be flowing at the higher volume observed during previous sed trap install visits. Offsite @ 0935

0939 Arrive @ ~~09~~ 44-SW1 to steady, light rain. Collected sample successfully @ 0941. Laterals flowing into MH, deflecting off PVC and spraying sed trap in pipe. No sewage odor in sample. Low turbidity, no odor, but very slight sheen present in sample. Offsite @ 0948.

0953 Arrive @ 44A-SW1. To very light rain. Sample collected successfully. Field decon blank collected here as well at 1006.

1010 Off site to WPCL to relinquish samples.

Attachments

Event 2: December 12, 2008

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



Date: 12/12/08
Page: 1 of 1
Collected By: MSS, JWB

Project Name: **PORTLAND HARBOR STORMWATER SAMP**

File Number: **1020.005**

Matrix: **STORMWTR**

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Organics				Metals		Field		
						TSS	PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	Pesticides (CAS)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)			
FO 081475	SW-43-ABC290-1208 N ALBINA & RIVER	43_SW1	12/12/08	1157	G	•	•	•	•	•	•	•	•	•	•	7.8	56	7.9
FO 081476	SW-43-ABC339-1208 N KERBY & WHEELER	43_SW2	12/12/08	1321	G	•	•	•	•	•	•	•	•	•	•	7.7	29	7.1
FO 081477	SW-43-ABC352-1208 N WHEELER PL & KERBY	43_SW3	12/12/08	1332	G	•	•	•	•	•	•	•	•	•	•	7.9	106	7.2
FO 081478	SW-43-ABC449-1208 N KERBY & TILLAMOOK	43_SW4	12/12/08	1310	G	•	•	•	•	•	•	•	•	•	•	7.8	34	7.5
FO 081479	SW-44-ABC352-1208 N HARDING & RIVER	44_SW1	12/12/08	1144	G	•	•	•	•	•	•	•	•	•	•	7.1	81	10.1
FO 081480	SW-44A-ABC311-1208 N LABREE & RANDOLPH	44A_SW1	12/12/08	1122	G	•	•	•	•	•	•	•	•	•	•	7.2	38	6.2
FO 081481	FIELD DECON BLANK	FDB	12/12/08	1344	G	•	•	•	•	•	•	•	•	•	•			
FO 081482	DUPLICATE	DUP	12/12/08		G	•	•	•	•	•	•	•	•	•	•			

Relinquished By: 1 Matt Sullivan 12/12/08
Signature: [Signature] Time: 1435
Printed Name: Matt Sullivan Date: 12/12/08
Received By: 1 Matt Sullivan 12/12/08
Signature: [Signature] Time:
Printed Name: Date:

Relinquished By: 2
Signature: Time:
Printed Name: Date:
Received By: 2
Signature: Time:
Printed Name: Date:

Relinquished By: 3
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Printed Name: Date:
Received By: 3
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Relinquished By: 4
Signature: Time:
Printed Name: Date:
Received By: 4
Signature: Time:
Printed Name: Date:

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Page 1 of 2

Project Portland Harbor SW

Project No. 1020.005

Location 6 outfall grab sites

Date 12/12/08

Subject Event 2

By MJS, JXB

1035 - rain has intensified from very light to moderate steady rain - will go out to sites at this point.

1112 - on site @ 44A-SW1 to very heavy consistent rain and heavy runoff. Flow in pipe is flowing very fast and is extremely turbid. Collected sample and duplicate from 1100-1132. Took photos of flow in pipe and of street near manhole.

1138 - on site @ 44-SW1 - light but steady rain - good flow entering catch basin and heavy flow in line. Collected sample 1144 - 1149

1155 on site @ 43-SW1. light rain but runoff still entering catch basins. Sampled 1157-1205 sample is moderately turbid.

1205 Rain has stopped

1216 Rain has started up again and is currently quite light

1255 Rain intensifying

1306 - on site @ 43-SW4 to moderate steady rain and good runoff entering catch basins. Sample is moderately turbid

1321 - on site @ 43-SW2 to steady rain & flow. Sample is moderately turbid.

1330 - on site @ 43-SW3 to heavy flow

Attachments sample is extremely turbid



Page 2 of 2

Project Portland Harbor Stormwater

Project No. 1020.005

Location _____

Date 12/12/08

Subject Event 2

By MSS, JKB

1344 Collected Field Decon Blank at 43-SW3 immediately after collecting sample, using a new clean beaker. (Did not collect first b/c we were approaching 3 hour first flush deadline).

Attachments

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Event 3: February 23, 2009

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



Date: 2/23/09
Page: 1 of 1
Collected By: M.S. Davis

Project Name: **PORTLAND HARBOR STORMWATER SAMP**

File Number: **1020.005**

Matrix: **STORMWTR**

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☐ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

TSS

PCB Congeners (All 209)

PAH + Phthalates (TA)

SVOC's (CAS)

Pesticides (CAS)

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)

Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO095216

SW-43-ABC290-MMNY
N ALBINA & RIVER

43_SW1

2/23/09

1442

G

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9.0

41

7.1

FO095217

SW-43-ABC339-MMNY
N KERBY & WHEELER

43_SW2

2/23/09

1410

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9.1

31

7.2

FO095218

SW-43-ABC552-MMNY
N WHEELER PL & KERBY

43_SW3

2/23/09

1518

G

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9.8

60

7.2

FO095219

SW-43-ABC499-MMNY
N KERBY & TILLAMOOK

43_SW4

2/23/09

1358

G

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9.4

24

7.5

FO095220

SW-44-ABC352-MMNY
N HARDING & RIVER

44_SW1

2/23/09

1422

G

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9.1

40

7.2

FO095221

SW-44A-ABC311-MMNY
N LARABEE & RANDOLPH

44A_SW1

2/23/09

1455

G

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9.1

37

7.3

FO095222

FIELD DECON BLANK

FDB

2/23/09

1530

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FO095223

DUPLICATE

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2/23/09

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Relinquished By: 4

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Printed Name: Matt Sullivan Date: 2/23/09

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Signature: [Signature] Time:



Page 1 of 1

Project Portland Harbor Stormwater Sample
Location basins 43, 44, and 44A
Subject Event ^{MS} 34

Project No. 1020.005
Date 2/23/09
By MJS, JXB

1337 - very heavy rain falling throughout the region - will go to Albina and determine if there is sufficient rain/run-off to sample.

43-SW4 - on site at 1354 to heavy rain + good run-off. Sample is very turbid and has a pronounced sheen.

43-SW2 - on-site at 1406 to continued rain and flow cascading from laterals into manhole chamber. Water pooled in manhole is visibly flowing. Samples are extremely turbid.

44-SW1 - on site @ 1420 to continued moderate rain and very heavy runoff. Collected duplicate for TSS + PCBs. Samples are extremely turbid w/ visible suspended soil visible entering catch basin.

43-SW1 - on site @ 1439 to continued rain and heavy run-off. Samples are again extremely turbid - heavy truck traffic.

44A-SW1 - on site at 1452 to decreasing rain but still very heavy flow. Samples extremely turbid. Rain intensifying again.

43-SW3 - on site @ 1509 to steady moderate rain. Rain decreased throughout sampling but flow remained extremely heavy. Odor and visual particles in sample may indicate a CSO event occurring. 1530 collected FDB w/ a new clean bailer at 43-SW3.

Attachments

Event 4: March 23, 2009

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Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

Sample Time recorded in PST

CL Sample ID.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Organics				Metals		Field		
						TSS				PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	Pesticides (CAS)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)
FO095371	SW-43-ABC290-MMYY N ALBINA & RIVER	43_SW1	3/33/04	13:48	G	•				•	•	•	•	•	•	9.8	132	7.3
FO095372	SW-43-ABC339-MMYY N KERBY & WHEELER	43_SW2		1330	G	•				•	•	•	•	•	•	10.5	90	6.9
FO095373	SW-43-ABC362-MMYY N WHEELER PL & KERBY	43_SW3		1454	G	•				•	•	•	•	•	•	10.7	552	7.6
FO095374	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	43_SW4		1322	G	•				•	•	•	•	•	•	10.7	122	7.1
FO095375	SW-44-ABC352-MMYY N HARDING & RIVER	44_SW1		1402	G	•				•	•	•	•	•	•	9.1	129	7.8
FO095376	SW-44A-ABC311-MMYY N LARABEE & RANDOLPH	44A_SW1		1414	G	•				•	•	•	•	•	•	10.0	97	7.5
FO095377	FIELD DECON BLANK	FDB		1432	G	•				•	•	•	•	•	•			
FO095378	DUPLICATE	DUP			G	•				•	•	•	•	•	•			

Signature: *Matt Sullivan* Time: 1647

Relinquished By: 2

Signature: *Matt Sullivan* Time: 1647

Relinquished By: 4

Printed Name: *Matt Sullivan* Date: 3/33/04

Signature: *Matt Sullivan* Time: 1647

Relinquished By: 3

Signature: *Matt Sullivan* Time: 1647

Received By: 1. *Matt Sullivan* Date: 3/33/04

Signature: *Matt Sullivan* Time: 1647

Relinquished By: 3

Signature: *Matt Sullivan* Time: 1647

Printed Name: *Matt Sullivan* Date: 3/33/04

Signature: *Matt Sullivan* Time: 1647

Relinquished By: 3

Signature: *Matt Sullivan* Time: 1647



Page 1 of 1

Project Portland Harbor Stormwater
Location Basin 43, 44, and 44a
Subject Event 5

Project No. 1020.005
Date 3/23/09
By MJS, JXB

1123 PST Light rain beginning, radar shows significant moisture arriving from the west. significant

1219 ~~No significant~~ On-site at basin 43; no rain yet but it is now beginning to rain more sprinkle more consistently.

1300 rain is now intensifying and pavement now completely wet although nothing is yet running off.

1309 runoff is beginning and is currently entering 3 of the 4 catch basins in the intersection.

1314 Flow in manhole has increased - will collect sample @ 43-SW 4

1330 on site @ 43-SW 2. There is abundant flow exiting the manhole. Rain continues to be light but steady and there is visible runoff - collected sample.

1348 on site @ 43-SW 1. Still light but steady rain. Visible runoff and good flow in the manhole. Sample is very turbid.

1402 on site @ 44-SW 1 to continued steady light rain. There is visible runoff entering catch basin. Collected sample and duplicate for TSS + PCBs. Sample was extremely turbid with a dark gray color.

1414 on site @ 44A-SW 1. Light rain continuing w/ steady runoff. Good flow in manhole. Collected sample which was extremely turbid.

1432 on-site at 43-SW 3. Light rain continues. will collect FDB prior to sampling.

1445 Light steady rain continuing. There is light but consistent flow entering catch basin. Flow in manhole is light but extremely turbid. ~~collected sample~~ ^{sample} contains visible suspended particles and is

Attachments very turbid. Measured extremely high conductivity reading (552 uS/cm). Sample has milky green and a ~~hydrocarbon~~ petroleum like odor.

Phase 1 Sediment Trap Deployment

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INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: PORTLAND HARBOR STORMWATER SAMP	Project No.: 1020,005	Date: 10/30/08	By: JXB/JJA
Site Address: N. RIVER & ALBINA	Sample Pt Code: 43-ST1	Basin: 43	Hansen ID: ABC290

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns:
Site is located at intersection of N River St. & Albina Ave. Heavy traffic from grain silo along river front (2x long semi trucks) can potentially turn wide at this location clipping work zone. Refer to JSA on file.

Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?):
- Approx. 1.0" of standing water due to sag in OS 16" diameter pipe

Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.):
Approx. 1.0"-1.5" of fine silt deposited in 16.0' mainline

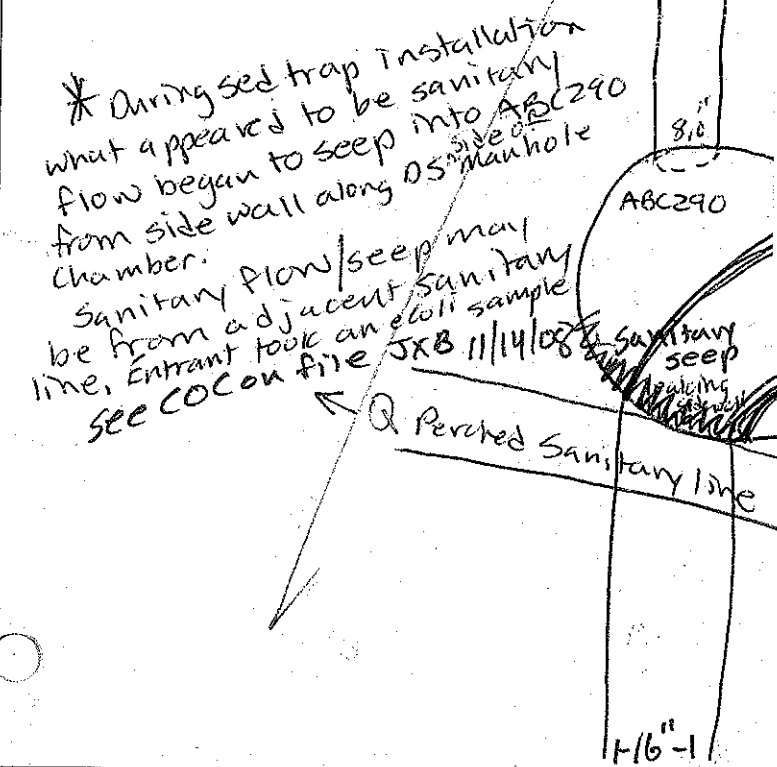
Sediment trap bottles installed on: **JXB 10/30/08**

Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.):
N/A

Pipe diameter (inches): **16"**
from MH (et):

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap loc using the top of the page as north):



Sed Trap FDS for attempted Sed trap installation 10/30/08

Installation was aborted due to suspected Sanitary seep into ABC290 from MH Side wall. Entrant took an ecoli sample

e coli results for sample 200,000 mpn/100 ml

See COC & Janus for additional information JXB 12/16/08

Elevated Laterals from CB entering MH chamber above invert.

6.0" perched lateral is plugged 10.00' lateral above perched 6.0" lateral is lined



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INLINE SEDIMENT TRAP FIELD DATA SHEET

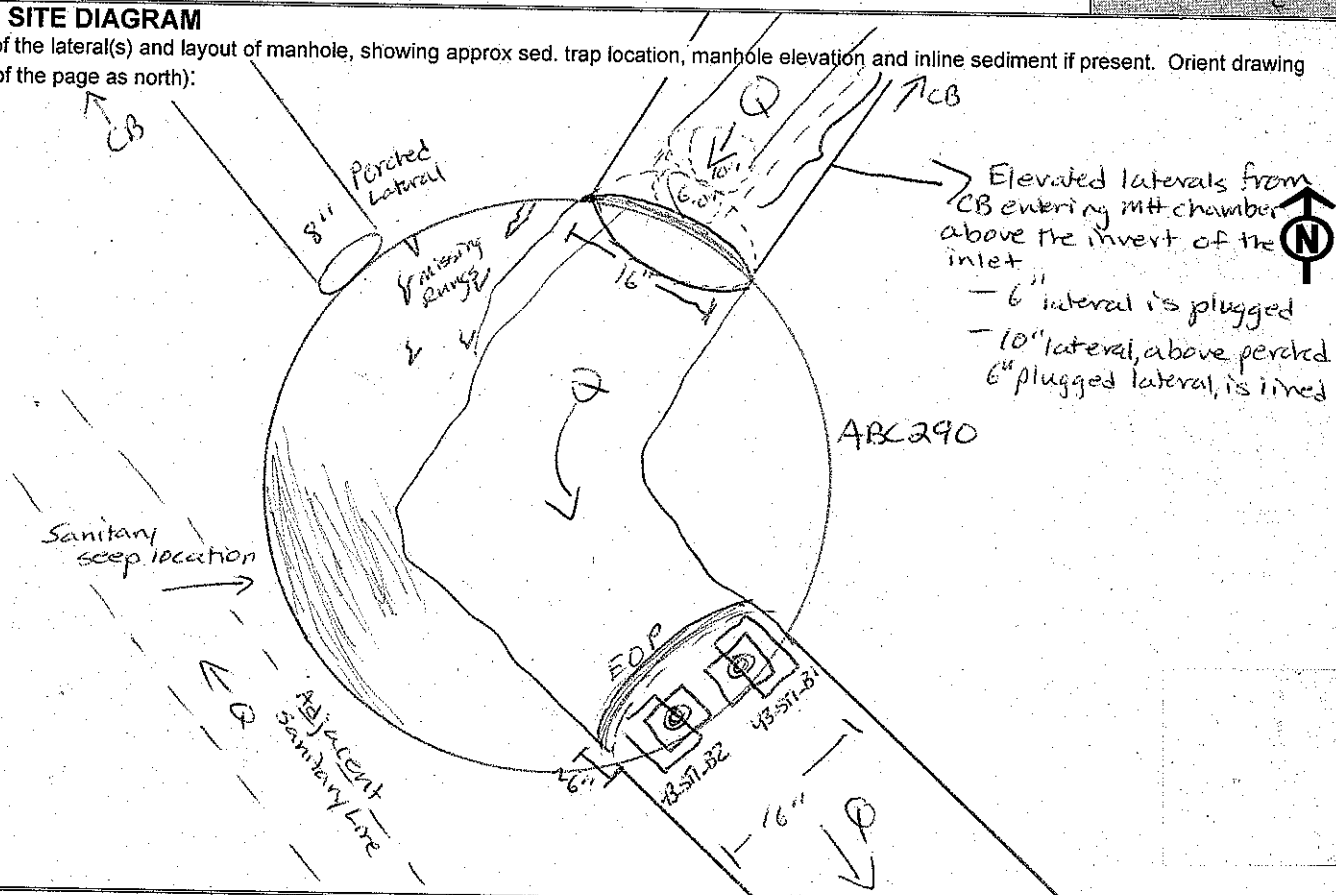
Project Name: <i>Portland Harbor Stormwater Samp</i>	Project No.: <i>1020.005</i>	Date: <i>11/25/08</i>	By: <i>RCB/JXB</i>
Site Address: <i>N. River & Albina Ave</i>	Sample Pt Code: <i>43-ST1</i>	Basin: <i>43</i>	Hansen ID: <i>ABC290</i>

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns: <i>Potential for heavy semi-truck traffic at this site. Flagger not necessary during certain periods of the day, but helpful if available. Refer to JSA & TC set up. Discharge from ESCO River ST shaft occurring DS of ABC290 - minor potential for engulfment.</i>		Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?): <i>No flow in pipe upon arrival. During installation storm runoff occurred creating flow of ~3.0" in depth @ 1-2 fps. Minimal sanitary sewer leakage into node via seep in mlt side wall during installation. River does not appear to back up into site.</i>
Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.): <i>No sampleable sediments in pipe.</i>		
Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.): <i>Sediment traps mounted ~6" downstream of EOP in 16" diameter main outlet. Traps are located downstream of sanitary sewer seep point in side wall of ABC290.</i>		Sed trap bottles installed on: <i>11/25/08</i>
		Pipe diameter (inches): <i>16"</i>
		Distance from MH node (feet): <i>~21</i>

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap location, manhole elevation and inline sediment if present. Orient drawing using the top of the page as north):



Pt. Code: 43-ST1		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC290
Date: 11/8/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By: JXB/ELH	US Bottle 1 - ~0.3" (43%) DS Bottle 2 - ~0.4" (44%)	Final Removal? Y/N		Holding Sticker
Comments: Both traps were in tacked. Buildup of organic debris & paper wrapped around trap housing. Plastic bag completely covering bottle opening of 43-ST1-B1. Entrant carefully removed bag while wearing clean gloves, prior to securing bottle caps & conducting visual inspection. Baseflow was ~1.5" flow @ 0.5 fpm.				
US-Bottle - 43-ST1-B1 - Total accumulation of solids was ~0.3" (43%) by volume. Bottle was full of stormwater w/ minor silt & no apparent odor.				
DS-Bottle - 43-ST1-B2 - Total accumulation of solids was ~0.4" (44% by total volume). Minor fines adhered to the inside walls of the bottle. Bottle full of stormwater w/ visible silt & no apparent odor.				
Photos Taken? Y/N OK JXB 11/9/08 - Camera damaged during field visits. No photos. See field notes on 11/8/09				
Describe: Photo of plastic bag completely covering bottle opening on 43-ST1-B1 was taken				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle -	Final Removal? Y/N		Holding Sticker
Comments:				
US Bottle - DS Bottle -				
JXB 11/15/09 Field camera repaired. Photos from Basin 43, 44 & 44A successfully uploaded & placed on project folders onto S:11 drive.				
Photos Taken? Y/N				
Describe:				
Date: 3/18/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By: JXB/MJS	US Bottle 1 - ~0.5" (Left) DS Bottle 2 - ~0.5" (Right)	Final Removal? Y/N		Holding Sticker
Comments: Both traps are in tacked. Leaves & organic material adhered to trap housing. Bottle openings are free of obstructions. Pipe is dry - no baseflow. Noticeable sanitary odor present in 1st chamber. Both sed. trap bottles were full of stormwater w/ no visible silt on surface of stormwater captured.				
US Bottle 1 - Total accumulation of captured solids on bottom of bottle was approx. 0.5". Trace fines adhered to inside surface of bottle.				
DS Bottle 2 - Total accumulation of captured solids in bottom of bottle was also approx. 0.5". Minor fines adhered to inside surface of bottle.				
Photos Taken? Y/N				
Describe:				

Pt. Code: 43-ST1		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC290
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				Holding Sticker
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				Holding Sticker
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				
US Bottle -				Holding Sticker
DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 43-ST1		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABC290
Sample ID:	FO095657	Duplicate sample collected at this site? Y/N	DUPLICATE ID:	
affix FO number				
Duplicate Sample ID on COC:		Any deviations from standard operating procedures? Y/N		
affix FO number sticker		Describe:		
Comments:				
<p>See sediment trap file JXB</p> <p>See Sediment Trap Processing Field Data Sheet</p>				

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INLINE SEDIMENT TRAP FIELD DATA SHEET

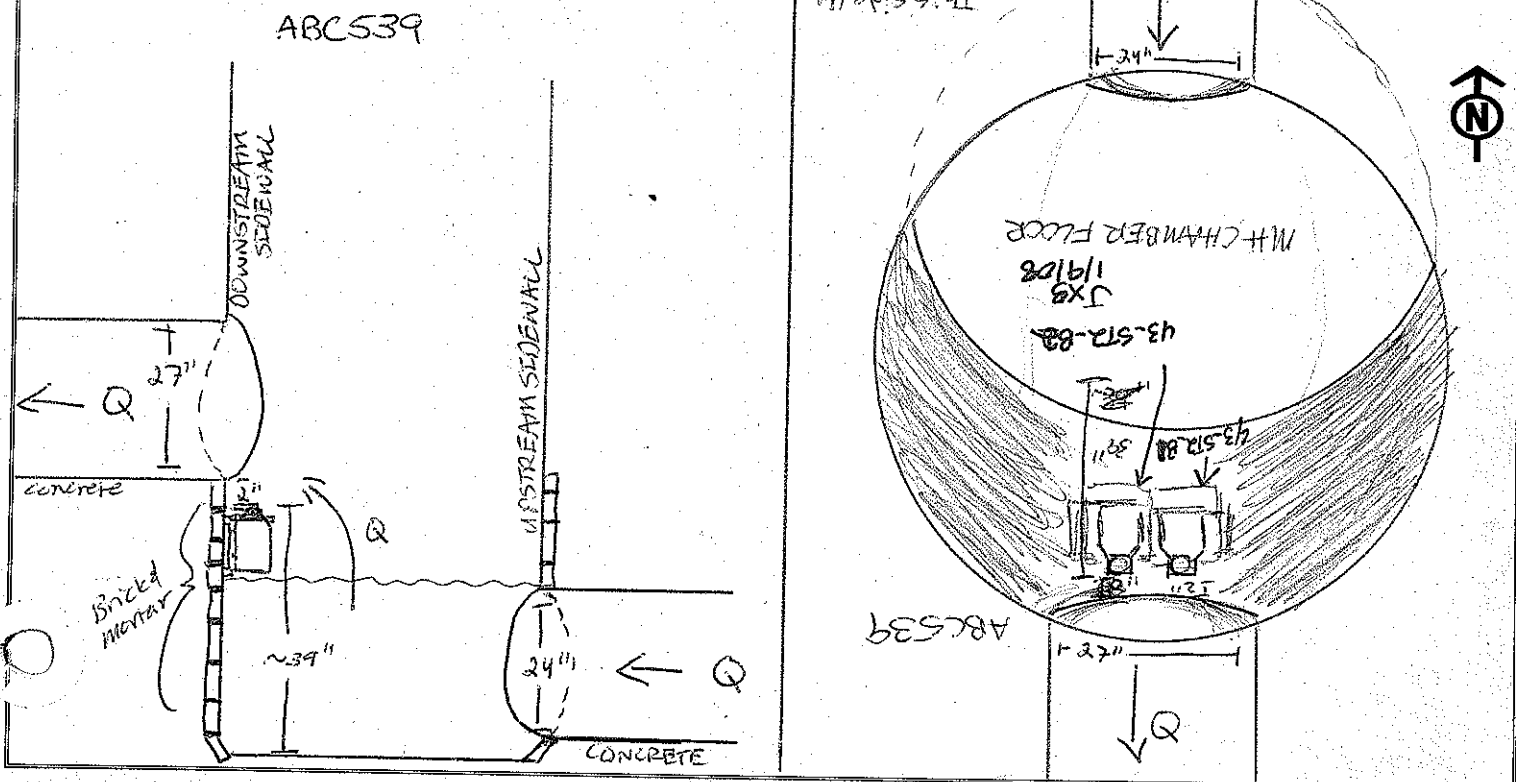
Project Name: Portland Harbor Stormwater Sump	Project No.: 1020.005	Date: 11/24/08	By: JXB/RCB
Site Address: N. Kerby & N. Wheeler Place	Sample Pt Code: 43-ST2	Basin: 43	Hansen ID: ABC539

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns: Node has a tendency to fill up w/ baseflow & I&I (~4' in depth) making CSE challenging. Heavy truck traffic on Kerby & Wheeler from Water Bureau & PPS. Cone off node & extend cones along centerline of N. Kerby w/ arrow placards. Setup UWA & SLOW signs on streets.	Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?): All active baseflow & I&I was pumped out of node by Maintenance vector crew during CSE and sed trap installation. River does not appear to back up into site.
Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.): No sampleable sediments present in node. Maintenance had cleaned solids from node and had a vector crew on site actively pumping out node during install.	Sediment trap bottles installed on: 11/24/08
Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.): Sediment traps were installed ~39" above the floor of the MH chamber on the downstream sidewall. Traps were aligned side by side & were mounted on sidewall approx. 2" below the invert of the 27" outlet. w/ bottle mouths	Pipe diameter (inches): 27"
	Distance from MH node (feet): N/A

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap location, manhole elevation and inline sediment if present. Orient drawing using the top of the page as north):

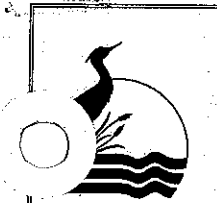


Pt. Code: 43-ST2		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC539
Date: 1/13/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y N If removed which one(s)?	Archived ID:	
By: JXB/ECH	US Bottle 1 - ~0.2" DS Bottle 2 - 0.7" Bottle --- (2%) Bottle --- (7%)	Final Removal? Y N	Holding Sticker	
Comments: Traps were intact following installation. Both sed trap bottles full of stormwater. Approx. 4.0 feet of standing water present in floor of manhole chamber. Standing water is flowing slowly into 27" outlet. VHS taped wrapping ribbon, wrapped around bottle necks. Bottles free of obstructions. US Bottle - 43-ST2-B1 (left hand bottle) had trace accumulations of solids ~0.2" in bottom of bottle (<2% by volume) DS Bottle - 43-ST2-B2 (right hand bottle) had a total accumulation of 0.7" of solids in the bottom of the bottle (<7% by total volume). Photos Taken? Y N Describe:				
Date: 2/18/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y N If removed which one(s)?	Archived ID:	
By: JXB/ECH	US Bottle 1 - 1.3"-1.5" DS Bottle 2 - 0.9"-1.0" Bottle --- Bottle ---	Final Removal? Y N	Holding Sticker	
Comments: Both traps were intact. Bottle openings were free of obstructions. Both bottles were full of stormwater w/ minor adhesions on inside surface of bottle walls. Base flow was 1.7" deep in outlet and was 0.2 fps. US Bottle - Flowing at Left 1 Total accumulation of sediment captured in bottom of sed. trap bottle was 1.3"-1.5" DS Bottle - Right 2 Total accumulation of sediment captured in bottom of sed. trap bottle was approx. 0.9"-1.0". Photos Taken? Y N Describe:				
Date: 3/18/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y N If removed which one(s)?	Archived ID:	
By: JXB/MJS	US Bottle 1 - 1.2"-1.3" DS Bottle 2 - 1.0" Bottle --- Bottle ---	Final Removal? Y N JXB	Holding Sticker	
Comments: Both traps were intact. Observed base flow was off in the outlet invert was approx 1.5" w/ a flow of ~0.5 fps. 43-ST2-B2 bottle opening was completely obstructed by a paper towel. Entrant removed obstruction. Left both bottles were full of stormwater. US Bottle - 43-ST2-B1: Total accumulation of captured solids in bottom of bottle was approx. 1.2"-1.3" w/ minor fines adhered to the inside surface of the bottle (adhesions). Discrepancy between 2/18 & 3/18 solid accumulation may be due to solids compacting & not solids loss. DS Bottle - 43-ST2-B2: Total accumulation of captured solids in bottom of bottle was approx. 1.0". Minor adhesions on inside surface of bottle. Photos Taken? Y N Describe:				

Pt. Code 43-512		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID ABC539
Date: 5/27/09	Estimated sed. depth per bottle (% by volume & inches): US Bottle 1- 1.9" DS Bottle 2- 2.5"	Bottles removed/replaced? <input checked="" type="checkbox"/> N If removed which one(s)?		Archived ID
By: JXB/MJS	Final Removal? <input checked="" type="checkbox"/> N End of 08/09 deployment			
Comments: On site to conduct final removal of in-line sed. traps @ completion of deployment period. Traps were intact. Standing water in bottom of MH chamber was ~ 45". Positive flow going out of 27" diameter outlet. Base flow in outlet was ~ 2.0" w/ a flow of ~ 0.5 fps. Visible sheen on surface of standing water. Both bottles were full of captured stormwater. Bottles were free of obstructions. B1: Total accumulation of solids was ~ 1.9" w/ adhesions on inside of bottle. Captured solids appear to be very compact & dense in total volume. B2: Total accumulation of solids was ~ 2.5" w/ adhesions on inside surface of bottle wall. Captured solids appear to be compact & dense in volume.				
Photos Taken? <input checked="" type="checkbox"/> N				
Describe: Submerged sed. traps & visible sheen on surface of standing water.				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				
Bottle - DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				
US Bottle - DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 413-ST2		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC539
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; text-align: center; line-height: 60px;">Holding Sticker</div>
Comments:				
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; text-align: center; line-height: 60px;">Holding Sticker</div>
Comments:				
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 413-ST2		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABC539
Sample ID:	FO095658	Duplicate sample collected at this site? <input checked="" type="checkbox"/>	DUPLICATE ID:	
affix FO number				
Duplicate Sample ID on COC:		Any deviations from standard operating procedures? <input checked="" type="checkbox"/>		
affix FO number sticker		Describe: <i>Unable to use a peristaltic pump to adequately process captured solids - employed a labgrade vacuum pump</i>		
Comments:				
See Sediment Trap Processing Field Data Sheet				



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INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: <i>Portland Harbor Stormwater Sump</i>	Project No.: <i>1020.005</i>	Date: <i>11/25/08</i>	By: <i>RCB/JXB</i>
Site Address: <i>N Wheeler Pl & Kerby Ave</i>	Sample Pt Code: <i>43-ST3</i>	Basin: <i>43</i>	Hansen ID: <i>ABC552</i>

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns:

No TC. MH located in parking area for Portland Public Schools. May not be able to back up to MH due to parked cars, though cars do not usually park on MH. Park on nearby Wheeler Pl & access MH on foot.

Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?):

Baseflow depth of 0.2' & 0.5 fps w/ flow sinuosity primarily confined in invert of pipe. River does not appear to back up into site.

Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.):

No sampleable sediments present in pipe

Sed trap bottles installed on:

11/25/08

Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.):

Sediment traps installed in downstream, 62" diameter, epoxy lined, outlet ~100' & 108" DS from EOP, stormline

Pipe diameter (Inches):

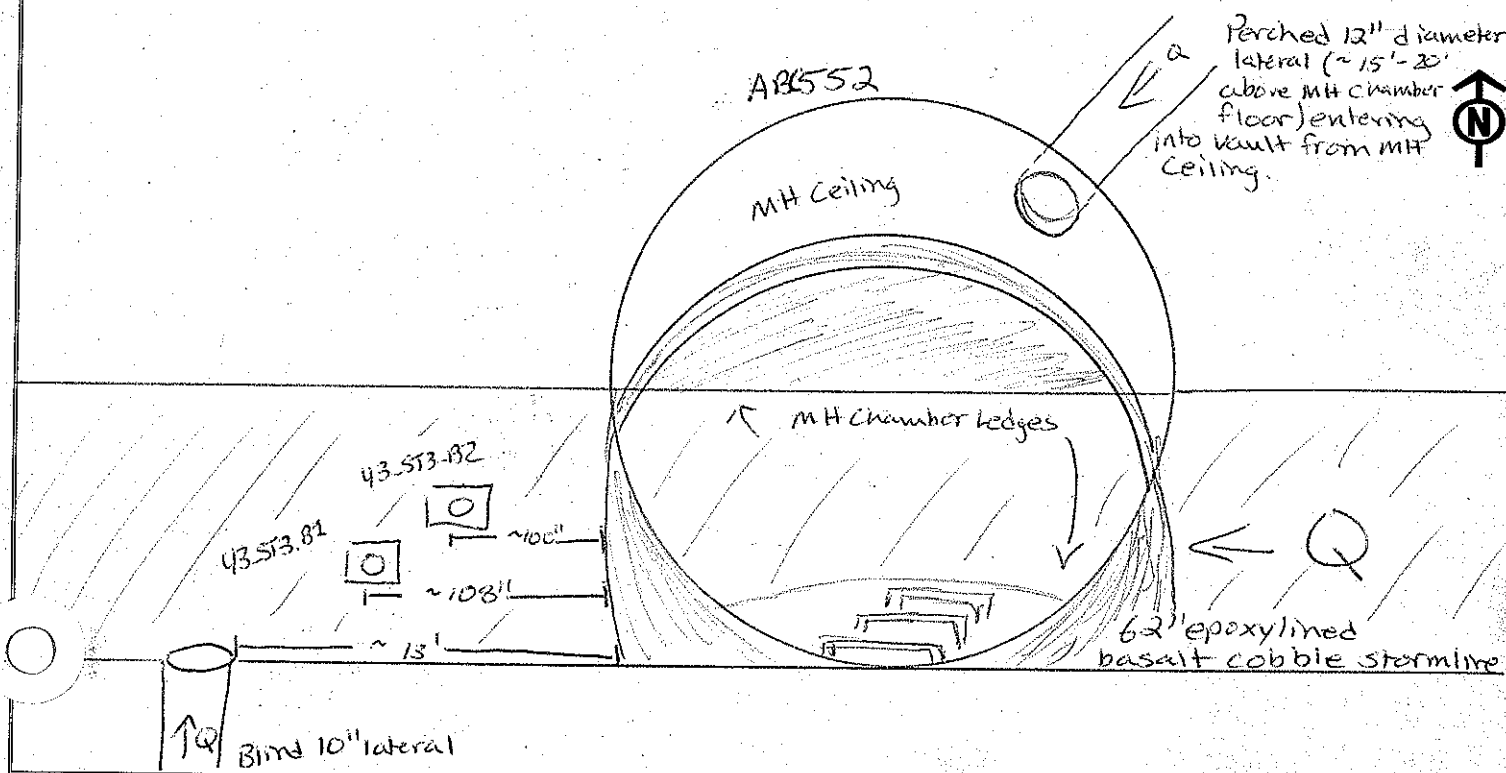
62"

Distance from MH node (feet):

11'-12'

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap location, manhole elevation and inline sediment if present. Orient drawing using the top of the page as north):



PI Code 43-ST3		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID ABC552
Date: 1/8/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y(N) If removed which one(s)?		Archived ID:
By: JXB/ECH	US Bottle 2 - 1.5" DS Bottle 1 - 1.7" Bottle - Bottle -	Final Removal? Y(N)		
Comments: Both traps intact. Baseflow was 0.5" @ 0.3 fps. Both traps have organics, plastic & paper wrapped around trap housing. 43-ST3-B2 bottle opening is ~80% obstructed by organic/plastic/paper debris. Entrant carefully removed debris w/ clean gloves. Bottles mislabeled during install - labeled bottles to match paperwork. US Bottle 43-ST3-B2: Minor fines adhered to the inside of the bottle walls. Total accumulated sediment in bottom of bottle = 1.5". Bottle completely full of stormwater. Unable to detect an odor due to decaying organics that were on trap housing. DS Bottle 43-ST3-B1: Minor fines adhered to the inside of bottle walls. Total accumulation of sediment in bottom of bottle = 1.7". Bottle full of stormwater. Unable to detect odor.				Holding Sticker
Photos Taken? Y(N)				
Describe: Photos of organics, plastic & paper "cocoon" wrapped around traps.				
Date: 2/18/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y(N) If removed which one(s)?		Archived ID:
By: JXB/ECH	US Bottle 2 - 1.6-1.7" DS Bottle 1 - 1.6-1.7" Bottle - Bottle -	Final Removal? Y(N)		
Comments: Sediment traps were intact. Observed baseflow was approx. 0.2" @ 0.5 fps. Both sediment traps (housing & bottle openings) were completely obstructed/covered by paper rags & organics & plastic debris "cocoon". Took photo of obstructions. US Bottle 2 - Bottle was completely full of stormwater w/ minimal fines adhered to inside walls of bottle (adhesions). Iron bacteria film on surface of captured stormwater. Approx. 1.6" - 1.7" of total accumulated sediment captured in bottom of bottle. DS Bottle 1 - Bottle was also completely full of stormwater w/ minimal adhesions & iron bacteria film on surface of captured stormwater. Approx. 1.6" - 1.7" of total accumulated sediment captured in bottom of bottle.				Holding Sticker
Photos Taken? Y(N)				
Describe: Photos of debris "cocoon" wrapped around traps & completely obstructing bottle openings				
Date: 3-18-09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y(N) If removed which one(s)?		Archived ID:
By: JXB/MJS	US Bottle 2 - 2.0" DS Bottle 1 - 1.8" Bottle - Bottle -	Final Removal? Y(N)		
Comments: Both traps were intact. Observed baseflow was approx. 0.3" w/ a flow of ~2.0 fps. Both sediment traps were fully incased again w/ paper rags, organics & plastics. Bottle openings were completely obstructed. Carefully removed debris "cocoon" from traps. Both bottles were full of stormwater w/ a visible sheen on the surface. Minor Trace JXB fines adhered to inside surfaces of bottles. US Bottle 43-ST3-B2: Total accumulation of captured solids in bottom of bottle was approx. 2.0" DS Bottle 43-ST3-B1: Total accumulation of captured solids in bottom of bottle was approx. 1.8"				Holding Sticker
Photos Taken? Y(N)				
Describe:				

Pt. Code 43-ST3		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC55Z
Date: 5/27/09	Estimated sed. depth per bottle (% by volume & inches): US Bottle B2 ~1.8" DS Bottle B1 - 1.5"	Bottles removed/replaced? <input checked="" type="checkbox"/> Y/N If removed which one(s)?		Archived ID:
By: JAB/ECH/MJS	Bottle	Final Removal? <input checked="" type="checkbox"/> Y/N End of 08/09 deployment		
Comments: On site to conduct final removal of inline sed. traps at end of deployment period. Baseflow was ~0.2". Upstream bottle (43-ST3-B2) had ragged organic debris adhered to trap housing but was free of obstructions. Downstream bottle (43-ST3-B1) was completely engulfed & obstructed due to a ragged organic debris "cocoon", which has been previously observed during previous field visits. B2: Total accumulation of captured stormwater solids was ~1.8". Discrepancy between March's solids accumulation observations & final observation most likely due to solids coming out of suspension & solids compacting in trap bottle. B1: Total accumulation of captured solids was ~1.5". Discrepancy between March's solids accumulation & final solids accumulation observed most likely due to solids compacting. Note: Both bottles were full of captured stormwater w/ trace adhesions on inside surfaces. Captured stormwater has a pungent sanitary odor, as well as outside surface of trap bottles (CSO trunk). Photos Taken? <input checked="" type="checkbox"/> Y/N Describe: Photos of sed traps in situ & of debris on trap housing & of "debris cocoon"				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments: Bottle - DS Bottle - Photos Taken? Y/N Describe:				Holding Sticker
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments: US Bottle - DS Bottle - Photos Taken? Y/N Describe:				Holding Sticker

Pt. Code: 43-ST3		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABLS557
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		Holding Sticker
Comments:				
US Bottle - DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		Holding Sticker
Comments:				
US Bottle - DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 43-ST3		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABLS557
Sample ID: affix FO number st	FO095659	Duplicate sample collected at this site? Y/N	DUPLICATE ID:	
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? Y/N			
Comments:		Describe:		
See Sediment Trap Processing Field Data Sheet				



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Field Operations
6543 N. Burlington Ave
Portland, OR 97203-5452



INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: <i>Portland Harbor Stormwater Sump.</i>	Project No.: <i>1020.005</i>	Date: <i>11/24/08</i>	By: <i>REB/JXB</i>
Site Address: <i>N Tillamook & Kerby Ave.</i>	Sample Pt Code: <i>43-ST4</i>	Basin: <i>43</i>	Hansen ID: <i>ABC500</i>

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns:

Node is located in the middle of the intersection. Place MWMT signs on Tillamook & Kerby, then deploy a cone island around the node. Some large trucks in the area.

Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?):

0.3' of flow @ 0.2 fps. No evidence of river back up

Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.):

Large cobbles & gravels present upstream of node. Very little fines and no sampleable quantities in pipe

Sed trap bottles installed on:

11/24/08

Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.):

Approximately 12" upstream of ~~node~~ for upstream trap. Downstream trap approx. 5" upstream of EOP.

Pipe diameter (inches):

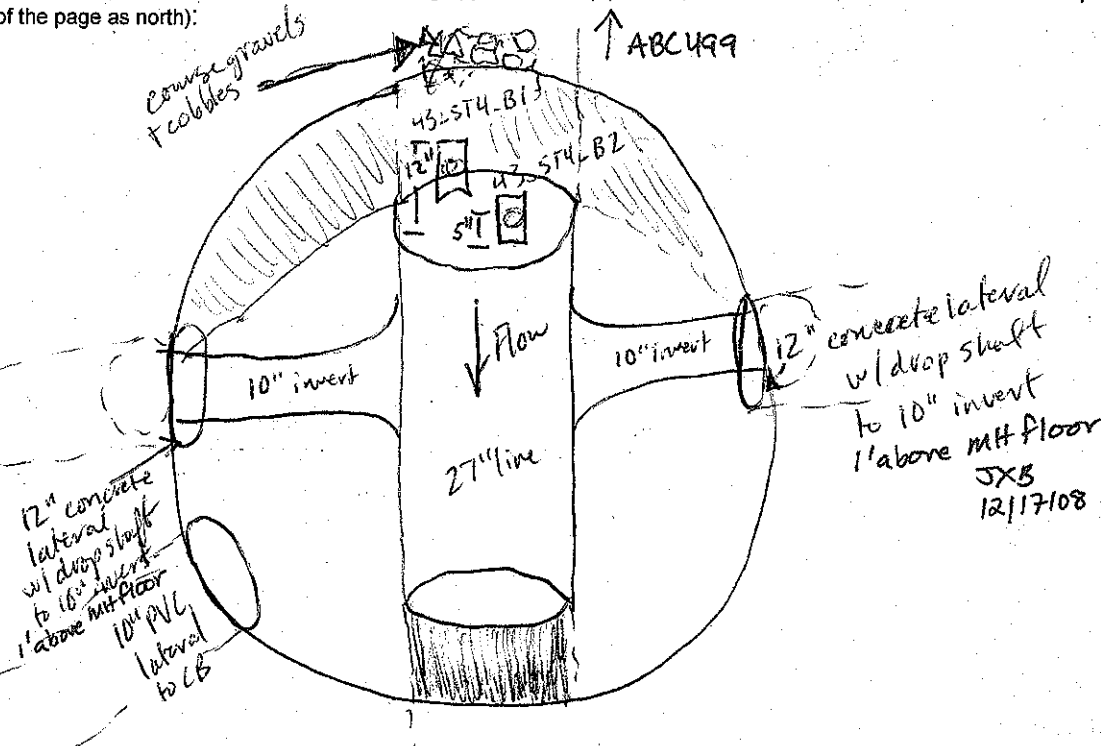
27"

Distance from MH node (feet):

~3

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap location, manhole elevation and inline sediment if present. Orient drawing using the top of the page as north):



Pt. Code 43-ST4		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID ABC500
Date: 5/27/09	Estimated sed. depth per bottle (% by volume & inches): US Bottle B1 - 0.6" DS Bottle B2 - 0.6"	Bottles removed/replaced? <input checked="" type="checkbox"/> N If removed which one(s)?		Archived ID:
By: JXB/MSS/ECH	Bottle - Bottle -	Final Removal? <input checked="" type="checkbox"/> N End of deployment		
Comments: On site to conduct final removal of sed. traps at completion of deployment period. Traps were intact. Baseflow was ~0.3" in average depth. Rags & organic debris adhered to housing on downstream bottle (43-ST4-B2) w/ trash adhered to upstream trap housing (plastics, metal & organics). Stormwater solids (~1.25" in average depth) are deposited as far as can be seen upstream of manhole ABC500. US Bottle B1 - was completely full of captured stormwater w/ strong decomposing odor & visible silt on surface of captured stormwater. Minor adhesions on silt inside surface of bottle walls. Total accumulation of solids captured was ~0.6" DS Bottle B2 - was also completely full of storm water w/ strong organic decomposing odor & iron bacteria on surface of captured stormwater. Adhesions on inside surface of bottle. Total accumulation of captured solids was ~0.6"				43-ST4-B1 11/24/08- 5/27/09 1101PST 43-ST4-B2 11/24/08- 5/27/09 1101PST
Photos Taken? <input checked="" type="checkbox"/> N				
Describe: Sed. traps insitu prior to removal of debris & trash on trap housing.				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments: Bottle - DS Bottle -				Holding Sticker
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments: US Bottle - DS Bottle -				Holding Sticker
Photos Taken? Y/N				
Describe:				

Pt. Code: 43-ST4		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC500
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				Holding Sticker
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				Holding Sticker
Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 43-ST4		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABC500
Sample ID: FO095660 affix FO number	Duplicate sample collected at this site? <u>Y</u>	DUPLICATE ID:		
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? <u>Y</u> Describe: <i>used a vacuum pump to process solids</i>			
Comments: <i>See Sediment Trap Processing Field Data Sheet</i>				



Page 1 of 2

Project Portland Harbor Stormwater Samp

Project No. 1020.005

Location Various Locations

Date 10/1/08

Subject Basin 43, 44 & 44A Site Recon

By JXB/MJS

All times in PST

1334 - Photos taken of site during recon

JXB

12/16/08 Point codes for Basin 44 were based on original work order

→ [Site 44-ST3] - Confirmed 10" diameter terra cotta lined pipe entering MH chamber from the SE. Terra cotta material has collapsed & is deposited in the invert pipe. Debris extends ~1' US from end of pipe (EOP) to ~4' US of chamber. In addition to pipe partially collapsing, pipe is too small for existing sed traps.

[Site 44-ST2] - Confirmed 12" diameter terra cotta lined pipe entering MH chamber from the NE (main inlet). Pipe material is cracked & missing sections. Cannot install sed traps far enough US to mitigate inputs from perched PVC lateral (pipe diameter too small & location of pvc perched lateral ^{partially blocking} in invert of MH chamber).

[44ST1] - Confirmed 10" diameter ^{JXB} terra cotta pipe entering MH chamber from NW. Pipe is intact but is too small for existing sed traps. Hansen ID ABC352 12/16/08 JXB

Confirmed main outlet as a 12" terra cotta lined pipe. Due to large inputs from elevated concrete & PVC laterals in MH chamber & pipe diameter constraints, as well as intermixing of solids particles between sites, FO will advocate to strike all sites & install at least one standard sed trap in 12" OS outlet.

1403 - On site @ 43-ST1 [2100 N. Albina Ave (ABC363)] Confirmed pipe diameter as 16" terra cotta pipe. Solids (~1-1.5" in depth) deposited in invert of MH chamber & extend the entire length of the outlet. Solids primarily consist of fine silts & clay, as well as ^{large} angular gravels

Attachments 1/4" - 3/4" minus - construction debris from ESCO?



Page 2 of 2

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location Various Locations

Date 10/11/08

Subject Basin 43, 44 & 44 A Site Recon

By JXB/MJS

43-ST1 (cont.) - MJS assesses viability of installing sed traps. Due to inputs from perched CB lateral w/ high turbulent flow, there may only be one sed trap installed @ this site - directly DS from MHT chamber & perched lateral. Took photo of main line & perched lateral.

1430 - Arrived on site @ 43-ST2 [N. Kerby & Wheeler (AR539)]
Did not make an CSE. Approx. 1.1 m of standing water in MHT chamber (See Westinghouse Parkway Investigation Field Notes for pipe & MHT schematics). Took photo of MHT chamber.

NOTE:

* Site may not prove viable for sed trap/stormwater monitoring if stormwater continues to pool in chamber (I&I?)

1450 - Arrived on site @ 43-ST3 [N. Wheeler Pl & Kerby Ave (AR553)]
Did not perform CSE b/c heavy flow entering MHT chamber from east lateral, which is connected to dewatering pad on the Water Bureau lot where vactor dewatering trucks discharge. Large volume of water discharged while on site. FO spoke w/ Water Bureau staff that were discharging to dewatering pad. Staff reported that water was from a flooded vault from a broken water line. Site appears to have an offset main line or a MHT chamber floor drain - not suitable for sed trap installation or stormwater sampling.



10/6/08
JXB

Confirmed 60" mainline offset ~3.0' from center of MHT chamber after CSE.

Attachments



Page 1 of JXB 2

Project Portland Harbor Stormwater samp

Project No. 1020.005

Location Various Locations

Date 10/6/08

Subject Basin 43 ^{JXB} 49 site Recon

By JXB/MJS

All times in PST

10/7/08

JXB Node ABC552 replaced ABC553 for Sed Trap location 43-ST3 due to vac-pad

1139 - MJS enters node ABC552 (N. Wheeler Pl & Kerby Ave). Confirms discharge previously noted.

pipe diameter in main inlet & outlet as 60". Main line appears to be basalt ^{JXB} cobbles/bricks w/ epoxy sleeve or liner. Arc map, BES collection system layer lists pipe as 62" diameter. Epoxy liner appears to be 1.0-2.0" thick. No sampleable solids in line. Approx 0.2" of baseflow @ ~0.2 fps. One 2 1/2" diameter lateral enters

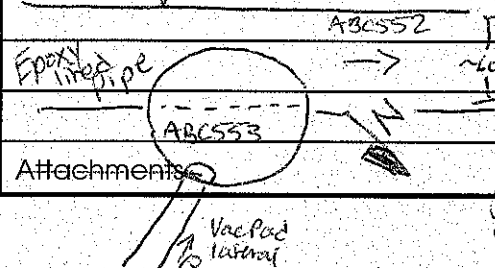
MH chamber ABC552 approx. 15'-20' above MH invert in the ceiling of the MH chamber. Took photos of mainline & MH chamber

NOTE: Epoxy liner/sleeve may be problematic for trap installations and/or pose a serious health risk to entrants during installation. Therefore, the following precautions will be adhered to:

- Entrants will wear a full-faced respirator during the extent of installation
- 3.0-4.0" long anchor bolts will be used to secure traps in basalt bricks & epoxy liner.
- Traps will be flushed with H₂O after installation to remove epoxy dust & shavings.

1152 - MJS attempts to enter ABC553. MJS confirms that 60" diameter mainline is offset approx 3' from center of MH chamber. Site is problematic in that mainline is offset (stormwater grabs) & ^{discharge} discharge

From vac pad. Site ABC552 appears to be more promising than ABC553 for long-term sed trap deployment & stormwater grabs for PDX Harbor Project. Took photos of mainline & MH chamber.





Page 2 of 2

Project Portland Harbor Stormwater Samp

Project No. 1020.005

Location Various Locations

Date 10/6/08

Subject Basin 43^{JXB} Site Recon

By MJS/JXB

1221 - JXB enters ABC500 (N. Tillamook & Kerby). Entrant confirms US pipe diameter as 27". Approx. 0.2" of baseflow @ ~0.1fps. Solids, mostly angular gravels, deposited US^{along} the entire extent of the main inlet. Depth of solids vary, but average ~0.5" in depth. Solids will need to be cleared from US inlet along the invert to install traps, but site is good.

↑ Took photo of mainline & MH chamber

└ 10/7/08 JXB Site location for sed traps to be 43-ST4



Page 1 of 1

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location BASINS 43, 44, 44A

Date 10/17/08

Subject 08/09 INLINE SED TRAP INSTALLATION

By JXB/MJS

BACKGROUND: High pressure system has moved into the northwest/
Fog & overcast conditions turning into clear sky's ~60-65°F.
Last measurable precip > 48 hours.

All times in PDT

0933 PDT - Arrive on site @ N. Larabee & Randolph (ABC311)

JXB installs "standard" sed traps (44A-ST1) approx. 6-8'
DS from ^{edge of} manhole chamber in the 72" main pipe. JXB also
installs base plates for ~~rectangular~~ ^{square} sed traps (R&D) approx 9" ^{DS} from standard sed traps. ^{JXB}

Took photos of Sed Trap installation.

JXB mounts "EPA certified clean" narrow mouth HDPE
bottles in standard pair using clean nitrile gloves,
after flushing invert w/HPDT. Bottle caps were removed
& placed in clean Ziplock bag. Took photo of sed traps w/out bottle caps.

Bottle 1 mounted in US trap (44A-ST1-B1)

Bottle 2 mounted in DS trap (44A-ST1-B2)

1250 - Arrive on site @ 2100 N Albina Ave (ABC363). MJS

attempts to install a pair of "standard" sed traps downstream of
MH chamber. 16" pipe is clay, making anchor bolt installation challenging.
Anchor bolts are in place but not engaged ^{fully} (only acting like pegs).

Will need to keep an eye on traps during storm events. There is
a low probability that traps will get blown out due to small pipe
diameter & slight sag in pipe. Large quantity of solids inline
may be due to ESCSO construction activities - talk to Angela Henderson.
MJS completed standard sed trap installation. Took photos of sed.
traps w/out bottle caps.

Attachments

43-ST1-B1 installed upstream ~5.0" from EOP

43-ST1-B2 installed downstream ~16.0" from EOP.

JXB removed
sed traps
at site
for
1150 Deployment
period
Note to be used for
ESCSO River shaft
removal



Page 1 of 1

Project PORTLAND HARBOR SW BAMP
Location BASIN 43
Subject ABC539 43-ST2

Project No. 070.005
Date 11/19/08
By ECH/RCB

1404 Arrived on site to install sed traps.
Maintenance vac'd out and performed a
line clean at this location yesterday.
Standing water still in line.

1424 RCB entered. Water is about 1 1/2"
above outlet bottom despite water having
been ~~piped~~ ^{ECB} pumped out yesterday.
Outlet pipe diameter confirmed to be
27" and concrete. Sediment in invert
felt as though it had been cleaned out
well.

1429 Exited MH.

1445 After safety discussion and consulting
with ~~EXB~~ ^{EXB}, we decided not to do the install
at this location without consulting
with PM.



Page 1 of 1

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location 43-ST4, 43-ST2

Date 11/24/08

Subject sed trap installations

By RCB/JXB

1057: Arrived on site at 43-ST4 (ABC500) to install sed traps. Took photos of drainage basin and prepared equipment.

1114: JXB enters node to install sed traps^{inlet EOP} in 27" line. Measured pipe to confirm diameter. Some coarse gravels + cobbles upstream of node, but no sample-able sediment. Installed sed traps approx. 12" upstream of node^{inlet EOP} and 5" upstream of node^{inlet EOP} to avoid lateral contributions. Traps installed, clean bottles placed in traps, caps removed and placed in a clean plastic bag. JXB 12/17/08

1203 Offsite

1205 Met Vactor crew at 43-ST2 (ABC539). Vactor crew set up and pumped water out of node.

1240 JXB enters node w/ vactor pipe still in the node to install traps. Vactor doing a nice job of keeping the pipe dry. Two traps installed on the MIT wall just below the outlet on the downstream side. Traps are aligned side by side. Installation successful, bottles installed, caps removed. Took photos.

*placed in labeled clean bag for duration of deployment period

1351 Offsite to recon^{ABC522} for tomorrow's install
ABC552

JXB
12/17/08

1400 Checked ABC539 to see if water had re-entered the node and found that the MIT was filling w/ water from base flow and was 1/3 of the way up to the outlet. Base flow may be due to elevated I&I.

Attachments 1406: Offsite to WPCL



Page 1 of 2

Project Portland Harbor Stormwater Sump.

Project No. 1020.005

JXB 12/18/08
Location ABC 552, ABC 290

Date 11/25/08

Subject Sed Trap Installation

By JXB/RCB

* All times PST.

0952: Arrived on site at ABC 552 JXB 12/18/08. Assembled sed trap installation equipment and prepared for entry into node.

1010: JXB enters MTT and takes confirmation measurements of 62" epoxy lined stormline. Measurements confirm that original pipe dimensions were 62" and construction material appears to be basalt cobbles on the floor w/ red brick w/mortar pipe walls. Subsequent epoxy lining reduced the pipe diameter to 58-60".

1014 Started installing sed traps. Because of the epoxy liner, JXB had to use 3/8" x 3 3/4" anchor bolts to have enough length to anchor into underlying basalt cobbles (standard anchor bolt size is 3/8" x 2 1/4"). Upstream sed trap installed approximately 100" downstream from EOP, the downstream sed trap installed approximately 108" downstream of EOP. Ten-inch lateral intersects 62" pipe approximately 13' downstream of EOP and should not impact sed traps.

1122 Sed trap bottles installed, caps removed and placed in clean plastic bags.

1131 Off site.

1142 Checked sed trap bottles (top side) in ABC 539 (43-ST2) following yesterday's installation. Base flow has filled MTT up to outlet and submerged traps as expected.

Attachments



Page 2 of 2

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location ABC 290, 43-ST1

Date 11/25/08

Subject Sed trap installation

By JXB/RCB

1204 Arrived at 43-ST1 at node ABC290 to make another attempt JXB
(see previous notes) -> at installing sed traps at this location. No obvious ^{sanitary} sewer/seep ^{12/18/08}
contributions to the stormline observed during installation, however
increased flow from upstream of node was observed in the 16" line.
Also JXB could hear flow being discharged ~~from~~ into a downstream
MH from the ESCSO project, although it did not cause a
backup into node ABC290.

Sediment traps installed successfully, approximately 6" downstream
of EOP, essentially side by side. Bottle 43-ST1-B1 placed on the
left side and bottle 43-ST1-B2 placed on the right.

Bottle caps removed and placed in a clean plastic bag,
installation complete.

Off-site

12/18/08
JXB

BACKGROUND:

Following the ^{results} E. coli sample from suspected sanitary seep into stormline
at ABC290, as well as positive dye test on sanitary line by Maintenance,
a ^{subsequent} determination was made by Portland Harbor Superfund PM (LAS) &
Field Operations to not strike ABC290 as a viable monitoring location.
(i.e., sediment traps & stormwater grabs for 08/08-08/09 monitoring
period to go forward as planned).

Attachments



Page 1 of 4

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location Basin 43, 44 & 44A

Date 1/8/09

Subject INLINE SED TRAP CHECKS

By JXB/ECH

BACKGROUND: Large frontal system has moved through the Northwest w/ heavy bands of moisture (Pineapple Express), following a prolonged arctic front throughout the entire ^{region} Northwest (Rain on Snow event). High pressure ridge beginning to build, leading to increased temperatures & a prolonged dry period. This will be the first field check of the sed traps in Basin 43, 44 & 44A following ^{their} installation.

* All times in PST

Willamette River Staff Gauge Reading \Rightarrow 13.14' @ 0930 (~16.14')

(POT datum Adjustment)

0951 - Arrive on site @ 44A-ST1 (ACC311). ECH prepares to enter MHT. Baseflow in pipe measured at ~1.8" & 1.5-2.0 fps. Noticeable petroleum odor observed in MHT chamber. Entrant notes significant build up of organic debris around primary & secondary sed traps housing. Took a photo of debris on/around ~~furthest~~ ^{from} upstream trap. Entrant secured bottle caps, working ^{from} upstream to downstream, while wearing clean gloves. Entrant removed sed trap bottles for visual observations after removing debris. All traps were in tact.

Primary Sed Trap pair:

- 44A-ST1-B1 - Had a total accumulation of ~0.5" of solids w/ fines adhered to the inside of the bottle wall. Significant buildup of organics around trap housing, but bottle opening was free of obstructions. Bottle was completely full of stormwater w/ a visible sheen on the surface & no apparent odor.

- 44A-ST1-B2 - Had approx. 1.5" of total accumulation of solids w/ fines adhered to the inside wall of the bottle. Minor buildup of organics on trap housing; bottle opening free of obstructions. Bottle was full of stormwater w/ a visible sheen on the surface & no apparent odor.

Attachments



Page 2 of 4

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1030.005

Location Basin 43, 44/44A

Date 1/8/09

Subject INLINE SED TRAP CHECKS

By JXB/ECH

44A-ST1 (cont.)

Secondary Sed Trap Pair:

• 44A-ST1-B3 - Total accumulation of solids was approx. 0.5" w/ minor fines adhered to the inside walls of the bottle (adhesions). Organic debris wrapped around trap housing & partially obstructing bottle opening (~80% obstructed). Debris was removed by entrant. Bottle was full of stormwater w/ a visible sheen on the surface & no apparent odor.

• 44A-ST1-B4 - Total accumulation of solids was approx. 1.0-0.5" w/ an average depth of ~0.7" (captured solids were deposited in the bottom of the bottle @ an angle) w/ adhesions on ^{the} inside of ^{the} bottle walls. Bottle was full of stormwater w/ a visible sheen ^{JXB} on the surface & no apparent odor. Minor buildup of organics on trap housing.

Total accumulation of solids @ 44A-ST1 = ~ 3.2 "

Entrant re-secured trap bottles & removed bottle caps while wearing clean gloves. Bottle caps were placed in clean, designated Ziplock for duration of deployment period.

1050 - Left 44A-ST1 for Basin 44 - 44-ST1

1103 - Arrive on site @ 44-ST1 (ABC352). Upon arrival, field crew observed substantial oily sheen/spill around manhole, extending upstream of MH manhole (MH) CB along curb, into parking area
Attachments @ 2204 N. River St. Took photos of sheen.



Page 3 of 4

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location BASIN 4344 & 44A

Date 1/8/09

Subject INLINE SED TRAP CHECKS

By JXB/FCH

44-ST1 (cont.) - Contacted SPCR regarding oily sheen/spill. Entrant prepares to enter M.H. Strong/pungent petroleum odor in M.H. chamber. Visible sheen on surface of baseflow. Odor increased when entrant entered flow & disturbed ^{minor} solids in invert of chamber.

Baseflow was positive (downstream) and was measured at ~4.5" w/ flow @ ~0.3 fps. River does not appear to have backed up into site at this time [Instantaneous Willamette River Staff Gauge Reading = 13.31' @ 1100 (~16.31')]. Staff gauge readings show a rapidly rising steep limb. Entrant inspects Sed trap.

44-ST1-B1 - Total accumulation of solids was approx. 0.6" in the bottom of the trap bottle w/ minor adhesions on the inside walls of the bottle. Bottle was free of obstructions and was full of stormwater w/ a visible/substantial oily sheen on the surface. Strong petroleum odor present.

Following visual check of 44-ST1-B1 by Field Operations (FO) the determination was made to archive the sample bottle due to the presence of the oily sheen within the M.H. chamber & in the catchment area, coupled w/ the rapidly rising river level (elevation at M.H. invert = ~17'). Sample bottle was archived on site, ^{placed} chilled ^{JXB} in a cooler w/ chilled blue ice to later be stored @ the WPCU in a laboratory fridge. NOTE: FO will need to install a new bottle @ site.

Attachments 44-ST1 after river levels recede & oily sheen is investigated,

~~Lab bottle~~ (44-ST1-B2) installed on 1/15/09 JXB
New bottle



Page 4 of 4

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location BASIN 43, 44 & 44A

Date 1/8/09

Subject INLINE SED TRAP CHECKS

By JXB/ECH

1152 - Arrive on site @ 43-ST1 (ABC290). Entrant prepares to enter manhole. Both traps are in tacked. Build up of organic debris and paper ^{wrapped} around trap housing. Entrant notes plastic bag completely covering the bottle opening of 43-ST1 - B1. Entrant ~~took a photo of trap~~ ^{OK JXB 1/9/09} ~~and then carefully removed bag while wearing clean gloves.~~ Entrant secured bottle caps and then removed bottles for visual inspection. Baseflow was ~1.5" w/flow @ 0.5 fps.

43-ST1-B1 - Total accumulation of solids was approx. 0.3"
Bottle was full of stormwater w/ minor sheen & no
apparent odor

43-ST1-B2 - Total accumulation of solids was approx.
0.4". Bottle was full of stormwater w/ visible sheen & no
apparent odor. Minor fines adhered to the inside ^{JXB 1/9/09} of
the bottle.

Total solids accumulation = 0.7"

Entrant secured sed trap bottles back in traps & removed bottle caps. Caps were placed into designated Ziplock for the remaining deployment period.

1225 - Left 43-ST1 to conduct additional inline sed trap checks of other Basin 43 sed trap sites located further up in the Basin.



Project Portland Harbor SW Swamp
Location Basin 43
Subject Sed trap checks

Project No. 1020.005
Date 1/8/09
By ECH, JXB

1250 Arrive on site @ 43 ST3 (ABC 552).

1305 Entrant enters pipe. Upon entering, entrant takes pictures of current sed-trap conditions.

Baselw 0.5", 0.3 tps.

Sed trap housings entirely covered with organics, plastic, and ~~fecal~~ paper. 43-BT3-B2's entrance opening is 80% obstructed.

1310 Entrant, with clean gloves, caps the bottles, removes the debris, and removes the bottles from traps for inspection.

1313 Entrant notes lateral downstream from traps is flowing.

1316 Bottles were mislabeled during install.

43-BT3-B2^(us) Minor fines adhered to the inside of the bottle. Total accumulated sediment in bottom of bottle is 1.5". Bottle is entirely ~~full~~ full of SW. Unable to detect an odor due to the decaying organics that had been around the housing.



Page 2 of 4 JXB 4/19/08

Project Portland Harbor SW Sump
Location Basin 43
Subject Sed trap checks

Project No. 1020.005
Date 1/8/09
By ECB, JXB

43-ST3-B1^(DS) Minor fines adhered to the inside of bottle. Total accumulation of sediment in bottom of bottle is 1.7". Bottle is entirely full of SW. Unable to detect an odor due to the decaying organics that had been around the housing.

1321 Entrant returns B2 to the US housing and B1 to the DS housing. Entrant puts on clean gloves prior to removing the bottle caps.

1333 Depart site.

1334 Arrive at 43-ST2 (ABC 53a). Set up light traffic control.

1344 Entrant enters pipe. Currently about four feet of standing water in pipe. Entrant is suspended from tripod.

1353 VHS tape and wrapping ribbon wrapped around the neck of the bottles. Entrant put on clean gloves and placed bottle caps on bottles. With clean opera^(over the water) gloves on, entrant removes bottles from housing for visual inspection.

Attachments



Page 3 of 14 JXB
11/9/08

Project Portland Harbor SW Sump
Location Basin 43
Subject Sed trap checks

Project No. 1020 005
Date 1/8/09
By ECJ, JXB

43 ST2-B1 (left hand bottle) Trace amounts (~0.2") of sediment accumulated in bottom of bottle. Bottle full of stormwater.

43 ST2-B2 (right hand bottle) 0.7" of sediment accumulated in the bottom of bottle. Bottle entirely ~~not~~ full of stormwater.

Due to difficult entry situation bottles were not checked for odor.

1409 Entrant returns bottles to housing and with clean gloves, removes the bottle caps.

1416 Depart site

1417 Arrive at ~~NEO~~ ~~ST 43~~ 43-ST4 (ABC500)
Get up light traffic control

1448 Entrant enters pipe. Minor amount of ~~paper and plastic~~ debris at base of housing. Plastic bag covering the top of RS bottle. Base flow is 0.5" deep, 0.2 fps. No screen.

1453 Entrant, with clean gloves, caps the bottles, remove debris from housing and removes bottles from housing for visual inspection

Attachments



Page 4 of 4

Project PORTLAND HARBOR STORMWATER SAMPL.

Project No. 1020.005

Location BASIN 43

Date 1/8/09

Subject SENTRAP CHECKS JXB 1/9/08

By JXB/ECH

43-ST4-B1 (US) Trace amount ($< 0.1''$) of sediment accumulated on bottom of bottle. Bottle full of storm water. No screen.

43-ST4-B2 (PS) Fines adhered to the inside wall of bottle. $0.2''$ of sediment accumulated on the bottle bottom.

1458 Entrant returns bottles to housing and with clean gloves on, removes bottle caps.

1506 Depart site.

JXB 1/9/08

*Note: during the visual inspection on 43-ST4 it was determined that the FO field camera was dropped from the entrants CSE^{gear} while inspecting 43-ST2. The camera, along with all of the photos from the day's field checks & observations was damaged beyond^{JXB} beyond repair, after falling into the 4' of standing water within the manhole chamber. As a result all mention of^{JXB} photos within the previous notes have been struck.



Page 1 of 5

Project Portland Harbor Stormwater Samp.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 2/18/09

Subject Inline sediment Trap Checks

By JXB/ECH

BACKGROUND: Extended dry period (5-day accumulation = 0.06 inches - Albina Rain gage) w/ a high pressure system currently set up throughout the region. Current weather is cool (mid-to-low 50's) and overcast. FO to conduct second inspection of ~~JXB~~ inline sediment traps installed in Basins 43, 44 & 44A ~~of~~ for 08/09 wet season.

* All times in PST

0952 - Arrive on site @ 44A-ST1 (W. Larabee & Randolph). ECH prepares to enter stormwater node ABC311. Baseflow was approx. 0.2" w/ a flow of 0.5 fps. ECH inspects primary & secondary inline sediment traps @ 44A-ST1.

44A-ST1-B1 & B2 - Primary Sed Traps:

Organics and plastics were adhered to the housing of both sed traps. Bottle openings were free of obstructions. Both sed trap bottles were full of stormwater up to the neck of the bottle. Entrant observed iron bacteria film on surface of captured Stormwater. Took photo of iron bacteria film.

44A-ST1-B1 - Total accumulation of sed in bottom of sed trap bottle was approx. 0.8"

44A-ST1-B2 - Total accumulation of sed in bottom of sed trap bottle was approx 1.5"

44A-ST1-B3 & B4 - Secondary Sed Traps: Organics and plastics were also adhered to the housing of both secondary sed traps.

Attachments



Page 2 of 5

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 2/18/09

Subject Inline Sediment Trap Checks

By JXB/ECH

44A-ST1-B3 & B4 - Secondary sed traps (cont): Bottle opening for 44A-ST1-B3 was completely obstructed by a paper towel. Entrant carefully removed obstruction, while wearing clean nitrile gloves, after taking a photo of bottle & obstruction. Both sed. trap bottles are full of stormwater up to the neck of the bottle. Iron bacteria film was also observed on the surface of the captured stormwater in the secondary sed trap bottles.

44A-ST1-B3 - Total accumulation of sed. in bottom of sed. trap bottle was approx. 0.6"

44A-ST1-B4 - Total accumulation of sed. in bottom of sed. trap bottle was approx. 0.7"

1018 - Entrant re-secured primary & secondary sed. trap bottles in inline stainless housing & removed bottle caps. Entrant observed a minor oily sheen^{moving from upstream to downstream} on surface of baseflow, while leaving stormwater node.

1037 - Leave 44A-ST1 & travel to Basin 44.

1057 - Arrive on site @ 44-ST1 (N. Harding & River ST). BES Inspector, Rick Hyatt on site. Rick informed FO that a PPL sub-contractor had performed directional-drilling on 2/17, from power pole paralleling N. River ST north, to ESCSO microtunnel shaft for a new power pad. Rick mentioned that PPL sub had drilled into 8" plugged lateral, entering stormwater node ABC352 from the north east. Rick was on site ^{JXB} when on site

Attachments when subsurface lateral was struck; drilling was stopped & drill head repositioned. Rick observed no visible fines or displaced soil exiting lateral into ABC352.



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Project Portland Harbor Stormwater Sump.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 2/18/09

Subject Inline Sediment Trapchecks

By JXB/ECH

44-ST1 (cont.)

1110 - Setup TC. ECH prepares to enter stormwater node ABC552 to conduct second inspection of inline sediment trap. Entrant inspects 8" diameter, plugged lateral, entering manhole chamber from the northeast. Elevated lateral is in tacked and full of solids. Solids begin approx. 12" downstream of EOP. No flow observed from lateral.

Entrant notes pungent chemical/hydrocarbon odor inside of manhole chamber w/ a slight oily sheen on surface of baseflow. Baseflow was fairly slack @ approx. 3.0" deep. Entrant observed approx 0.2" of fine solids deposited along MH chamber invert. Baseflow was extremely turbid.

Sediment trap bottle was free of ^{any} fines adhered to the inside surface of the bottle walls. Bottle was completely full of stormwater w/ a visible sheen on the surface of the captured stormwater.

44-ST1 B2 - Total accumulation of sedi. in bottom of sed. trap bottle was approx 0.2"

1130 - Left 44-ST1 for Basin 43

1141 - Arrive on site @ 43-ST1 (N. River & Albina Ave). Unable to access site due to heightened FSCSO construction activities, TC by D&H Flagg, and grain silo truck traffic. Will attempt to conduct Attachments inspection on 2/20.



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Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 2/18/09

Subject Inline Sediment Trap Checks

By JXB/ECH

1149 - Arrived on site @ 43-ST3 (N. Wheeler Pl & Kerby Ave). ECH prepares to enter stormwater node ABC552. Baseflow was approx. 0.2" w/ a flow of <0.5 fps. Entrant notes that the housing of both sed traps are completely invaded by organics, plastics, and paper rags; and that the bottle openings on each bottle are completely obstructed. This debris "cocoon" ^{was} ~~has been~~ previously observed during ^{JXB} ~~the~~ 11/18/09 inspection. Entrant took photos of debris cocoon & then carefully removed debris while wearing clean nitrile gloves.

43-ST3-B1 - Total accumulation of sed. in bottom of sed trap bottle was approx. 1.6"-1.7"

43-ST3-B2 - Total accumulation of sed. in bottom of sed trap bottle was approx. 1.6"-1.7"

1234 - Entrant re-secured sed. trap bottles & removed bottle caps. Left 43-ST3 for ^{JXB} ~~43-ST2~~ 43-ST4

1240 - Arrived on site @ 43-ST4 (N. Tillamook & Kerby Ave). ECH prepares to enter stormwater node ABC500. Baseflow was approx. 0.2" w/ flow between 0.5-1.0 fps. Entrant notes build up of minor organics & paper debris around trap's housing. Sediment trap bottles are not obstructed; however, debris on upstream trap housing has partially dammed up the flow, ^{just} upstream of the traps, resulting in substantial sediment being deposited inline. Took photo of debris on trap housing & inline sediment. Total depth of inline sediments was on average approx. ~~4.2'~~ ^{1.2'} & extended approx 6' us of traps

43-ST4-B1 - Total accumulation of sed. in bottom of sed trap ^{JXB} ~~Attachment~~ bottle was approx. 0.2"-0.3"

43-ST4-B2 - Total accumulation of sed. in bottom of sed. trap bottle was approx. 0.3", Entrant re-secured bottles & removed caps



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Project Portland Harbor Stormwater Samp.
Location Basins 43, 44 & 44A
Subject Inline Sediment Trap Checks

Project No. 1020.005
Date 2/18/09
By JXB/ECH

1309 - Left 43-ST4 for 43-ST2

1320 - Arrived on site @ 43-ST2 (N. Kerby & N. Wheeler PL). ECH prepares to enter stormwater node ABC539 to conduct visual inspection in manhole chamber. Entrant was suspended above traps in standing water using CSE tripod & winch. Entrant capped bottles w/ clean gloves on. After caps were secured, entrant donned clean nitrile opera gloves to work in standing water & to remove sed. trap bottles.

43-ST2-B1 (Left Bottle) - Bottle had minor fines adhered to the inside walls of the bottle (adhesions). Bottle was full of stormwater. Total accumulation of sed. in bottom of sed trap bottle was approx 1.3" - 1.5"

43-ST2-B2 (Right Bottle) - Bottle had minor adhesions on inside surface of bottle & was full of stormwater. Total accumulation of sed. in bottom of sed. trap bottle was approx 0.9" - 1.0"

Entrant re-secured bottles in trap housing & removed bottle caps

1355 - Left 43-ST2 for Basin 18.



Page 1 of 1

Project Portland Harbor Stormwater Samp

Project No. 1020.005

Location Basins 18 & 43

Date 2/20/09

Subject Basin 18 R&D Inline Sed Trap Checks

By JXB/MJS

* All times in PST

0938 - Arrived in Basin 18 to conduct second inspection of inline sediment traps for Basin 18 R&D Project.

FO inspected the following sites:

18-ST2

18-ST3

18-ST4

18-ST5

1145 - Left Basin 18 for 43-ST1

1200 - Arrived on site @ 43-ST1. Heightened F&CSO construction activities @ Albina River ST Shaft are still occurring. Unable to access site 43-ST1.

Left 43-ST1 for WPCL.

Attachments



Page 1 of 1

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location To File

Date 3/19/09

Subject Albina River Lots/Solids Accumulation Rates
Basin Total Accumulation

By JXB

Basin 43

43-ST1 = 1.0" [0.3" gain in captured solids accumulation ^{since 1/18/09}]

43-ST2 = 2.3" [No change]

43-ST3 = 3.8" [0.4" gain in captured solids accumulation ^{since 2/18/09}]

43-ST4 = 0.8" [0.2" gain in captured solids accumulation ^{since 2/18/09}]

Basin 44

44-ST1 = 0.5" [0.3" gain in captured solids accumulation ^{since 2/18/09}]

Total solids for site (archived solids & current solids) = 1.1"

JXB Basin 44A 4.9"

44A Basin 44AST 4.9" [1.3" gain in captured solids accumulation ^{since 2/18/09}]
JXB



Page 1 of 4

Project Portland Harbor Stormwater Samp.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 3/18/09

Subject Inline Sediment Trap Checks

By JXB/MTS

For background information &/or weather ^{discussion} see Basin 18 R & D notes from 3/18/09 on file.

* All times in PST

1010 - Arrive on site @ 44A-ST1 [N. Larabee & Randolph (AB311)] to inspect primary & secondary sediment traps. MTS prepares to enter MH.

Primary & secondary traps are in locked & are free of obstructions. Observed baseflow was ~0.25' w/a flow of ~1.0 cfs. Leaves & organics were adhered to the trap housing. Entrant capped sediment trap bottles & conducted visual inspection.

Primary Sed Traps: No visible sheen on surface of captured stormwater, nor was there a discernable odor.

44A-ST1-B1 - Was full of captured stormwater w/a total accumulation of captured solids of approx. 1.25". Minor fines adhered to the inside surfaces of the bottle (adhesions).

44A-ST1-B2 - Was full of captured stormwater w/a total accumulation of captured solids of approx. 1.7". ^{minor} Adhesions were also present in bottle.

Secondary Sed Traps: No visible sheen on surface of stormwater captured in traps, nor was there a discernable odor.

44A-ST1-B3 - Was full of captured stormwater w/a total accumulation of captured solids of approx 1.0" w/visible adhesions on the inside surfaces of the bottle.

44A-ST1-B4 - Was full of captured stormwater w/a total accumulation of captured solids of approx. 0.9". Adhesions were also present in bottle.

1033 - Entrant secured bottles in traps & removed bottle caps. Left Basin 44A for Basin 44.



Page 2 of 4

Project Portland Harbor Stormwater Camp

Project No: 1020,005

Location Basins 43, 44 & 44A

Date 3/18/09

Subject Inline Sediment Trap Checks

By JXB/MJS

Basin 44

1053- Arrive on site @ 44-ST1 [N. Harding & River (ABC352)] to conduct visual inspection of sediment trap. MJS prepares to enter M.H. Entrant notes no sheen on baseflow & no detectable chemical/hydrocarbon odor in M.H. Baseflow was approx. 3.0" w/a flow of ~0.5 fps. Entrant carefully secured bottle cap & removed bottle for visual inspection. Trap ^{was} free of obstructions w/no organic material adhered to trap housing. ^{JXB}

44-ST1-B2 - ^{was} full of stormwater. No odor detected. no is there any visible sheen on ^{JXB} surface of ^{the} captured stormwater. Total accumulation of captured solids in bottom of ^{the} bottle ranges in depth between 0.2" - 0.8" w/an average depth of approx 0.5". Minor fines adhered to ^{the} inside walls of the bottle.

JXB

12112- Left 44-ST1 for Basin 43.

Basin 43

1127- Arrive on site @ 43-ST1 [N. River & Albina (ABC290)] to conduct visual inspection of sediment traps. Sediment traps @ this location were last inspected on 1/8/09. MJS prepares to enter M.H. Traps were intact. Organic material & leaves on trap housing & on the neck & shoulder of ^{the} bottles. Bottle openings were free of obstructions. Entrant secured bottle caps & removed bottles for visual inspection.

43-ST1-B1 - ^{was} full of stormwater. No odor detected; no visible sheen on surface of captured stormwater observed. Total accumulation of captured solids in bottom of bottle was approx. 0.5". Trace fines adhered to inside surface of bottle.

43-ST1-B2 - ^{was} full of stormwater. No odor detected; No visible sheen on surface of captured stormwater observed. Total accumulation of ^{JXB} captured solids was approx. 0.5". Minor fines adhered to inside walls of bottle.



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Project Portland Harbor Stormwater Samp.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 3/18/09

Subject Inline Sediment Trap Checks

By JXB/MJS

1207 - Arrive on site @ 43-ST3 [N. Wheeler Pl & Kerby Ave (ABC552)] to conduct visual inspection of inline sediment traps. Both sediment traps are in locked. Base flow was approx. 0.3" w/a flow of ~2.0 fps. Both sediment traps were fully incased in a debris "cocoon" of paper rags, ^{JXB}organics, and plastic debris; as previously observed during the 1/8 & 2/18 inspections. Did not take photos of debris. Bottle openings were completely obstructed.

Entrant carefully removed debris "cocoon" from both traps. Both bottles are full of stormwater. Visible sheen on surface of captured stormwater observed. Entrant secured bottle caps and conducted visual inspection of accumulated solids. Both bottles had trace amounts of fines on the inside surfaces of the bottles.

43-ST3-B1 - Total accumulation of solids captured in ^{the}bottom of ^{the}sed. trap bottle was approx. 1.8"

43-ST3-B2 - Total accumulation of solids captured in ^{the}bottom of ^{the}sed. trap bottle was approx. ^{JXB}2.0"

^{JXB}Trap Bottles were secured and caps removed. Off site.

1233 - Arrive on site @ 43-ST2 [N. Kerby & Wheeler Place (ABC539)]. MJS prepares to be winched into lift chamber w/ 4'-5' of standing water in floor of chamber. Entrant submerged bottle caps, ^{under water}while wearing clean nitrile gloves, & then ^{JXB}secured bottle caps to ^{from trap housing}trap bottles under water. Bottles were then removed ^{JXB}while wearing clean nitrile opera gloves for visual inspection. Off site.

Attachments



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Project Portland Harbor Stormwater Samp.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 3/18/09

Subject Inline Sediment Trap Checks

By JXB/MJS

1315- Arrive on site @ 43-ST4 [N. Tillamook & Kerby Ave (ABCSCC)]
to conduct last inline sediment trap visual inspection in Basin 43. ^{for me}

Bottle openings are free of obstructions. Trash (plastics & other non-organics) adhered to trap housing. Both bottles are full of stormwater w/no visible sheen on surface of captured stormwater. MJS removes bottles, after securing bottle caps, to perform visual inspections of traps.

43-ST4-B1: Total accumulation of solids in bottom of sed. trap bottle was approx. 0.3". Minor fines adhered to the inside surfaces of the bottle (adhesions).

43-ST4-B2: Total accumulation of solids in the bottom of the sed. trap bottle was approx. 0.5". Minor adhesions on inside surfaces of the bottle.

1326- Off site. Returned to WPCL

Attachments



* City Inspector Joe P. came by to see what we're doing. He suggested the flow at ABC290 was from grouting activity by KBB or subcontractor. They had been injecting grout but wasn't sure where it was going. Our flow may be water from grout or displaced I+I.

Page 12 of 3 JXB

Project Portland Harbor Stormwater Sump
Location Basins 43, 44 & 44A - Albina Riverlots
Subject Sediment trap final removal

Project No. 1020.005
Date 5/27/09
By MJS, JXB, ECH

0800^{PST} on site @ ABC290 for final removal of sed traps in downstream line - site 43-ST1. There is currently flow entering the manhole coming from a ^{JXB} ^{perched} 8" poly line entering from the northwest. Source of the flow is likely construction activity (concrete and grout mixing and application) on the North ~~east~~ corner of the intersection. Flow from this inlet is resulting in ~0.8" of flow in the pipe. * There is abundant organic debris, with some plastic trash accumulated on the trap housing. Removed the bottles along with the housings, but left the baseplates installed in case monitoring is repeated at this site next year. Does not appear that the remaining equipment will adversely impact the flow through the line here, but will still notify maintenance of the presence of this equipment.

0900 PST On site at N Harding + River St. to remove sed trap in ABC352 - 43 ~~ST1~~ ^{ECH} 44 - ST1 B2. Base flow coming from Northwest line. About 1/4" flowing through. About 3 1/2" of standing water flowing through our ^(main inlet) line. Plastic trash and an aluminum can around the housing but nothing actually on the bottle top. Entrant took photo of bottle in situ and began removal. Removed bottle along with the housing. Left baseplate installed. Baseplate doesn't appear to impact flow. Sediment noted in line.



Page 2 of 3 JXS

Project Portland Harbor SW Samp
Location Basins 43+44+44A - Albina Riverots
Subject Sed trap final removal

Project No. 1020.005
Date 5/27/09
By MTB, JXB, ECH

0937 On site for removal of 44A - ST1 B1, B2, B3, B4 - located at ABL311, N. Larabee + Randolph. About 1/4" of baseflow moving at about 1.0 fps flowing through ^{main} invert. All 4 bottles are completely full of stormwater. B1 ~~stuck~~ bottle top was partially obstructed with fabric, plastic and organics. B2, B3, B4 were all clear ^{except JXB} some organic debris around the housing. Entrant took pictures of bottles in situ and began to remove bottles. Bottles and sed trap housing removed. Baseplates remain installed. Baseplates do not seem to adversely

impact flow - will notify maintenance of equipment in collection system ^{JXB}
1041 - On site @ ^{JXB} ST4 (ABC500) for removal of sed. traps from ^{JXB} N Tillamook + Kerby. There is ~0.3" of base flow. Both bottles are full of stormwater. There is debris, plastic, and organic material, and metal screen on the housing of bottle 1. Bottle 2 had a rag collected on the housing. Bottle ~~1~~ had a leaf perched on the opening but was not obstructing flow in. ~1.25" of sediment accumulated upstream of the sed traps. Removed the bottles and sed. trap housings and left the base-plates installed.

1120 - on-site @ 43. ST3 - ABL550 to remove sed traps. There is ~0.2" of base flow. Upstream (#2) bottle has rags and organics on housing, but bottle opening is clear. Bottle 1 (downstream bottle) has

Attachments



Page 3 of 3

Project Portland Harbor SW Man JTB

Project No. 1020.005

Location Basins 43 + 44 & 44A - Albina Riverlots

Date 5/27/09

Subject Sed. Trap Final removal

By MJS, JXB, ECH

ragg and organic debris covering the bottle housing and fully obstructing the bottle opening. ~~Removed~~ Removed bottles & trap housing, and left base plates installed. Pipe has a strong sanitary sewer odor, and samples have strong similar odor as well.

1148 - Arrive on site @ 43-ST2 (AB539) to remove inline sed traps @ end of deployment period. Set up traffic control @ N. Kerby & Wheeler Place. Entrant was winched ^{down} into ^{standing} ~~pooled~~ water in bottom of manhole chamber. Entrant noted a visible sheen on surface of standing water in manhole chamber. Positive flow ($\sim 0.5 \text{ fps}$ @ $\sim 2.0'$) ^{observed JXB} exiting manhole chamber in perched 27" diameter outlet. Average depth of standing water was $\sim 45"$. Entrant secured bottle caps & removed sed. trap bottles for subsequent archiving & processing. ^{All} trap housing was removed except for the sed trap base plates - will need to notify maintenance of equipment.

1232 - Left Basin 43 after removing all inline sed traps for 08/09 deployment period in the Albina Riverlots area. Returned to the WPCL to archive sed trap bottles for subsequent processing.

Pace
 WPC
 TA
 WPA
 CAS
 TA

Total	
86	
86	
186	
40.8	
33.4	
186	
86	

Tip for Grains
2nd jar -

100

6 parts -
~~split~~

parts -
4 are initialed FO#
3 get new FO # as dup
-5667

(C)A WIRE (CB + M)
-5667 TA (Matic + Tcc)

best all in for best

Not a thing for me

Page
TA
WPC

~~1/2 the period only~~
~~1/2 the extraction~~

2007 Sedition
Sang le Volvres

3/1/23

Coex tested

43-ST1✓

	CITY OF PORTLAND ENVIRONMENTAL SERVICES <small>Water Pollution Control Laboratory 6543 N. Burlington Ave Portland, OR 97203-5452</small>	
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INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET			
Project Name: PORTLAND HARBOR STORMWATER SAMP.		Project Number: 1020.005	
Sample Processing Conducted By: JXB/AJA	Sample Pt. Code: 43-ST1	Removal Date: 5/27/09	Processing Date: 5/28/09 - 5/29/09
Basin: 43	Hansen ID: ABC290	Subbasin: N/A	
Sediment Trap Location Description/Address: <i>Sediment traps were mounted ~6" downstream of end of pipe (EOP) in 16" diameter, main clay outlet. Traps were installed downstream of known sanitary seep in manhole ABC290 sidewalk.</i> ABC290 - N. River & Albina Ave			

SEDIMENT TRAP PROCESSING/FILTRATION NOTES			
Filter Equipment/Method:		Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007].	
Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper): <i>Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper, as well as P4, 4-8 µm & P5, 5-10 µm</i>			
Sediment Trap Bottle ID: 43-ST1-B1-		Sediment Trap Bottle ID: 43-ST1-B2-	
Total Est. Depth of Accumulated Sed in Bottle (inches): ~0.75"		Total Est. Depth of Accumulated Sed in Bottle (inches): ~1.0"	
Sample Processing Start Time: 1135 PST 5/28/09	Sample Processing End Time: 1540 PST 5/28/09	Sample Processing Start Time: 0815 PST 5/29/09	Sample Processing End Time: 1215 PST 5/29/09
Number of Filters Used: 10 (2x P2; 8x P4)		Number of Filters Used: 9 (3x P5; 6x P4)	
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): ~125 mL JXB		Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): ~150-175 mL based on loss of ~2.7g during solids transfer JXB	
Tare Weight [empty jar in grams (g)]: 130.3g transferred 802 jar JXB		Tare Weight [jar and filtered sed. from Bottle1 in grams (g)]: 311.3g	
Dewatered/Filtered Sed. Weight (g): 112.1g		Dewatered/Filtered Sed. Weight (g): 86.3g	
Sample Processing Notes/Comments: <i>Strong decomposing organic odor present in filtered solids.</i>		Sample Processing Notes/Comments: <i>Strong decomposing organic odor present in filtered solids. Observable sheen on surface of solids slurry during filtration</i>	

Visual Description of Final Composite Sample: <i>Final composite was primarily fine silts to medium sands, was black in color w/visible sheen & strong decomposing organic odor.</i>		
COC Time (time composite jar is capped): 1235 PST 5/29/09 JXB	Total Dewatered/Filtered Sed. Weight in grams (g): 198.4g	Sample Jars Collected (number, size, full or partial): 1x partial 802 sample jar
Sample ID: FO095657 <small>affix FO number stick</small>		Duplicate sample collected? Y(N) DUPLICATE ID
Duplicate Sample ID on COC: <small>affix FO number sticker</small>		Any deviations from standard operating procedures? Y(N) Describe:



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Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL FIELD LAB / 43-ST1

Date 5/28/09 - 5/29/09

Subject BASIN 43 SED. TRAP PROCESSING

By JXB

ALL TIMES IN PST

1115- Set up deconed Portland Harbor, 90-millimeter(mm) stainless steel filter support w/conical 1-liter(L) microfiltration system on Versidy covered lab cart. Microfiltration system was decontaminated according to Field Operations SOP 7.01a. Use of solvents (acetone & methanol) in decon procedure was based on the higher priority given to the PCB analyses. This deviation from the SOP has been documented in previous processing years (06/07 & 07/08) & has been approved by the Project Manager, Linda Scheffler.

1121- Equipped microfiltration system w/a P2, 1-5µm qualitative cellulose filter. Primed filter stand with ultrapure deionized water (UPDI) to secure filter. Connected peristaltic pump to microfiltration system.

1135- Began to process bottle #1 from sed. trap 43-ST1-B1.

1151- Clogged filter. No sampleable solids on surface of filter. Removed filter & replaced w/ second P2, 1-5µm qualitative filter. Primed microfiltration system & continued sed. trap processing.

1220- Clogged second filter. No sampleable solids recovered. Removed filter & moved up to a P4, 4-8µm qualitative cellulose filter. Primed filter w/UPDI and continued to process 43-ST1-B1.

1238- Use of a P4, 4-8µm filter is providing increased filtration rate (increase flow through rate of supernatant)

Attachments



Page 2 of 6

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location WPCL FIELD LAB/43-ST1

Date 5/28/09 ~ 5/29/09

Subject BASIN 43 SED TRAP PROCESSING

By JXB

1245 - P4, 4-8mm qualitative filter clogged. Removed filter - no recoverable solids on surface of filter. Outfitted filtration system w/ another P4, 4-8mm qualitative filter (^{4th} ^{5th} filter used in 43-ST1-B1 processing). Primed filter w/ upot & continued processing.

1305 - Filter clogged. Sampleable solids retained on surface of filter primarily consisted of fine silts to medium sands. ^{took photo of solids} Scrapped solids off of filter & placed filtered solids in pre-labeled 407 sample jar. Removed spent filter, equipped filtration system with another P4, 4-8mm qualitative filter (^{5th} ^{6th} filter used in processing 43-ST1-B1). Primed filter & continued processing.

1320 - Filter clogged. Sampleable solids retained on surface of filter primarily consisted of fine silts, medium coarse sands & organic particles. Took photo of solids. Scrapped solids off of filter & added retained solids to ^{filtered} solids in sample jar. Removed spent filter & equipped filtration system w/ another P4, 4-8mm filter (^{7th} ^{6th} processing filter used). Primed filtration system w/ upot & continued processing.

1445 - Filter clogged. Substantial sampleable solids retained on surface of filter, primarily consisting of fine silts, medium coarse sands & substantial organic particles. Took photo of filtered solids. Scrapped solids off of filter & placed in sample jar. ^{JXB} Removed spent filter & equipped filter system w/ new filter P4, 4-8mm (^{7th} processing filter used). Primed filtration system & continued processing.

Attachments



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Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL FIELD LAB / 43-ST1

Date 5/28/09 - 5/29/09

Subject BASIN 43 SED TRAP PROCESSING

By JXB

^{JXB}
1515 - Filter clogged. substantial solids retained on surface of filter. Scrapped solids off of filter w/ stainless spatula & added to sample jar w/ retained solids. Removed filter & primed new P4, 4-8um qualitative filter & continued to filter.

1528 - Filter clogged. substantial solids retained on surface of filter. Scrapped solids & removed filter. Primed new P4, 4-8um qualitative filter (9th processing filter used) & continued to filter.

1535 - Filter clogged. Substantial solids retained on surface of filter. Scrapped solids & removed filter. Primed new P4, 4-8um qualitative filter (10th processing filter used). Added ~125 mL of UPDI to ^{residual} ~~remaining~~ solids adhered to side walls of 43-ST1-B1 to remobilize solids. Filtered mobilized solids w/ added UPDI.

1540 - Removed final filtered solids off of the filter surface & added solids to sample jar w/ retained solids. Discarded filtrate. Covered microfiltration system w/ aluminum foil & Laboratory Parafilm to close off system ^{from} the Lab's atmosphere. overnight. Will begin processing 43-ST1-B2 on 5/29/09 ^{JXB}

Dewatered/Filtered Sed weight for 43-ST1-B1 = ~112.1g. ✓

Tare weight of sample jar w/ lid = 201.9g

(JXB) 6/1/09

Gross weight of filtered wet solids + sample jar = 314.0g

∴ Tare weight - gross weight 314.0g

- 201.9g

Attachments Total wet weight of Filtered solids = 112.1g



ALL TIMES IN PST

Page 4 of 6

Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL FIELD LAB/43-ST1

Date 5/28/09 - 5/29/09

Subject Basin 43 SED TRAP PROCESSING

By JXB

0815 - Took a photo of 43-ST1-B2 archived sed. trap bottle. Removed aluminum foil & laboratory Perma Film from micro-filtration system. Filtration system was closed off to Lab's atmosphere overnight after processing 43-ST1-B1 on 5/28/09. Equipped microfiltration system w/ a ^{PS, 5-10} ~~P4~~, 4-8mm qualitative filter. Primed filter w/ UPDI & began to process 43-ST1-B2. NOTE: A PS, 5-10mm filter was selected initially to process overlying supernatant ^{in order} to expedite solids processing. (JXB)

0840 - Filter clogged. Minor to trace solids retained on surface of filter. Filtered solids are primarily medium coarse angular sand particles. Took a photo. Scrapped minor solids off of filter. Removed filter & replaced w/ another PS, 5-10mm filter. Primed filter & continued processing.

0850 - Filter clogged. Minor fines on surface of filter. Scrapped filter. No retained sampleable solids present. Removed filter & replaced w/ a PS, ⁵⁻¹⁰ ~~4-8~~mm qualitative filter - removed ~80% of supernate using previous two filters. Primed filtration system & continued processing.

0857 - Filter clogged. Sampleable solids retained on surface of filter. Took a photo. Scrapped solids from surface of filter & added to sample jar w/ retained solids from 43-ST1-B1 processing. Removed filter & equipped filtration system w/ a P4, 4-8mm filter (4th filter used for processing). Primed system & continued processing.

0910 - Filter clogged. Sampleable solids retained on surface of filter. ~~Attachments~~ Took a photo. Scrapped solids from filter & placed in sample jar.



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Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location WPCL FIELD LAB / 43-ST1

Date 5/28/09-5/29/09

Subject BASIN 43 SED TRAP PROCESSING

By JXB

0910 (cont.) - Removed filter & equipped filtration system w/ another P4, 4-8 μ m filter (5th filter used for processing). Primed filter. Solids in bottom of ~~trap~~ bottle are viscous & compact. Added ~100 mL of UPDI to ^{JXB} bottle to remobilize ^{residual JXB} solids on side walls of bottle. Poured slurry into filter system & began filtration.

0950 - Filter clogged. Scrapped substantial sampleable solids from surface of filter after taking a photo of filtered solids. Placed solids in sample jar w/ retained solids. Equipped microfiltration system w/ another P4, 4-8 μ m filter (6th filter used for processing). Primed filter & processed remaining solids-UPDI slurry.

1100 - Filter clogged. Scrapped substantial sampleable solids from surface of filter after taking ^{a JXB} photo. Filtered solids appear to be primarily fines & organic matter. Placed solids in sample jar w/ retained solids. Equipped microfiltration system w/ another P4, 4-8 μ m filter. Added ~50 mL of UPDI to sample bottle to remobilize ^{residual JXB} solids ^{inside} retained on surface of bottle. Poured remaining solids & UPDI slurry into filtration system & filtered.

Note: Solids removed from surface of 6th filter exceeded total volume of 4oz sample jar. As a result, All filtered solids in sample jar ^{were} ~~was~~ transferred to a new 8oz jar. Remaining filtered solids will be added to 8oz jar and homogenized. Total Loss of solids from transfer between jars was ~2.7g



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Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location WPCL FIELD LAB / 43-ST1

Date 5/28/09 - 5/29/09

Subject Basin 43 SED TRAP PROCESSING

By JXB

1135 - Filter clogged. Minor solids retained on surface of filter. Scrapped solids off of filter & placed into 8oz sample jar w/ ^{transferred} retained solids. Removed filter & equipped filtration system w/ another P4, 4-8mm filter (8th filter used in processing). Continued to process the last of the remobilized solids - UPDI slurry.

1200 - Filter clogged. Trace to minor solids retained on surface of filter. Scrapped solids off of filter. Removed filter & equipped filtration system w/ last ^{4-8mm} filter (9th filter used to process 43-ST1-B2). Poured remaining solids - UPDI slurry into filter system & continued processing; rinsing down sides of 1.0L funnel w/ UPDI (~25mL) to further capture ^{all processed} residual solids. (JXB)

1215 - All solids from 43-ST1-B2 filtered. Took a photo of last mobilized solids - UPDI slurry retained on surface of filter. Scrapped solids & added to sample jar. Total wet weight of solids from 43-ST1 B2 = 86.3g (JXB)

1235 - Homogenized all filtered solids in 8oz jar w/ a deconed stainless spatula. Took a photo of final composite. 43-ST1 (JXB)

Total dewatered/filtered sed. weight = 198.4g

43-ST1-B1

43-ST1-B2

Filtered wet weight of solids 112.1g + Filtered wet weight of solids 86.3g

112.1g
+ 86.3g
198.4

Attachments

43-ST2



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:

AJA

Sample Pt. Code:

43-ST2 ✓

Removal Date:

5/27/09 ✓

Processing Date:

5/28/09 - 5/29/09 ✓

Basin: 43

Hansen ID:

ABC539 ✓

Subbasin:

N/A

Sediment Trap Location Description/Address: ^(JXA) Sediment traps were installed ~39" above the floor of the manhole chamber along the downstream sidewalk. Traps were aligned side by side & were mounted on the side wall ~2" below the bottom invert of the 27" diameter outlet. N. Kerby & N. Wheeler Place.

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

Filter Equipment/Method:

Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007].

* Used Vacuum Pump from lab.

Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper):

Fischer Scientific, P2, P4, P5 (# most common) - 5-10 µm cellulose filter paper

Sediment Trap Bottle ID: 43-ST2-B1 -

Sediment Trap Bottle ID: 43-ST2-B2 -

Total Est. Depth of Accumulated Sed in Bottle (inches): 1.9 ✓

Total Est. Depth of Accumulated Sed in Bottle (inches): 2.5 ✓

Sample Processing Start Time: 1152 5/28/09 PST ✓

Sample Processing End Time:

0745 PST 5/29/09

Sample Processing Start Time:

0825 PST 5/29/09

Sample Processing End Time:

1130 PST 5/29/09

Number of Filters Used: 11 → 8-P5; 2-P4; 1-P2

Number of Filters Used: 8, P5

Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): ~110 mL ✓

Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 100 mL (JXA 6/9/09)

Tare Weight [empty jar in grams (g)]: 202.3g

Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]: 360.3g

Dewatered/Filtered Sed. Weight (g): ~160g -

Dewatered/Filtered Sed. Weight (g): 320.1g

Sample Processing Notes/Comments:

Had to transfer B1 seds from 4oz jar to 8oz jar for B2 seds compositing. Total loss of sediment in transfer from 4oz to 8oz jars was ~1.5g of wet solids (JXA 6/9/09)

Sample Processing Notes/Comments:

Sampled entire B2 w/ P5 (5-10 µm) filters. Composited all collected seds into comp jar. ✓

Visual Description of Final Composite Sample: Mostly silt with some organics and a little sand/grit

COC Time (time composite jar is capped): 1133 PST 5/29/09

Total Dewatered/Filtered Sed. Weight in grams (g): 320.1g

Sample Jars Collected (number, size, full or partial): 1, 8oz full

Sample ID:

FO095658

Duplicate sample collected? Y (N) DUPLICATE ID

affix FO number stick

Duplicate Sample ID on COC:

Any deviations from standard operating procedures? Y (N) * 6/9/09
Describe: Unable to use a peristaltic pump to adequately process captured solids - employed a vacuum pump. (JXA)

affix FO number sticker



Page 1 of 5

Project Portland Harbor Stormwater Sampling
Location WPCL Field Lab / Basin 43
Subject Filtration lab notes.

Project No. 1020.005
Date 5/28/09
By ATA/JXB

Times in PST

1148 Photographed 43-ST2-B1 in front of white board.

1152 Begin filtration process w/ geo pump + 1-5 μ m cellulose filter. There is a lot of sediment accumulated on the outside of the bottle neck (in the threads of bottle). This was not included in the sampling filtration.

1210 Filter clogged - Poured remaining supernate back into sample bottle. Switched to 4-8 μ m filter. No significant sediment collected from first filter (1-5 μ m).

1235 Changed filters ^{3rd} ~~5th~~ ⁴⁻⁸ no sediment recovered from 2nd filter. ~~4th~~ ^{3rd} (M)

1245 Changed filter (4th filter for this bottle) Switched to P5 filter (5-10 μ m). No sediment recovered from 3rd filter. There is an oily sheen present on the surface of this aliquot. There is also a strong odor.

1300 Geopump peristaltic pump is heating up the suction tubing and causing deformation, which will eventually lead to tubing failure. Hooked suction tubing up to ^{Lab vacuum} ~~vacuum~~ pump at 12 inches Hg (~6 PSI).

1345 Changed filter (5th filter, P5-5-10 μ m-) Recovered a very small amount of sediment, placed it into

Attachments



Page 2 of 5

Project Portland Harbor ~~SEB~~ Stormwater Sample ^{JXB 5/7/09}
Location WPLL Field Lab / Basin 43
Subject Filtration Lab notes

Project No. 1020.005
Date 5/28/09
By ASA

(1345 cont.)

Pre-labeled sediment sample jar.

1458 Returned some liquid to original sample bottle via deconned funnel (stainless). Continued filtration to dry sediment plug ^{in jar}.

1510 Changed filter (~~5th~~ ^{6th} filter for this bottle, P5, 5-10 μ M). Collected a good sized cake of wet sediment about 1 cm high.

1518 Filter clogged sed. cake dry, collected into sample jar. Changed filter (~~6th~~ ^{7th} filter for this bottle, P5, 5-10 μ M).

1535 Filter clogged, sediment collected. Changed filter (~~7th~~ ^{8th} filter for this ~~site~~ ^{jar} bottle, P5, 5-10 μ M).

1547 Filter clogged, sediment collected, changed filter. ^{at 9th} (~~8th~~ for this bottle P5 5-10 μ M) took photo of sediment cake (0161.jpg, 5/28/09, 1546). Added 100 ml Nano pure (ultra pure) to residual sediment in bottle.

1555 Filter clogged (residual sed w/ ultrapure) ~~than~~ ^{at 11th} collected dry sed into sample jar. Replaced filter (~~11th~~ ^{12th} for this ~~site~~ ^{jar} bottle, P5, 5-10 μ M). Will continue w/ residual sed, UPDI filtration tomorrow.

(Cont.)

Note: Filtration apparatus was sealed from lab atmosphere

Attachments using parafilm.



Page 3 of 5

Project PDX Harbor Stormwater Sump JKB 6/9/09
Location Field lab.
Subject Filtration notes

Project No. 1020.005

Date 5/29/09

By AJA

*Times in PST

Date = 5/29/09 - 2nd day of 43-ST2 processing

0730 Continued filtering residual sediment
w/ UPDI rinses from 43-ST2-B1 JKB 6/9/09

0748 Filter clogged, collected sediment into
composite jar, replaced filter with
another P5 (5-10 μ M) 11th ✓

0755 Used an additional 10 ml UPDI (110 ml
total) to rinse all seds out of bottle 1.

0808 Final filter dry with a thin cake of seds
laden with organic particles. Photo taken
0163.JPG. Added to composite jar. Note that
bottle 1 filled an entire 4 oz sample jar.
Contents of this jar ^{moved} to an 8 oz jar
where Bottle 2 contents will be added
and homogenized. Loss of sediment in
transfer from 4 oz to 8 oz ~~glass~~ jars
was ~1.5 g of wet sediment.

0825 Photographed 43-ST2-B2 against whiteboard.
Begin filtration w/ P5 filter (5-10 μ M)
One-half of B2 water decanted through
filter before signs of clogging.
Removed clogged filter (1st filter for B2) no
significant seds recovered. Replaced filter w/ new
✓ P5 (5-10 μ M) filter. 2nd filter insert jar

Attachments



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Project PDX Harbor Stormwater, Samp ^{DB 6/19/09}

Project No. 1020.005

Location Field Lab

Date 5/29/09

Subject Filtration notes

By ASA

0855 Removed 2nd P5 filter and replaced w/ a 3rd (P5 5-10 μ M). There is no recoverable sediment, but filter is covered in dark brown, very fine silt. Material remaining in bottle is thick sediment.

0907 Third filter is clogged. good ~7mm filter cake. Photographed w/ sign. Transferred to 802 Comp Jar. Replaced filter w/ another P5 (5-10 μ M).

0920 Fourth filter removed and sediments collected into 802 Comp Jar. Very fine silts interspersed with small particulates present on filter. Odor is strong. Replaced filter (5th for this bottle, P5 5-10 μ M).

0945 Fifth filter removed and sediment collected. Replaced with P5 filter.

1013 Sixth filter photographed with a thick cake (71cm). ^{incorrectly} Labeled as 5th filter in photo. ^{DB 6/19/09} Labeled, removed and added to Composite Jar. ~100 ml of UPDI used to suspend residual seds from sample bottle and poured onto another, new P5 filter.

1105 Last (previous) aliquot has too much water so poured back into sample bottle directly from filtration cup. Remaining sediment

Attachments



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Project PDX Harbor Stormwater Samp.
Location WPCL Field Lab
Subject Filtration Notes

Project No. 1020.005



Date 5/29/09

By AJA

1105 (cont) added to composite jar.
Renewed filter, ^{equipped} with ^{new} another P5 (8th
filter for this bottle, 5-10 μ M) to filter
residual water. There is a very apparent
sheen on this aliquot.

1130 Eight and final filter is dry. This contained
the last of the residual material adhered
on the side of bottle. Composed of small
and medium sized sand grains. Collected
and placed in composite jar. Homogenized
Comp Sample. Final weight = $522.4g - 202.3g =$
 $= 320.1g$ of wet sediment (mostly silt w/ some
organics and very small amount of sand/grit)
Photo taken of final composite. PDX 6/19/09

43-ST3 ✓

	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: LAP, AJA	Sample Pt. Code: 43-ST3	Removal Date: 5-27-09	Processing Date: 5-29-09
Basin: 43	Hansen ID: ABC 552	Subbasin: ---	
Sediment Trap Location Description/Address: N Wheeler Place & Kerby Ave		Sediment traps were installed in downstream 62" diameter, epoxy lined CSO connected stormwater line ~ 100' & 108" OS from main outlet end of pipe (EOP)	

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

Filter Equipment/Method:	Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007].
--------------------------	---

Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper):
Fisher Scientific, qualitative P5, 5-10 µm & P8, 20-25 µm cellulose filter paper.

Sediment Trap Bottle ID: 43-ST3-B1 -		Sediment Trap Bottle ID: 43-ST3-B2 -	
Total Est. Depth of Accumulated Sed in Bottle (inches): 1.5"		Total Est. Depth of Accumulated Sed in Bottle (inches): 1.8"	
Sample Processing Start Time: 0820 PST	Sample Processing End Time: 1307 PST	Sample Processing Start Time: 1155 PST	Sample Processing End Time: 1515 PST
Number of Filters Used: P5: 6; P8: 13		Number of Filters Used: P5: 8; P8: 2	
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): Approx. 90 mL		Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): ~ 75 mL	
Tare Weight [empty jar in grams (g)]: 201.0g (w/lid)		Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]: 419.9g	
Dewatered/Filtered Sed. Weight (g): 218.4g		Dewatered/Filtered Sed. Weight (g): 282.3g	

Sample Processing Notes/Comments:

Took approx. 1.5 hours to filter supernate. Switched to higher porosity filter (P8 20-25 µm) to facilitate processing. Volume of processed sample exceeded 8 oz jar capacity. **5x3** **3ml sample (1x3)**

Sample Processing Notes/Comments:
 Half of total volume of processed solids from B2 were placed into 8 oz sample jar w/ processed solids from B1. Volume exceeded capacity of 8 oz jar. 8 oz sample jar solids were subsequently emptied into a deconed stainless steel bowl.

Visual Description of Final Composite Sample: (see back of FDS)

COC Time (time composite jar is capped): 1428 PST 5/29/09	Total Dewatered/Filtered Sed. Weight in grams (g): 491.9g	Sample Jars Collected (number, size, full or partial): 2x partial 8 oz jars
Sample ID: FO095659	Duplicate sample collected? Y	DUPLICATE ID
Duplicate Sample ID: FO095659	Any deviations from standard operating procedures? Y	
Describe:		

Visual Description of Final Composite Sample :

43-ST3 - Composite sample was black w/ red & white coarse inclusions. Strong decomposing organic & sanitary odor present. Composite had a visible sheen on surface.



Page 1 of 10

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location WPCL Field Lab / 43-ST3

Date 5-29-09

Subject Basin 43 Sed. Trap Processing

By LAP

*TIMES IN PST

0738: Set up decont'd 90 mm stainless steel filter support w/ conical 1L micro-filtration system on Versidry-covered lab cart. Micro-filtration system was decontaminated according to Field Operations SOP 7.01a.

Equipped microfiltration system w/ a P5, 5-10 µm qualitative cellulose filter. Primed filter stand w/ ultrapure deionized water (UPDI) to secure filter. Connected peristaltic pump to microfiltration system.

0814: Photographed bottle 1 prior to processing. (164, 165)

0820: Began to process bottle #1 from sed. trap 43-ST3-B1.

0826: Clogged filter. No sampleable solids on surface of filter - removed filter & replaced w/ another P5, 5-10 µm qualitative filter. Primed microfiltration system & continued sed. trap processing.

0836: Clogged filter. No sampleable material on surface of filter - removed filter & replaced w/ another P5, 5-10 µm qualitative filter. Primed filtration system & continued processing.

Attachments

FILTERS USED: [P5] ~~III~~ I [P8] ~~III~~ ~~III~~ III



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Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCU Field Lab / 43-ST3

Date 5-29-09

Subject Basin 43 Sed Trap Processing

By LAP

0845: Clogged filter. Followed same procedure as above. Trace amounts of material on surface of filter. Have not had any sampleable solids yet. 6/11/09 JXB

0913: Clogged filter. Followed same procedure as above. Trace amounts of material on filter surface - nothing recoverable.

0958: Clogged filter. Followed same procedure as above. Trace amounts of material on filter surface - no recoverable solids.

1030: Clogged filter. Very small amount of material recovered from filter. Replaced w/ a P8, 20-25 μ m filter due to clogging. Director: made to change filter
JXB 6/11/09 as with the slow flow-through rates for decanting supernate.

1052: Clogged filter. Small amount of material recovered. New P8 filter. Most of supernate now filtered at this point - getting into solid material. Material is very coarse w some JXB
silt & clay particles

1102: Clogged filter. Small amount of material recovered. Another P8 filter used. [Subtotal = six (6) P5 filters; (3) three P8 filters.] Photographed filtered material. (176 jpg).



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Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location WPCL Field Lab/ 43-ST3

Date 5-29-09

Subject Basin 43 Sed. Trap Processing

By LAP

1133: Clogged filter. Recovered material from filter surface. Replaced w/ a new P8 filter.

1136: Same as above. Process going faster at this point.

1147: Clogged filter. Recovered material from filter surface. Strong unpleasant odors from this sample. Another P8 filter.

1158: Clogged filter. Recovered material from filter surface (into labeled 8 oz. amber glass jar). Placed another P8 filter.

NOTE: JXA 6/1/10/09

** @ 1155: AJA begins to process 43-ST3-B2 concurrent w/ LAP processing of 43-ST3-B2 ~~and~~ 43-ST3-B1.

1204: Clogged filter. Recovered material from filter surface. Placed another P8 filter.

1209: Clogged filter. Recovered material from filter surface. Placed another P8 filter. Used ~20 ml of UPDI to mobilize solid material in bottle. Almost finished

Attachments



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Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020-005

Location WPCL/ FIELD LAB 43-ST3

Date 5-29-09

Subject Basin 43 Sed. Trap Processing

By LAP

→ cont. processing sample.

1220: Same as above. (~20ml UPDI added) JXB 6/11/09

1224: Clogged filter. Recovered material from filter surface. Placed another P8 filter & used approx. 20 ml of UPDI to mobilize solid material in bottle. (~60 ml of UPDI used @ this point)

1245: Same as above. (~80 ml UPDI).

1300: Clogged filter. Recovered material from filter surface. ~10 ml UPDI added to mobilize last solid material from inside bottle. Last filter placed.

1307: Removed last filter - processing complete. In summary: (6) P5 filters used initially. Took ~1.5+ hours to filter the supernate so switched to higher porosity P8 (20-25 μ m) filters for the duration of filtration. Total of (13) P8 filters used. Approx. 90 ml UPDI used to mobilize solid material in bottle. Volume of composited sample exceeded 8 oz jar capacity.

JXB
billed
due to sample make up
(primarily coarse, organic solids)

Attachments



Page 5 of 10

Project PORTLAND HARBOR STORMWATER SAMP Project No. 1020.005
Location WPCL Field Lab / 43-ST3 Date 5-29-09
Subject Basin 43 Sed. Trap Processing By LAP

Compositing notes: Volume of composited B1 & B2 sample exceeded 8 oz. jar capacity.

Material in 8 oz jar was transferred to a deconid (per SOP 7.01a) stainless steel bowl to homogenize total recovered solids.

✓ ~1.6 grams of material was lost when solids were emptied from 8 oz. jar into composite bowl, referenced above.



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Project PDX Harbor Stormwater Sump
Location Field Lab / 43-ST3
Subject Basin 43 sed trap processing

Project No. 1020.005
Date 5/29/07
By AJA

*Times in PST Note: pages 1-5 from LAP, B1 filtration

1155 Begin filtration of 43-ST3-B2. LAP is still working on B1. These notes will be appended to her notes. Photographed bottle in front of white board. Started with Fisher brand PB (20-25 µM) filters based on LAP's experience with the ST3-B1 bottle. Filter 1 allowed most of the liquid from bottle to pass through.

In order to keep track of sed weight from B1 + B2 individually, A running total of B2 contributions will be kept below. Initial empty jar ^{JXB 611191} tare w/ lid = 201.0g

B2 contribution #	wt before Contrib. g	wt After g	diff. g
0	370.2	N/A	N/A
1	370.2	370.3	0.1g
2	398.7	399.0	0.3g
3	399.0	435.0	36.0g
4	453.9	517.1	63.2g
5	510.4 519.0	547.4	28.4g

1307 - B1 finished, B1 additions to Jar ceased

JXB Comp bowl w/ sediment = 1080g ⁶¹¹¹⁹¹ ~~total~~ initial weight SS bowl + B2 contents.

Attachments

547.4 - 128 = 201.0 =

218.4g B1 contribution



JXB 6/11/09

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Project PDX Harbor Stormwater Sump
Location Field Lab / Basin 43-ST3
Subject Basin 43 Sed trap processing

Project No. 1020-005
Date 5/29/09
By AJA

1211 pst Filter 1 clogged, photographed w/ sign. Sandy material present with some slimy biological looking material. 0.1g collected. Replaced filter w/ another 'p8 (20-25 μ M) to continue filtering. solids

1225 Second filter photographed, collected, and composited in Jar. Sample was fine grained sand, with some organic (decomposed) contributions. 0.3g. Switched to 'P5 filter (5-10 μ M) after conversation w/ JXB. Filtering wet sediment now, ~~the~~ first two filters handled all the supernate liquid. (filtered)

1235 Third Filter Collected, good thick cake on it, composed of sandy silt. Filter w/ a p5 filter. Photographed and composited. Replaced filter w/ another 'P5. ~36.0g collected JXB 6/11/09

1253 Fourth filter collected, photographed, composited. Samples continue to appear quite sandy. Replaced filter with P5 (Fifth filter) ~63.2g collected JXB 6/11/09

1305 Fifth filter collected, no photo, similar to last filter in appearance. ~28.4g collected JXB 6/11/09

1324 Sixth filter collected. At this point all filtered solids are going into a 55 bowl to be composited because total recovered solids are greater than



JXB 6/11/09

Page 8 of 10

Project PDX Harbor Sed. Stormwater Sample
Location Field Lab / 43 ST3
Subject Basin 43 Sed trap processing

Project No. 1020.005
Date 5/29/09
By AJA

1324 cont our 8 oz sample jar volume. Replaced filter with another P5 filter to continue sample collection.

1338 Seventh filter collected and added to ss composite bowl. ~~14~~ ¹⁴ ~50 ml UPDI added to bottle B2 to resuspend adhered sediments.

Used new P5 filter to continue processing

1358 ~~Eight~~ ¹⁴ Eighth filter collected, placed into ss composite bowl. Renewed P5 filter to filter remaining residual solids + ~~14~~ UPDI (Did not add additional UPDI to bottle)

1410 Ninth filter collected and added to Composite bowl. 25 ml Additional UPDI used for final rinse of Sample Bottle B2 and to wash down sides of filter funnel. 75 ml total UPDI used.

1417 Final Filter (Tenth filter) ~~14~~ ¹⁴ P5 5-10 μ m)
Collected sediments are very sandy with a ~~14~~ bit of medium to large sand particles. Now we will homogenize composite sample and equally divide between two labeled 8 oz sed. sample jars.



6/11/09

JXB

Page 9 of 16

Project Portland Harbor Stormwater Sump Project No. 1020.005
Location Field Lab/43 ST3 Date 5-29-09
Subject Bin 43 Sed trap processing By ASA

1428 Composite Complete, Sars 43 ST3a and
43- ST3b capped and refrigerated. refrigerated JTB
Calculations show 8.8 g sed lost due to adhering
to compositing bowl + SS spoon.

1448 Processing wrapped up for Albina Cots. Will
Continue Next week



JXB 6/11/09

Page 10 of 10

Project PDX Harbor Stormwater ^{sample} processing Project No. 1020.005
Location Field Lab / 43-ST3 Date 5-29-09
Subject Basin 43 sed trap processing By ASA

Composite ~~sample~~ sample transferred into two sample jars using deconned spoon.

JXB 6/11/09

Jar 43-ST3a = 461.6g tot. wt weight of processed solids w jar & lid
- 200.6 g tare weight of jar & lid
261.0 g of material

Jar 43-ST3b = 431.9 tot. " " " "
201.0 tare " " "
230.9 g of material

Residual sediment lost during compositing process =
458.7 dirty
- 849.9 clean
8.8 g composited sediment

1.6 g lost from transfer of B1+B2 from ^{partial schist} jar to ~~502~~ jar composite bowl

Overfilled Comp Jar = Full wt = 547.4g
- 128.0g (Partial B2 contrib)
- 201.0g tare wt
= 218.4g B2 contribution



Page 11 of 1011

Project PDX Harbor Stormwater ^{Samp} Project No. 1020.005
Location Field Lab Date 6/2/09
Subject Basin 43^{S13} Sed trap processing By ASA/LAP

Addendum

Math:

^{Solids (JXB) 5/11/09}
Total Captured = 502.3g
Total recovered = 491.9g



Jar a = 261.0g sed > tot. recovered
Jar b = 230.9g sed
loss from comp bowl + spoon = 8.8g
loss from original comp jar = 1.6g
total loss = 10.4g

Jar a + Jar b + total loss = tot Captured

Tot B1 contrib = 547.4g (wt Jar (Original) + B1 tot + B2
- 128.0g (B2 partial) Partial.)
419.4g (Jar + B1)
- 201.0 (Jar tare)
(218.4 cont B1)

Tot B2 contrib = 502.3g (tot Captured)
- 218.4g (tot B1 contrib)
283.9g B2 contrib

43-ST4 ✓

	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: AJA	Sample Pt. Code: 43-ST4	Removal Date: 5/27/09	Processing Date: 6/1/09
Basin: 43	Hansen ID: ABC 500	Subbasin: NIA JAB	
Sediment Trap Location Description/Address: N. Tillamook and Kerby Ave. approx 5 in x 12 in. upstream of manhole invert in main pipe.			

SEDIMENT TRAP PROCESSING/FILTRATION NOTES			
Filter Equipment/Method:		Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum – September 18, 2007].	
Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper): Fisher qualitative P5 5-10 µm cellulose filter paper			
Sediment Trap Bottle ID: 43-ST4-B1-		Sediment Trap Bottle ID: 43-ST4-B2-	
Total Est. Depth of Accumulated Sed in Bottle (inches): 0.6"		Total Est. Depth of Accumulated Sed in Bottle (inches): 0.6"	
Sample Processing Start Time: 0945 PST	Sample Processing End Time: 1050 PST	Sample Processing Start Time: 1102 PST	Sample Processing End Time: 1130 PST
Number of Filters Used: 3		Number of Filters Used: 2	
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 55 ml		Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 40 @ 60 ml	
Tare Weight [empty jar in grams (g)]: 202.1		Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]: 234.7 g	
Dewatered/Filtered Sed. Weight (g): 32.6		Dewatered/Filtered Sed. Weight (g): 31.2 g	
Sample Processing Notes/Comments: Used 3 P5 filters, all collected seeds were very dry. Sandy sample.		Sample Processing Notes/Comments: Same as B1, just added more silt/sed slurry to the initial filter in order to speed things up.	

Visual Description of Final Composite Sample: Very dry sample, Sandy, Silty, clay w/ Particulate Inclusions (white in color)		
COC Time (time composite jar is capped): 1135 6/1/09	Total Dewatered/Filtered Sed. Weight in grams (g): 63.8 g ✓	Sample Jars Collected (number, size, full or partial): 1 - 8 oz
Sample ID: FO095660 affix FO number sticker	Duplicate sample collected? Y <input checked="" type="radio"/> DUPLICATE ID	
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? Y <input checked="" type="radio"/> Describe: Vacuum pump used, not peristaltic pump.	



Page 1 of 2

Project Portland Harbor Stormwater Samp. ^{JXB} Project No. 1020.005
Location Field Lab. - 43-ST4 Date 6/1/09
Subject Filtration notes, Basin ~~43-ST4~~ ⁴⁴ ST1 ^(JXB) By AJA
(JXB) 6/17/09

Times in PST

0945 Starting with 43-ST4-B1, photographed bottle against white board. Begin filtering with a Fisher cellulose filter P5 (5-10 μ M). All supernate passed through first filter and some sediment was captured on filter.

Took photo. ^(JXB) Note: that date was wrong in photograph, all other information is accurate. Sediment collected into tared sed. jar.

1003 Replaced filter with another P5 (5-10 μ M) filter. Added about ~20 ml UPDI to B1 to resuspend sediments.

1030 Second filter dry. Removed and collected sediment. Material is very dry, ^(JXB) suggesting a lower organics content. Material seems to be made up of mostly silts with fine grain sands. Collected into sample jar.

~35 ml additional UPDI used to rinse residual sample from bottle. This material was filtered ^(JXB) onto another P5 (5-10 μ M) filter.

1040 Third ~~sample~~ ^(A) filter dry, last filter from B1. Thin layer of sand, silt, some woody particles collected and added to sample jar.

Total wt of sample + jar + lid = 234.7g ^{JXB}

Tare - 202.1g = 32.6g material

Attachments

^{weight of jar w/ lid (g)}

^(JXB)
6/17/09



Page 2 of 2

Project Portland Harbor Stormwater Samp.
Location Field Lab WPCU
Subject Filtration notes, 43 STY

Project No. 1020.005
Date 6-1-09
By AJA

1102 Photographed B2. Began filtering through a P5 (5-10 μ M) filter. Sediment seems similar in nature to B1.

1107 Filter One dry, sediments sandy with a lot of inorganics. Took photograph. Replaced filter with another P5 filter to continue processing. Filter One contents placed in composite jar. Used about 40 ml UPDI to rinse material from side of bottle.

Worms present in second aliquot as well as a medium sized pebble, approx 1.5 cm x 1 cm

Filter photographed, ^{3x8 carefully} removed pebble from subsample/filtered solids

1130 Collect dry, filtered sed.

Final weight of jar + sample = 265.9 g ^{OXB 6/11/09}
B1 Samp + Jar = 234.7 g
total B2 ^{solids} wt. = 31.2 g

Total sed wt = 63.8 g

Sample is sandy and clay-like with particulate inclusions (white in color) Very dry.

1455 Forgot to photograph \rightarrow two pics taken of homogenized comp. one w/ placard, one close up of sed.

Attachments

Phase 2 Inline Solids Sampling

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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



4/30/09
Date: 4/29/09 5X8
Page: 1 of 1
Collected By: MJS, ATB, LJS
5X8

Project Name: PORTLAND HARBOR INLINE SAMP

File Number: 1020.001

Matrix: SEDIMENT

Requested Analyses

Organics

General

Metals

Field Comments

OUTFALLS 43 (Albina River Lots)

ALL SAMPLES WERE SIEVED BY #10 SIEVE

WPCL Sample I.D.

Location

Point Code Sample Date Sample Time Sample Type

FO0095558

FO0095559

IL-43-ABC479-0409
N THOMPSON & KERBY

IL-43-ABC290-CBS-0409
N RIVER & ALBINA

43.4

4/29/09

1329

C

43.55

4/29/09

1438

C

PCB Aroclors - LL

PAHs + Phthalates (TA)

SVOCs (CAS)

NWTPH-Dx

TOC

Total Solids

Grain Size

Total Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn)

The customer requested the submittal of the unsieved bulk sample for comparison with the sieved sample (43.55)

(43-5)

Relinquished By: 1.

Signature: Peter Bryant

Time: 1322

Printed Name: Peter Bryant

Date: 4/30/09

Received By: 1.

Signature: Peter Bryant

Time: 1322

Printed Name: Peter Bryant

Date: 4/30/09

Relinquished By: 2.

Signature: Peter Bryant

Time:

Printed Name: Peter Bryant

Date:

Received By: 2.

Signature: Peter Bryant

Time:

Printed Name: Peter Bryant

Date:

Relinquished By: 3.

Signature: Peter Bryant

Time:

Printed Name: Peter Bryant

Date:

Received By: 3.

Signature: Peter Bryant

Time:

Printed Name: Peter Bryant

Date:

Relinquished By: 4.

Signature: Peter Bryant

Time:

Printed Name: Peter Bryant

Date:

Received By: 4.

Signature: Peter Bryant

Time:

Printed Name: Peter Bryant

Date:



Page 2 of 3

Project Portland Harbor Inline Sediment Sampling
Location Basin 43
Subject Inline & CB Sample Collection

Project No. 1020.001
Date 4/29/09
By PTB, MSS, LAS

1240 ARRIVED Basin 43. Set up TC and went to confirming locations of stormwater lines in and out of the MH chamber (ABC 488) 10" concrete line to the upstream E confirmed size Minimal solids accumulation. Perched overflow provides access to solids. Shaft outlet at floor has no solids. Main invert is plugged 4 ft. N of the MH chamber. Solids are accumulated along this 4 ft. Pool in floor above main invert from ABC 479 is completely free of solids and upstream pipe is 15" concrete. Main outlet is also completely free of solids. Interesting clay accretions accumulated in pool. Main outlet pipe is 24" concrete. LAS made determination not to sample the 10" concrete line to the upstream & E.

1315 Moved over to ABC 479 to investigate solids. Will sample solids accumulated in dead end to E in main invert of MH chamber. Laterals come in from N & SE corresponding to CBs at street level. The lateral to the SE is shown on the collection system map as tying into ABC 488 but entrant confirmed it connects to ABC 479. Main inlet from W and main outlet to SE (on floor of MH chamber).

1341 ~~PTB, MSS~~ 43-4 sample collection completed. Determination made to hold material for sieving in case other sites within basin need sieving as well.

1403 Arrived ABC 500. Ascertain locations of main line & laterals. Main line to E is perched with vertical shaft off MH chamber. Main inlet from W is also perched. Only new CB ties in to this node. The other 4 CBs at this intersection tie into ABC 499. No solids present. No sample at this node (ABC 500).

Attachments



Page 3 of 3

Project Portland Harbor Inline Sed Samp
Location Basin 43
Subject Inlined CB sample collection

Project No. 1020-001
Date 4/29/09
By PTB, MJS, LAS

1430 Outlined which CBs to composite together. Removed filter socks and it looks like there will be enough between the two. CBANE065 has less sediment than CBANE064. Both will be composited together. These ~~CB~~ catch basins are located NW of the intersection of N Albina + N River, and are sample point 43-5.
1510 Finished sample collection for Phase II.

4/30/09 - Sieving Note

1150 An 8 oz. jar of bulk sample from 43-5 was set aside^{and per customer request, submitted for analysis} to serve as a comparison of sieved vs. un-sieved sediment. The point code 43-5S was given to the sieved sample while the un-sieved sample got the code 43-5.



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Portland, OR 97203-5452



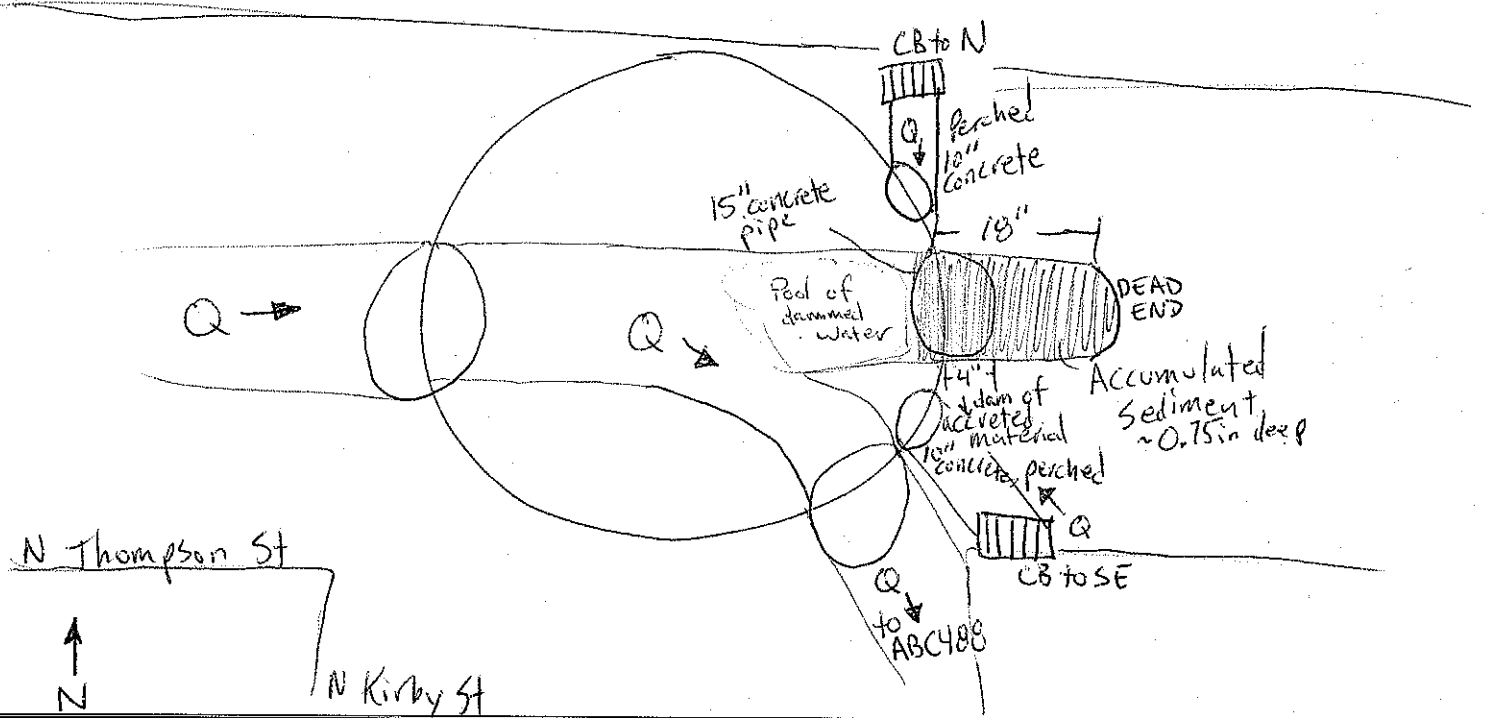
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>Portland Harbor Inline Sediment Samp</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>PTB, MSS, LAS</u>	Date: <u>4/29/09</u>	Arrival Time: <u>1240</u>	Current Weather Conditions/Last Rain: <u>Partly cloudy, Measurable rain in last 24 hours</u>
Basin: <u>43</u>	Node: <u>ABC488</u> <u>ABC479</u>		Subbasin: <u>NA</u>
Sampling Location Description/Address: <u>N Thompson + Kerby, US 10" line from E Downstream bend and dead end in floor of MH chamber.</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	Slight flow follows bend in main invert at ~0.25 fps. Dam of sediment ^{in dead end} causes backup of water upstream.
Does river appear to back up to this location? Describe rate/color/odor of flow:	No, river does not back up to here.
Are sediments observed in the line?	Yes, sediments located ^{from EOP of 15" concrete pipe} in the bend and ^{18" to} the dead end
Are sample-able quantities of sediments present in the line?	Yes, ~0.75 in. of sediment are accumulated across the floor of the 15" dead end pipe in the bend ^{PTB}
Describe lateral extent of sample-able sediments present in the line:	Sediment that is sampleable is located in the bend ^{PTB} and 18" up to the dead end. from the EOP into the MH chamber.

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



Date: 4/29/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: ABC488	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket bowl <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date:	Sample time:	Sample Identification: (IL-XX-NNNNNN-mmyy)			
4/29/09	1329	IL-43-ABC479-0409			
Sample location description: (number of feet from node of entry) From EOP at 15" dead end to 18" downstream to the dead end itself.					
Sample collection technique:		All solids removed within the sample location + were collected with a stainless steel spoon			
Describe Color of sample:		Dark grayish brown			
Describe Texture/Particle size:		90% fine to medium sands, 8% silts and clays, 2% pebbles & gravels.			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):			No sheen, no odor, no discoloration.		
Describe depth of solids in area where sample collected:			Solids were 0.75 in deep across the invert at the 15" pipe.		
Describe amount and type of debris in sample:			1 large nail ~ 1 ft. long		
Amount and type of debris removed from final sample:			1 large nail ~ 1 ft. long		
Compositing notes: Homogenized in field.					
Sample Jars Collected (number, size, full or partial)? None - May be sieved back at lab.					
If not enough sample to fill all of the jars, list jars collected and related analytes sampled (as per analyte priority list in work order).					
Lab ID		FO095558			
Duplicate sample collected? Y/N		Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures:					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	Camera 3	12
Plan view of sediments inline	Camera 7	33
Homogenized sample (sediment in bowl)	Camera 3	11
Other?		None

43-4

SECTION 4 – SIEVING REPORT

Date Sieved: 4-30-09	Personnel: JXB, LAP	Sample Processing Start Time: 1040	Sample Processing Stop Time: 1115
Sample Sieved <input checked="" type="radio"/> Y <input type="radio"/> N	Location Code: 1L-43-ABC479-0409		Point Code: 43-4
Describe the homogenized sample and any visible contamination (odor, color, contents, texture, etc.):		Medium to fine sands (60%) (30%) clay & silts ~7% coarse angular gravels & some clay concretions. Strong sour smelt (metal finishing odor) <1% organics 2% foreign debris (glass)	
Dry or Wet Sieve (Circle One)	If Wet Sieving record volume of water added here: $\frac{0.185}{0.685}$ kg (1 ml UPDI weighs ~ 1 gram @ 25°C)		
(Weight of Homogenized Sample in Bowl <u>2.83</u>) - (Weight after sample removed <u>0.39</u>) = Total Sample to be Sieved <u>2.44</u> kg			
(Weight of Excluded Material in Container <u>0.4</u>) - (Weight of Empty Container <u>0.1321</u>) = Excluded Material <u>0.27</u> kg			
(Weight of Sieved Sample in SR <u>3.42</u>) - (Weight of Empty SR <u>0.69</u>) - (Weight of water used <u>0.69</u>) = Total Sieved Sample <u>2.04</u> kg			
Observations during sieving process (including effectiveness of sieving, discernible odor, sheen, etc.):		Dry Sieving impracticable due to high clay/silt content. (90-95% of gross sample passes sieve easily). Strong odor present.	
Description of excluded material and % of bulk sample removed:		Primarily glass ^{with some} angular gravel. 11.07% of bulk sample removed. _{PTB}	
Any deviations from standard procedures: NO			
Photo of Homogenized Sample (w/ Nameplate) <input checked="" type="checkbox"/>	Photo of Sieved Sample (w/ Nameplate) <input checked="" type="checkbox"/>		
FO095558	Photo of excluded material (w/ Nameplate) <input checked="" type="checkbox"/>		

* High water content in final sample.

250
250
500 ml UPDI
+ 185 (UPDI bottle)
685 total UPDI added



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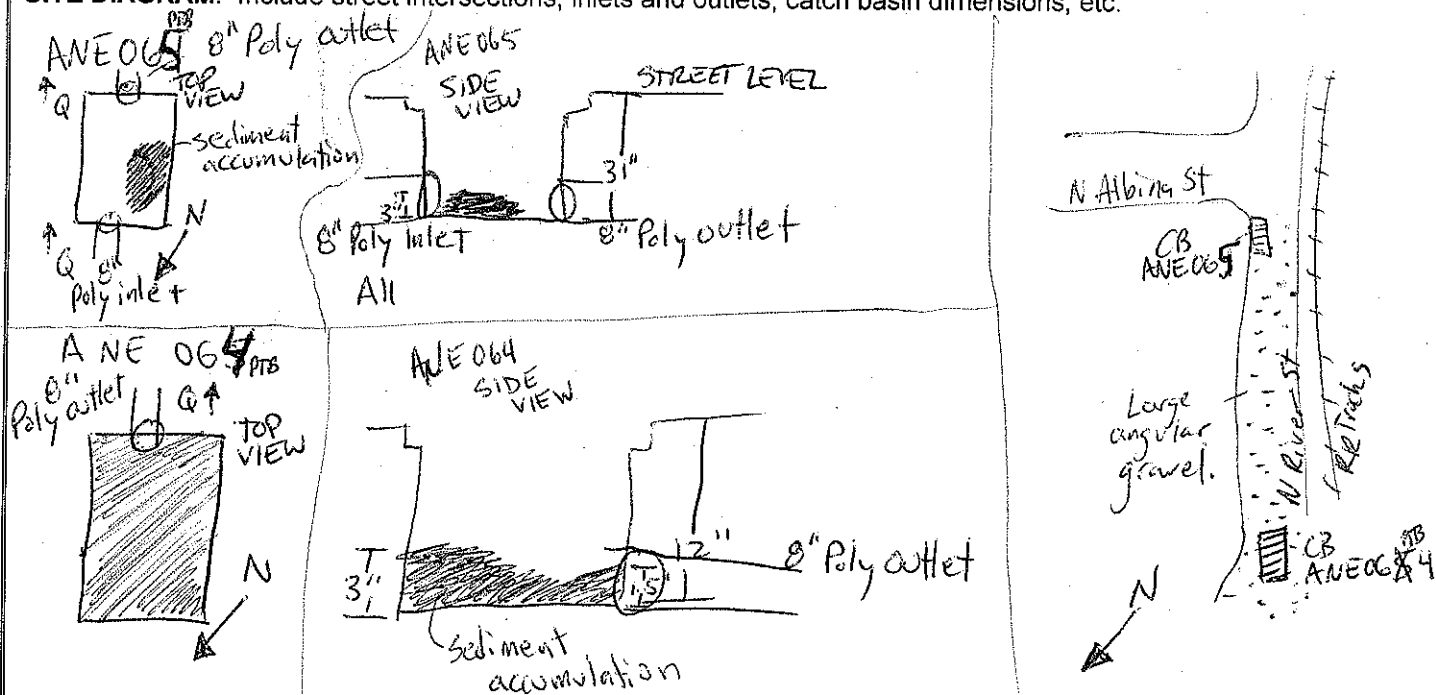
**CATCH BASIN SOLIDS SAMPLING
FIELD DATA SHEET**

Project Name: <u>Portland Harbor Inline Sediment Sampling</u>		Project Number: <u>1020.001</u>
Sampling Team: <u>PTB, MJS</u>	Date: <u>4/29/09</u>	Arrival Time: <u>1430</u>
Basin: <u>43</u>	Node: <u>ANE064 & ANE065</u>	Address: <u>N River + Albina Two</u> <u>CBs to ABC290</u>
Current weather and last known rainfall: <u>Overcast + Measurable rainfall within past 24 hours.</u>		

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe potential solids or contaminant sources that could impact catch basin (const. activities, erosion, vehicles, material storage, onsite processes, etc.):	CBs are located in heavy industrial area. Truck traffic is regular. Rail tracks are located adjacent to N River. City of Portland East Side CSO construction is occurring nearby. Glacier NW facilities west on the other side of the rail tracks. to the NW+SE.
Describe debris and/or clogging around, or in catch basin grate/cover:	Both CBs have filter socks in place. ANE064 has sand bags and biobugs surrounding the grate.
Is there standing water in catch basin?	No, CBs are dry
Describe visual or olfactory observations of contamination at catch basin if any (odor, sheen, discoloration, etc.):	No odor, sheen or discoloration.
Describe depth of sediments present in catch basin and the total depth of the catch basin or sump:	ANE064: 31" total CB depth with 3" solids accumulation ANE065: 12" total CB depth w/ average 1.5" solids depth and a maximum of 3" in the NW corner.

SITE DIAGRAM: Include street intersections, inlets and outlets, catch basin dimensions, etc.



43-5

Date: 4/29/09	SECTION 2 - SAMPLE COLLECTION REPORT		Node: ANE065 & Bm CBS ANE064 to ABC 290																
Sampling Equipment:	<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket bowl <input type="checkbox"/> OTHER (DESCRIBE)																		
Equipment decontamination procedure:	<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)																		
Sample date: 4/29/09	Sample time: 1438																		
Sample Identification Code: IL-43-ABC290-CBS-0409	Sample collection technique and if/how overlying water was removed: Flat scoop used to take subsamples described below.																		
Subsample number and location:	ANE065: Removed all materials except for what was excluded below. ANE064: Subsamples taken at the 4 corners and in the center																		
Color of sample:	Dark brown																		
Texture/particle size:	30% gravels, 30% sand, 20% silt, 20% clay.																		
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	No odor, sheen or discoloration.																		
Amount and type of debris in bulk sample:	ANE065: 25% large angular gravels/cobbles & large pieces of bark/wood ANE064: 15% large angular gravels, leaves, plastics, etc.																		
Amount and type of debris removed from final sample:	ANE065: All debris was removed (25% gravels & wood) ANE064: All debris was removed (15% large angular gravels, leaves, plastics, etc.)																		
Compositing notes:	Homogenized in the field.																		
Sample jars collected (number, size, full or partial)?	None - Sieving to occur at WPC																		
If not enough sample to fill all of the jars, list jars collected and related analytes sampled (as per analyte priority list in work order).	<table border="1"> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>																		
Lab ID	SIEVED SAMPLE FO095559 43-55	UN-SIEVED SAMPLE FO095560 43-5	Duplicate sample collected? Y/N Dupe ID																
Duplicate sample identification # on COC:																			
Any deviations from standard procedures:																			

SECTION 3 - PHOTOGRAPH LOG

Overview of CB showing drainage area	Camera #3	19-ANE065	ANE064-17
Catch basin plan view prior to sampling showing solids		15-S catch basin ANE065	16-ANE064
Lateral connections to/from CB		None	
Homogenized sample (sediment in bowl)		18	

43-5

SECTION 4 – SIEVING REPORT

Date Sieved: <u>4/29/09</u>	Personnel: <u>PTB, JLM</u>	Sample Processing Start Time: <u>1040</u>	Sample Processing Stop Time: <u>1150</u>
Sample Sieved <u>(Y)</u> / N	Location Code: <u>1L-43-ABC290-CBs-0409</u>		Point Code: <u>43-5</u>
Describe the homogenized sample and any visible contamination (odor, color, contents, texture, etc.):		<u>40% clays and fine silt</u> <u>40% medium to fine sands</u> <u>18% gravels (coarser rounded) + pea sized pebbles</u> <u>2% organics - decomposing and undecomposed</u> <u>No odor, no sheen. Dark brown color.</u>	
Dry or <u>(Wet)</u> Sieve (Circle One)	If Wet Sieving record volume of water added here: <u>1.0</u> kg (1 ml UPDI weighs ~ 1 gram @ 25°C)		
(Weight of Homogenized Sample in Bowl <u>9.11 kg</u>) - (Weight after sample removed <u>2.12 kg</u>) = Total Sample to be Sieved <u>6.99 kg</u>			
(Weight of Excluded Material in Container <u>3.49 kg</u>) - (Weight of Empty Container <u>0.12</u>) = Excluded Material <u>3.37 kg</u>			
(Weight of Sieved Sample in SR <u>0.56 kg</u>) - (Weight of Empty SR <u>0.07</u>) - (Weight of water used <u>1.0</u>) = Total Sieved Sample <u>3.74 kg</u>			
Observations during sieving process (including effectiveness of sieving, discernible odor, sheen, etc.):		<u>Sieving with UPDI seems to be effectively removing fines from the gravels at first. As more material is sieved more fines are put into suspension and removing all No odor + no sheen. accumulation from Excluded material is more difficult.</u> <u>Higher proportion discarded than previous sites. Reached point where the supernatant has so much suspended solids that there are noticeable fines on the excluded gravels.</u>	
Description of excluded material and % of bulk sample removed:		<u>Angular pebbles and gravels with minimal small organics.</u> <u>48.21% of bulk sample removed.</u>	
Any deviations from standard procedures:		<u>An 8 oz. jar of bulk sample was collected to serve as comparison of sieved vs. un-sieved sediment.</u> <u>High water content in sample jars of sieved material.</u>	
Photo of Homogenized Sample (w/ Nameplate) <input checked="" type="checkbox"/>		Photo of Sieved Sample (w/ Nameplate) <input checked="" type="checkbox"/>	
<u>FO095559</u> <u>SIEVED SAMPLE 43-55</u>		Photo of excluded material (w/ Nameplate) <input checked="" type="checkbox"/>	

0.75 kg nanopure
0.25 kg
1.0

FO095560
UN-SIEVED SAMPLE 43-5

The customer requested this bulk sample be submitted for comparison of sieved vs. un-sieved sediment. The sieved sample was designated with the point code 43-55 and the un-sieved sample given 43-5.

***April 2010 Follow-Up
Inline Solids Sampling***

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Collected By: JXB, MAW, PTB

[illegible]



Page 1 of 1

Project PORTLAND HARBOR INLINE SAMP

Project No. 1020.001

Location BASIN 43

Date 4/28/10

Subject ABLS39 ^{Inline} Sed SAMP

By JXB, MAW, PTB

0950 Arrive on-site with ^{from} DOT Vac Truck to remove ~4 ft. of overlying water ^{to} aid in sample collection.

1008 Getting set-up with vac truck piping and entry equipment
JXB performed entry with vac pipe in place. Once at bottom.

JXB guided vacing process to remove ~36" of overlying water.

1023 JXB began sample collection.

1102 Compositing began

1113 Filled 5 4oz. sample jars. 4 for analysis and 1 for archive.

1120 Departed site.

Attachments



CITY OF PORTLAND ENVIRONMENTAL SERVICES

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



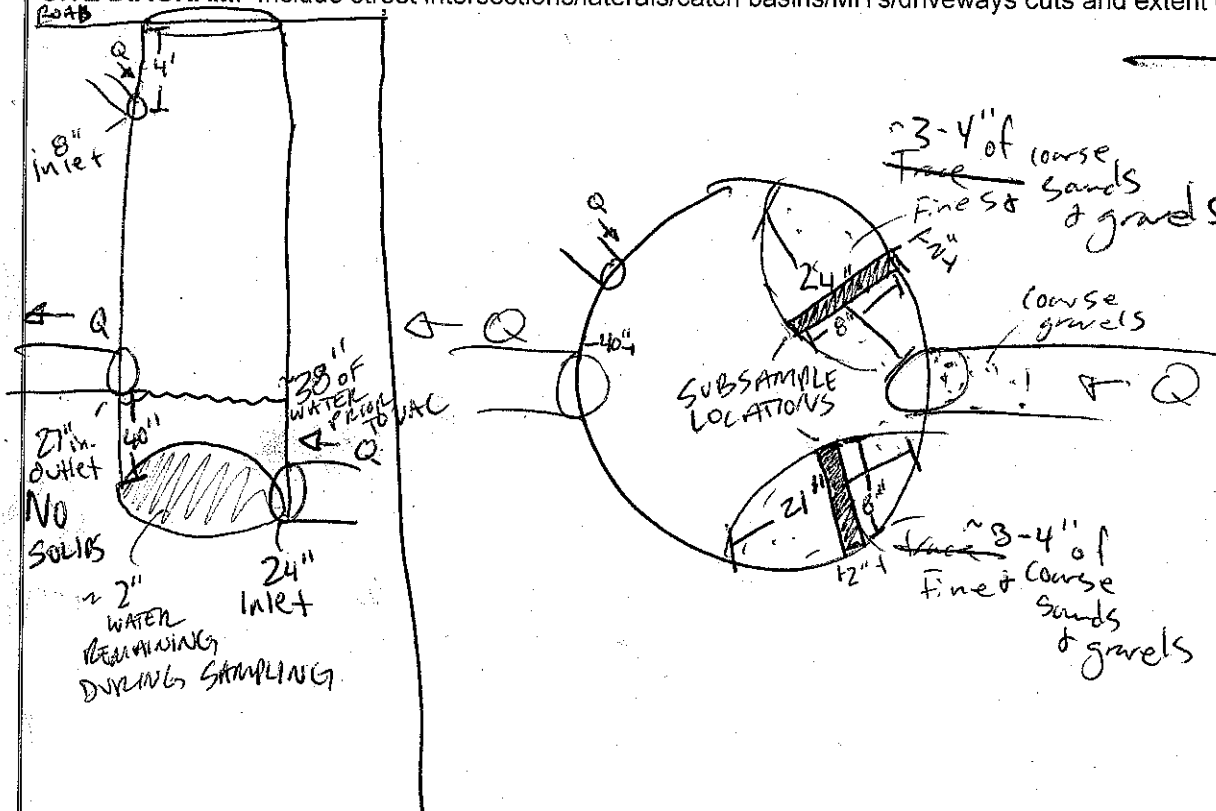
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMPL</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>JXB, MAW, PTB</u>	Date: <u>4/28/10</u>	Arrival Time: <u>0950</u>	Current Weather Conditions/Last Rain: <u>Overcast. Yesterday & this morning</u>
Basin: <u>43</u>	Node: <u>ABLS 39</u>		Subbasin: <u>NA</u>
Sampling Location Description/Address: <u>N Kerby & Wheeler Pl</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	Standing water is present on top of sediments in bottom of MHT chamber (~4')
Does river appear to back up to this location? Describe rate/color/odor of flow:	No.
Are sediments observed in the line?	Yes. Sediments are in the inlet pipe and in two depositional areas adjacent to the inlet EOP in the MHT chambers.
Are sample-able quantities of sediments present in the line?	Yes. The sediment is ~3-4" in depth adjacent to the inlet EOP.
Describe lateral extent of sample-able sediments present in the line:	The west depositional area is 24" wide and the east area is 21".

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



43-6

Date: 4/28/10		SECTION 2 - SAMPLE COLLECTION REPORT		Node: ABC539	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 4/28/10	Sample time: 1023	Sample Identification: (IL-XX-NNNNNN-mmyy) IL-43-ABC539-0410			
Sample location description: (number of feet from node of entry) <i>Samples were collected from the center of each depositional area in a strip ~2" wide and 8" long perpendicular to the long axis of the deposition</i>					
Sample collection technique:		<i>Scoops were taken along the entire width of the deposition excluding ~1% of bulk sample that consisted of debris (nails) etc.</i>			
Describe Color of sample:		<i>Mostly black with some particles of various colors</i>			
Describe Texture/Particle size:		<i>90% coarse sands, 3% silt, 5% coarse gravels, 2% Metal/clay chunks</i>			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		<i>Organic decomposing odor Visible sheen</i>			
Describe depth of solids in area where sample collected:		<i>Solids were ~3-4" in ^{depth} the sample collection areas.</i>			
Describe amount and type of debris in sample:		<i>2% metal & clay pieces, 5% coarse gravels</i>			
Amount and type of debris removed from final sample:		<i>5% of Bulk sample removed due to debris</i>			
Compositing notes: <i>Homogenized using sample collection spoon, removing coarse debris & gravels</i>					
Sample Jars Collected (number, size, full or partial)? <i>(5) full 4 oz. jars</i>					
If not enough sample to fill all of the jars, list jars collected and related analytes sampled (as per analyte priority list in work order).					
Lab ID FO105484		Duplicate sample collected? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: <i>None</i>					

SECTION 3 - PHOTOGRAPH LOG

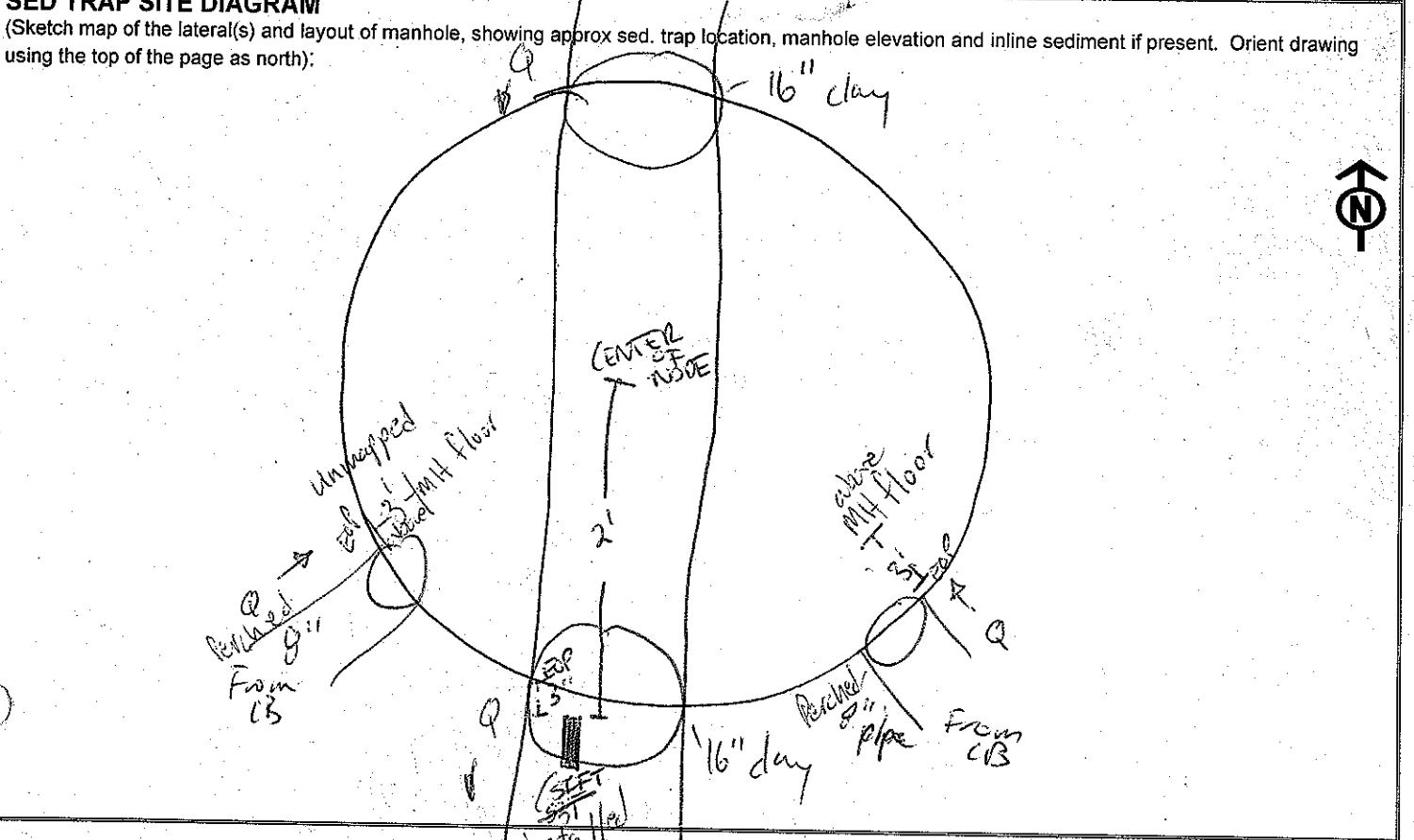
Overview of node showing drainage area	<i>✓ 0046/45</i>
Plan view of sediments inline	<i>✓ 37, 44, 43, 42, 41, 40 → 39 - inlet 38 - outlet</i>
Homogenized sample (sediment in bowl)	<i>✓ 0048, 0047</i>
Other?	<i>Inlets & outlets</i>

2009-2010 Sediment Trap Deployment

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INLINE SEDIMENT TRAP FIELD DATA SHEET			
Project Name: <u>Stormwater</u> Portland Harbor In-line Sump.	Project No: <u>116110</u> <u>1020-004-1020-005</u>	Date: <u>12/30/09</u>	By: <u>JXB,</u> <u>PTB</u>
Site Address: <u>N River & Albina</u>	Sample Pt Code: <u>43-ST6</u>	Basin: <u>33-43</u>	Hansen ID: <u>ABC363</u>

SECTION 1 – INSTALLATION INFORMATION	
Traffic control and/or site access concerns: <u>MH is near NE curb of road. Heavy Truck Traffic from grain silo. Park next to MH and cone off will leave enough space for traffic. No other TC required.</u>	Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?): <u>River does not back up here. Active flow in main invert & in both CB laterals. Flow in main is 2.5 in. deep @ 2 fps.</u>
Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.): <u>Pipe appears to have recently been cleaned. No sampleable solids US or DS.</u>	Sed trap bottles <u>DS</u> installed on: <u>DS</u>
Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.): <u>Due to the difficulties of drilling in a clay pipe, a previously installed bolt (from the previous sediment trap design) was used to bolt a band section to the pipe. It puts the trap slightly off-center (1" off-center) of the bottom of the main invert.</u>	Pipe diameter (inches) <u>16</u>
<u>SIFT 3 is 3 in. DS from EOP & 2 ft. from center of node.</u>	Distance from MH node (feet) <u>2</u>



Pt. Code: 43-ST6		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC363
Date: 11/11/10	Estimated sed. depth per bottle (% by volume & inches): Primary Cylinder US Bottle - Trace Secondary Cylinder DS Bottle - ~0.4" Bottle - Avg.	Bottles removed/replaced? Y/N If removed which one(s)? Removed captured solids during first interim check Final Removal? Y/N		Archived ID:
Comments: On site to conduct initial check following installation on 12/30/09. Trap was intact. Leaf debris deposited on trap housing. Primary cylinder appearing open @ an active flow of ~0.7 fps. US Bottle - Primary cylinder - Trace captured solids, primarily fine silts & sands DS Bottle - Secondary cylinder - Substantial solids captured (~0.4 in average depth) with captured stormwater. Captured solids were primarily fine silts & sands. Visible sheen on surface of captured stormwater supernatant. Photos Taken? Y/N Describe: SIFT sediment trap In situ & captured solids in primary & secondary cylinders.				43-ST6 12/30/09-1/11/10 1416 PST 41.2g 3.3
Date: 2/18/10	Estimated sed. depth per bottle (% by volume & inches): Primary Chamber US Bottle - 0.1" Secondary Chamber DS Bottle - 0.25" Bottle - Avg.	Bottles removed/replaced? Y/N If removed which one(s)? Final Removal? Y/N		Archived ID:
Comments: On site for second month check. Several leaves collected on tether and on SIFT housing. Standing water in pipe at 1.5" deep. All solids removed. Primary Chamber: Mostly free of sediment. Bottom side has up to 0.1" up against screen face US Bottle - Sediment is fine sand, with one seed. Secondary Chamber: Extensive accumulation on all sides and face of screen. Max depth is 0.5" with average depth at 0.25". Mostly fine silts, with a worm and a definite sheen. Photos Taken? Y/N Describe: ① SIFT in-situ prior to check ② Primary & Secondary Chambers ③ Sheen on secondary chamber				43-ST6 2/18/10 1335 02.6g
Date: 3/17/10	Estimated sed. depth per bottle (% by volume & inches): Primary Chamber US Bottle - 1/4" deep Secondary Chamber DS Bottle - 1/4" deep Bottle - deep	Bottles removed/replaced? Y/N If removed which one(s)? Final Removal? Y/N		Archived ID:
Comments: 2 in. standing water. Debris around housing includes styrofoam, cig. butts and flower petals. Primary: several flower petals and cigarette butts and pieces of grain. These were excluded from the sample. Fine sands up to 1/4" deep in 1" wide strip along invert of chamber US Bottle - Secondary: 1/4" accumulated along bottom of SIFT with a trace on face of screen. DS Bottle - Sed. consists primarily of fine sands & silt. Photos Taken? Y/N In-situ SIFT 100-0016 Describe: Primary & Secondary 100-0017				43-ST6 3/17/10 131.0 50.3g Tare weight of jar (g) 190.0g

Pt. Code 43-ST6		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC363
Date: 4/16/10	Estimated sed. depth per bottle (% by volume & inches): Primary US Bottle - Trace Secondary DS Bottle - 4.15cm	Bottles removed/replaced? Y/N If removed which one(s)? Collected & archived solids from primary & secondary chambers	Archived ID:	
By: JXB MJS/MAW	Final Removal? Y/N			
Comments: SIFT was intact & the inlet to the trap's primary chamber was unobstructed. Organic leaf debris adhered to the base of the trap housing. Ponded water in main pipe invert was ~1.0". Reinstalled SIFT at an upward angle of ~15°.				
US Bottle - Primary: There was trace amounts of solids accumulated in chamber, primarily fine sands (4.1cm in average depth).				
DS Bottle - Secondary: Chamber was 3/4 of the way full w/ stormwater over accumulated solids. Distinct green on surface of captured stormwater. Decanted stormwater from chamber. Sanitary odor observed. Accumulated solids were primarily fine sands & silt. Solids had a high water content.				
Photos Taken? Y/N				
Describe: SIFT chambers after decanting 1534.jpg Primary & secondary chambers prior to decanting 1537.jpg				
Date: 6/15/10	Estimated sed. depth per bottle (% by volume & inches): Primary US Bottle - 1/4" Secondary DS Bottle - 1 inch	Bottles removed/replaced? Y/N If removed which one(s)?	Archived ID:	
By: MJS PTB	Final Removal? Y/N			
Comments: 3 inches of flow at 1.5 fps present in pipe. SIFT is totally dry though with 3 in. from top of weir to top of water. Some leaves built up around housing but none obstructing the opening.				
Primary: Some fine gravels & fine sands at base of screen face on invert in area about 1 inch square and 1/2 inch deep.				
Secondary: 1 inch accumulation across invert of chamber and 1/4" across rest of face.				
Photos Taken? Y/N				
Describe: Primary & secondary chambers				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	Archived ID:	
By:	US Bottle - DS Bottle -	Final Removal? Y/N		
Comments:				
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				

43-ST6
4/16/10
1201
152.29

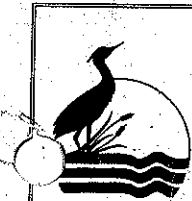
43-ST6
6/15/10 1103
151.69

These solids placed in a separate 8 oz. jar for archive since first jar was full.
PTB 6/22/10

Holding Sticker

Pt. Code:		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID:
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; width: 50px; height: 50px; margin: 10px auto; text-align: center; line-height: 50px;">Holding Sticker</div>
Comments:				
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; width: 50px; height: 50px; margin: 10px auto; text-align: center; line-height: 50px;">Holding Sticker</div>
Comments:				
S Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 43-ST6		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABC563
Sample ID: FO105681 (12/30/09-4/16/10) FO105682 (4/16/10-6/15/10) affix FO number sticker	Duplicate sample collected at this site? Y (N)	DUPLICATE ID:		
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? Y (N) Describe: after 4/16/10			
Comments: Due to the loss of the sed trap at 43-ST5 and the fact that the first archive jar from this site represents the same deployment period as all collected solids at 43-ST5 two separate samples were submitted for this site. The first is all solids collected from 12/30/09-4/16/10 and the second is solids collected from the last deployment period (4/16/10-6/15/10)				



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Field Operations
6543 N. Burlington Ave
Portland, OR 97203-5452



INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: <i>Stormwater</i> Portland Harbor <i>Inline</i> Sump.	Project No: <i>116110</i> <i>4020-001 1020-005</i>	Date: <i>12/30/09</i>	By: <i>XB,</i> <i>PTB</i>
Site Address: <i>N Albina & Interstate</i>	Sample Pt Code: <i>43-SIS</i>	Basin: <i>#3</i>	Hansen ID: <i>ABC 270</i>

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns: *Site is* *in*
In driveway to parking lot on dead end
road off Interstate Ave. Pull rig up &
cone off MH.

Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?): *River does not back up to here.*
Flowing water @ ~ 84 fps and ~ 1.5 in. in depth.
Active flow from all 3 CB inlets, during runoff
from melting snow event.

Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.):

None.

Sed trap bottles
installed on:
US

Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.):

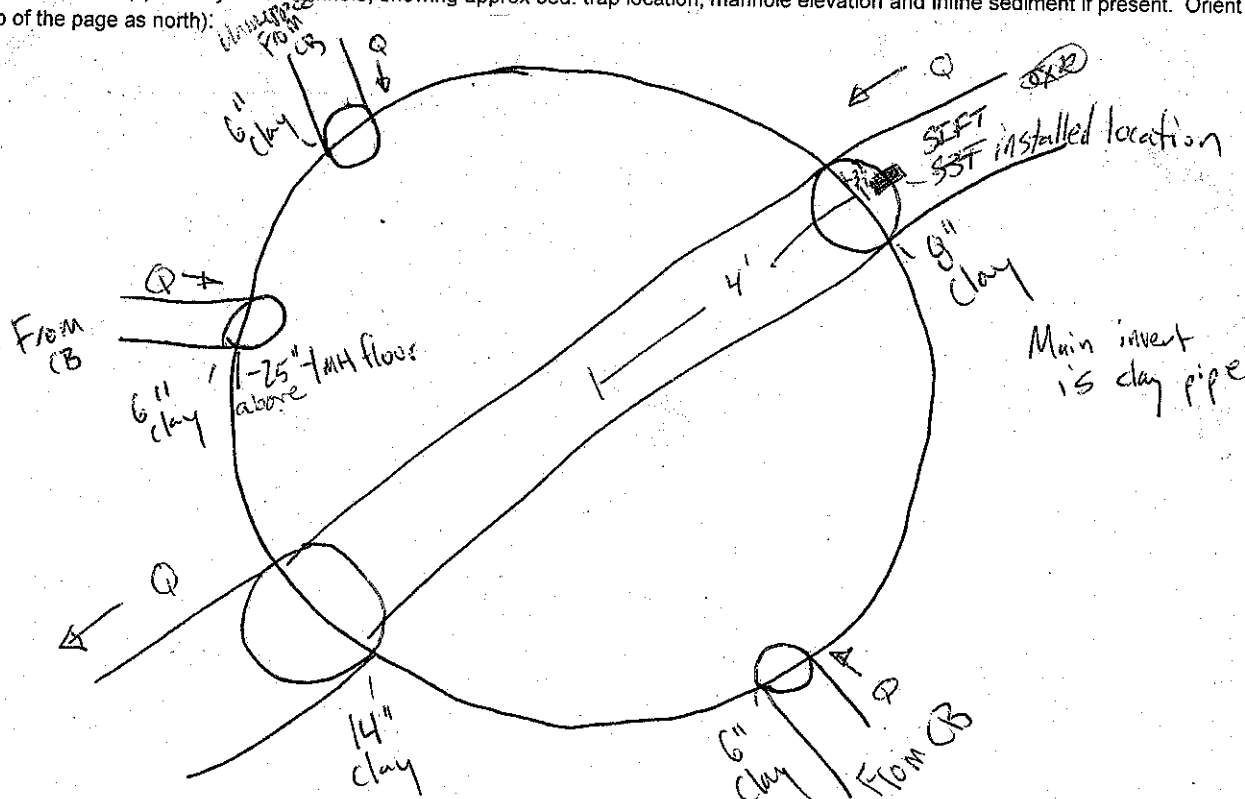
This SIFT trap is the smaller diameter prototype (1 3/4" diameter) and is
installed on an 8" slip band in an 8" pipe vs of node ABC270 3' from
EOP & 4 ft. from center of node. SIFT is @ ~ 10° upslope

Pipe diameter
(inches): *8*

Distance from MH
node (feet): *4*

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap location, manhole elevation and inline sediment if present. Orient drawing using the top of the page as north):



Pt. Code 43-ST5		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC 270
Date: 11/11/10	Estimated sed. depth per bottle (% by volume & inches): Primary Cylinder US Bottle - Trace Bottle -	Secondary Cylinder DS Bottle - 210g Bottle - 4.5mm	Bottles removed/replaced? <input checked="" type="checkbox"/> Y/N If removed which one(s)? Removed captured solids Initial check after install on 12/30/09 Final Removal? <input checked="" type="checkbox"/> Y/N	Archived ID:
Comments: On site to conduct initial check of Screened Inline Flow-through (SIFT) sediment trap. Sediment trap was ^{intact} w/ leaf debris deposited on trap housing. Primary cylinder ^{opening} was free of obstructions. US Bottle - Primary - Trace solids captured w/ ca ~0.5" of captured stormwater in bottom invert of trap DS Bottle - Solids, primarily fine silts & sands deposited in invert of Secondary Cylinder along screen (4.5mm). Estimate of captured solids was less than 10 grams. Captured solids also had red, clay-like inclusions.				43-ST5 12/30/09 - 11/11/10 1313 PST 4.6g (JKB)
Photos Taken? <input checked="" type="checkbox"/> Y/N				
Describe: SIFT In-situ & captured solids in primary & secondary cylinders				
Date: 2/19/10	Estimated sed. depth per bottle (% by volume & inches): Primary US Bottle - Trace Bottle -	Secondary DS Bottle - ~0.1" Bottle -	Bottles removed/replaced? <input checked="" type="checkbox"/> Y/N If removed which one(s)? Removed captured solids Final Removal? <input checked="" type="checkbox"/> Y/N	Archived ID:
Comments: On site to collect/check sed trap SIFT. Sed Trap was ^{intact} leaf debris around trap housing, but not impacting trap itself. Trap replaced to its original installation point. US Bottle - Primary - Trace amounts of solids. Primarily ^{fine} sands and silts DS Bottle - ~1/10 inch of fine sands + silts deposited along bottom wall and back screen of chamber.				43-ST5 1-11-10 - 2-19-10 1126 PST 13.9g of new solids
Photos Taken? <input checked="" type="checkbox"/> Y/N Photos not taken due to camera failure				
Describe:				
Date: 3/17/10	Estimated sed. depth per bottle (% by volume & inches): Primary US Bottle - Trace Bottle -	Secondary DS Bottle - 1/4" Bottle -	Bottles removed/replaced? <input checked="" type="checkbox"/> Y/N If removed which one(s)? Final Removal? <input checked="" type="checkbox"/> Y/N	Archived ID:
Comments: Organic material on housing. Inlet remained free of obstruction. Wetted invert. Primary: Trace accumulation on invert of chamber of sand & silt. US Bottle - Secondary: 1/4" of fine sand & silt distributed over bottom 1/3 of invert. DS Bottle -				43-ST5 3/17/10 1443 11.9g
Photos Taken? <input checked="" type="checkbox"/> Y/N 100-0020				
Describe: Primary & Secondary 100-0020 pass				
				Total weight of jar(s) lid 192.5g

Pt. Code 43-ST5		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC270
Date: 4/16/10	Estimated sed. depth per bottle (% by volume & inches): Primary US Bottle - ~4cm Secondary DS Bottle - ~5cm	Bottles removed/replaced? (Y/N) <u>Collected & archived solids from primary & secondary chambers</u>		Archived ID: 43-ST5 4/16/10 1252 14.39 ✓
By: JxB MJS/MAW	Final Removal? (Y/N) <u>Y</u>			
Comments: SIFT & slip band were partially blown out following last month's interim check on 3/17/10 (see daily field report notes). Inlet opening into primary chamber was unobstructed. Plastic debris & organic leaf matter adhered to the base of the trap housing. Pipe was wetted. Reinstalled slip band ~8" US from main inlet pipe EOP. SIFT was reinstalled at an ~12° upward angle. Primary - Solid accumulation in chamber was ~4cm in depth. Solids were primarily fine sands. Secondary - Accumulated solids in chamber were primarily deposited in the back bottom portion of the chamber invert & along the back face of the back screen. Depth of solids was ~5cm in average. Solids were primarily fine sands & silt.				
Photos Taken? (Y/N) <u>Y</u> SIFT & slip band blown out 1540.jpg & 1541.jpg				
Describe: Accumulated solids in primary & secondary chambers 1542.jpg				
Date: 6/15/10	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N		Archived ID:
By: MJS PTB	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? (Y/N) <u>Y</u>		
Comments: SIFT missing. SIFT was blown out of pipe and presumably washed downstream. No solids to recover.				Holding Sticker
Bottle - DS Bottle -				
Photos Taken? (Y/N) <u>Y</u>				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		
Comments:				Holding Sticker
US Bottle - DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID:
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; display: flex; align-items: center; justify-content: center;"> Holding Sticker </div>
Comments:				
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; display: flex; align-items: center; justify-content: center;"> Holding Sticker </div>
Comments:				
S Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code 43-ST5		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABC270
Sample ID: FO 105680 affix FO number sticker	Duplicate sample collected at this site? Y (N)	DUPLICATE ID:		
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? Y (N)			
Describe:				
Comments: Last solids at this site collected on 4/16/10 1252 as upon the last check for removal the SIFT and its band were nowhere to be found in the MTH chamber or downstream MTH chambers. The last collected solids date & time were used as the LOC time.				



Page 1 of 1

Project PORTLAND HARBOR ^{STORMWATER} ~~WATER~~ SAMP
Location BASIN 43
Subject ^{SIFT Sediment Trap} ~~SST~~ Installation (~~Stormwater~~ trap) ^(X12)

Project No. 1020,005
1020-001-000
Date 12/30/09
By PTB, XJB

1305 ARRIVE ON-SITE ABC270 TO INSTALL ^{SIFT} ~~SST~~ (Screened ~~Stormwater Solids Trap~~) Design sediment Trap for FY09-10 storm season. 3-4" of snow yesterday is slowly melting today causing runoff to occur. No active snow/rain currently. This site is an 8" pipe so we are deploying the smaller ^{SIFT Sediment Trap} ~~SST~~ prototype (@ 1 3/4") diameter since the larger trap would essentially fill up this size pipe. Photos of inlet & outlet & ~~SST~~ in-pipe.

1335 Completed install of ^{SIFT} ~~SST~~ @ ABC270.

1350 Arrive on-site ABC363 to install ^{SIFT Sediment Trap} ~~SST~~ for FY09-10 storm season. Active runoff occurring during install. No active rain/snow. Photo ds & us

1519 Completed install of ^{SIFT} ~~SST~~ @ ABC363



Page 1 of 1

Project Portland Harbor Stormwater Sump
Location Basin 43
Subject Initial SIFT Sediment Trap Checks

Project No. 1020-005
Date 1/11/10
By JXB/PTB

1233 - Arrive at Basin 43 site 43-ST6 (ABC363) semi-truck convey along N. Albina River. Semi-truck parked on ABC363 manhole. Grain silo closed for lunch hour. Unable to conduct initial check of Screened Inline Flow-through (SIFT) sediment Trap at this location.

1313 - Arrive on site at 43-ST5 (APC270) SIFT was ^{intact} w/ ^{leaf} debris on trap housing. Standing water in main invert (^{tail} ~~6.1" in depth~~ ^{0.15" @ 3' upstream of seam in inlet}). Trace solids captured in primary cylinder w/ < 5 mm of solids in secondary cylinder (< 10 grams est.). Captured Solids were primarily fine silts & sands w/ coarse red, clay-like inclusions. Installed SIFT back into 8" upstream inlet. Left 43-ST5.

1410 - Finally able to enter site ABC363 - 43-ST6. Active flow on site of $\sim 3.0'$ @ ~ 0.7 fps. No active runoff on catchment surface. Mild sweet odor present in manhole. No active flow upstream in stormwater node APC220; only ^{active} sanitary / I&T in manhole chamber walls. Leaf debris on trap housing. SIFT was ^{intact} and primary cylinder was free of obstructions. Took photo of trap in-situ. Removed trap and conducted first interim check following installation.

Trace solids captured & deposited in primary cylinder. Secondary cylinder had substantial solids captured & captured stormwater. Sheen present on surface of captured stormwater. Captured solids primarily consisted of fine silts & sands. 1416 - Removed solids from ^{SIFT} and placed in tared jar.

1442 - Left Basin 43 to return to WPC.

Attachments



Page 1 of 1

Project PORTLAND HARBOR STORMWATER SAMP
Location DF43 BASIN
Subject SIFT Monthly Checks

Project No. 1020.005
Date 2/18/10
By PTB, MAW

1310 Prepare for entry at 43-ST6 (ABC363) for second monthly check for this site during the FY09-10 storm season.

Entrant notes sanitary odor while in MH chamber.

1335 Collected sample into Archive jar for 43-ST6.

1402 Returned to WPCL.

1515 At WPCL weighed the Archive jar to obtain amount of solids captured since last check.

	Weight of Jar + Lid + Sed	Weight of Jar + Lid	Total Captured Sed Weight from last check	New Accumulation Sed weight since last check
43-ST6:	313.8g	190.0g	41.2g	82.6g

Total Collected this season = 123.8g ✓



Page 1 of 1

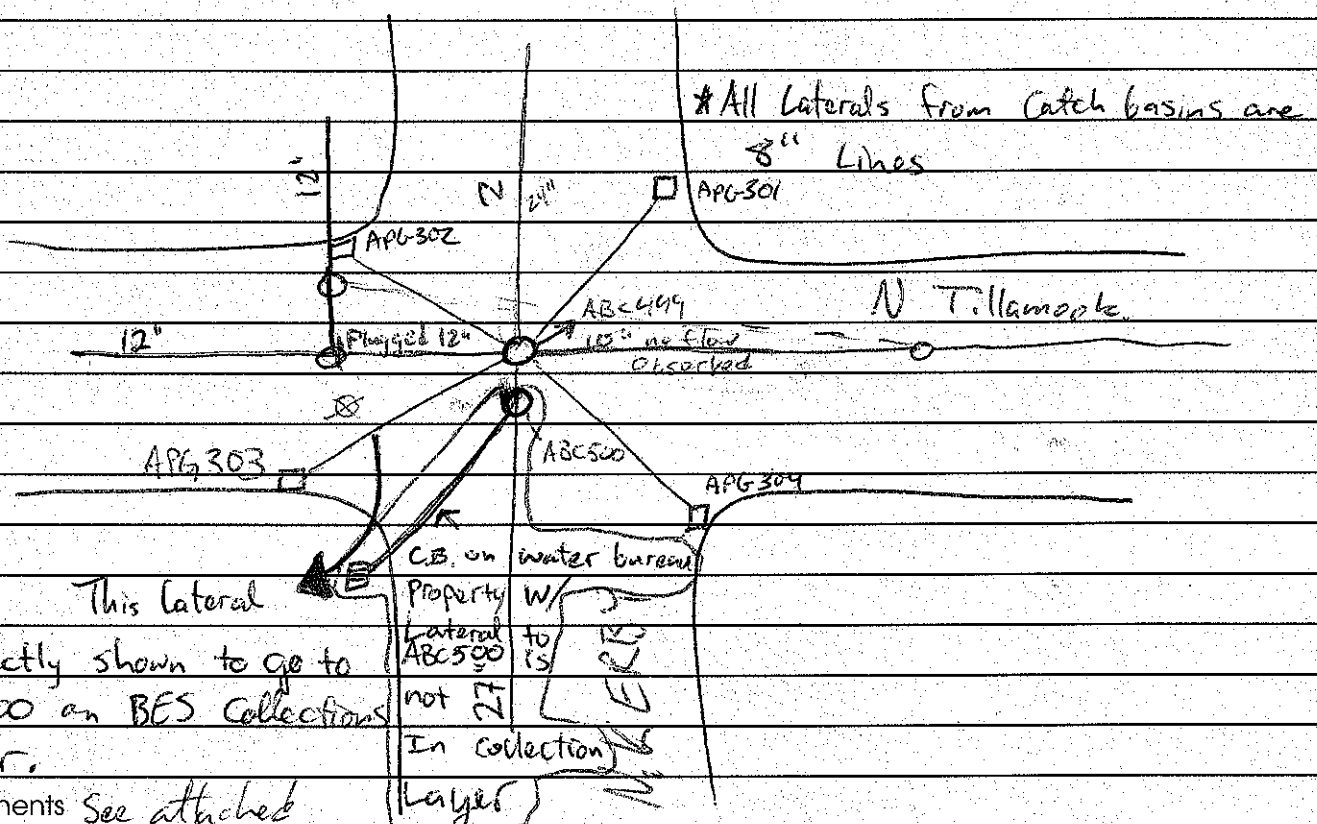
Project Portland Harbor Stormwater
Basin 43
Location Basin 43
Subject Daily notes

Project No. 1020.005 JXB
1010.005 3/26/10
Date 2/19/10
By AJA, JXB, MAW

1200 On site to check ArcGIS accuracy of
Catch basin laterals into node ABC499 per customer request.

Confirmed via water test that CB APG303 drains
into ABC499, not ABC500 as shown on the Basemap.

All other lines and laterals are present and
accounted for. The GIS pipe diameters are accurate.





Page 1 of 1

Project Portland Harbor Stormwater ^{Sample} Intra-Samp. Project No. 1020.005
Location 43-ST5 (M) 43-ST5 ^(JXB) 3/26/10 Date 2/19/10
Subject Daily field notes By AJA JXB MAW

1116 Arrived on site. Small dia. SIFT is intact. A lot of leaf debris is around trap ^{housing} and tether. Trap itself is not impeded with leaf debris. Entrant confirms that leaf debris is not affecting the trap.

~~(M) Entrant removed trap entirely from base~~
Sed trap + skip band removed for processing.

* No photos taken due to camera malfunction

Fine sands + silt in both primary and secondary chambers. Collected into ^{archived site} composite jar.

^{(JXB) 3/26/10}
Replaced SIFT in same location & orientation as before

Total wt (Jar, Lid, captured Solids) = 210.9 g

Tare wt (Jar + Lid) = -192.5 g ✓

total Solids = 18.4 g

previous Solids = 4.6

Solids from 2-19-10 = 13.8 g ✓

Attachments



Page 1 of 1

Project PORTLAND HARBOR STORMWATER SAMP
Location Basin 43
Subject Monthly SIFT checks

Project No. 1020-005
Date 3/17/10
By MJS, MAW, PTB

1256 Arrive on-site 43-ST6 for regular monthly check of this SIFT deployment.

1310. Collected seds from SIFT.

1315. Re-installed SIFT.

1351. Arrive on-site 43-ST5 for monthly check.

1403. Collected seds from SIFT.

1416. Re-installed SIFT.

43-ST5

Total weight w/ seds, jar & lid = 222.8g

Weight of jar & lid = -192.5g

Previous ^{seds} weights 13.8+4.6 = -18.4g

Total since last check = 11.9g

Overall Total = 30.3g

43-ST6

Total weight w/ seds, jar & lid = 364.1g

Weight of jar & lid = -190.0g

Previous sed weights 41.2+82.6 = -123.8g

Total since last check = 50.3g^v

Overall Total = 174.1g^v

Attachments



Page 1 of 2

Project Portland Harbor Stormwater Samp

Project No. 1020.005

Location Basin 43

Date 4/16/10

Subject Monthly Field Check - SIFTS

By JXB/MJS/MAW

1145 - Arrive on-site in Basin 43 at site 43-ST6, located at N. River & Albina. This will be the 4th interim check of the SIFTS in Basin 43, following their installation on 12/30/09. Set up TC & performed CSF.

SIFT was intact w/ the inlet to the trap's primary chamber unobstructed. Organic leaf litter adhered to the base of the trap housing. There was ponded water in the main pipe invert ~1.0" in depth. Removed SIFT from stormwater collection system to collect & archive solids captured by trap. Collected solids were placed into archived 8oz amber sed. jar after decanting ^{stormwater} supernate from secondary chamber (1201). Oily sheen was present on surface of supernate. There was a strong sanitary odor to the solids in the secondary chamber. SIFT was reinstalled at an ~15° upward angle. Left 43-ST6 for 43-ST5.

1231 - Arrive at 43-ST5, located at N. Albina & Interstate. Will collect & archive solids captured by SIFT, and also reinstall the small-diameter SIFT & slip band at this location (SIFT was tipped-up to an ~90° vertical orientation in-situ due to the front cotter pin being lost, as well as the slip band being partially blown out of the main inlet pipe, following the last interim check on 3/17/10). Inlet to SIFT was unobstructed. Substantial amounts of plastic debris & organic leaf litter was adhered to the base of the trap housing.

Removed SIFT & collected accumulated solids. Collected solids were ^{then} placed into archived 8oz amber sed. jar (1252). Slip band was reinstalled ~8" US from main inlet pipe EOP. Installed SIFT at an ~12° upward angle after bolting the trap to the slip band to prevent subsequent blow outs.

Attachments

Portland Harbor Stormwater Sump
Basin 43
Monthly SIFT Checks

Page 2 of 2

1020.005

4/16/10

JXB/MJS/MAW

1111/10 -

3/17/10

SITE	Total weight of jar (+) lid (g) seeds	Tare weight of jar (+) lid	Total weight of collected solids	Weight of previously collected seeds	This Month's seed weight Accumulation
43-ST5	237.10 g	192.50g	44.6g	30.3g	14.3g
43-ST6	506.30g	190.0g	316.3g	174.1g	142.2g



Page 1 of 1

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location BASIN ~~5~~ 43

Date 6/15/10

Subject SIFT Removals & Processing

By MJS, PTB

1022 Arrive on-site ABC270 to remove SIFT at 43-ST5 per customer request at end of storm season.

1030 SIFT is missing. SIFT presumably washed downstream.

Nothing to collect. Departed site after checking GIS for potential downstream nodes of entry to look for ~~being~~ ^{PTB} the SIFT in hopes of it getting caught up before getting washed

away entirely. Site 43-ST6 is downstream, will check there. Departed site. Checked MH chambers between ABC270-ABC363. No sign of SIFT.

1050 Arrive on-site ABC363 to remove SIFT 43-ST6

per customer request at end of storm season. No sign of blown-out SIFT from ABC270.

1103 Collected seeds from SIFT and removed all installation hardware. Seeds collected into archive jar to be homogenized at WPCL with archive jar containing all previous month's seeds. A second new

1109 Departed to WPCL. jar was used as there was no room in the previous archive jar.

1448 Decision made per conversation with customer to submit the solids collected from this month's accumulation in 43-ST6 separately since they were collected in a separate archive jar without previous month's seeds. This maintains comparability for 43-ST5 and the previous month's archive jar for 43-ST6 as they represent the same deployment period.

1527 Homogenized sample 43-ST5 for submittal.

1532 Capped jar to be submitted.

1542 Homogenized sample ^{from 43-ST6} collected from 12/30/09 - 4/16/10 in archive jar.

1551 Capped jar for submittal.

1555 Homogenized sample ^{from 43-ST5} collected from 4/16/10 - 6/15/10 in a separate jar.

1600 Capped jar for submittal.

Attachments

Portland Harbor Sampling - EID 1020.005
Basin 43

Date: 6/15/10
Crew: PTB, mss

NOTE: 1st jar was full so a new second 8 oz jar was used for this month's seed accumulation.

[illegible]



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



Date: 6/15/2010
Page: 1 of 1
Collected By: MJS, PTB

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: SEDIMENT

Requested Analyses

Basin 43 Sediment Trap Chain-of-custody
Sediment traps installed: 1230/09 (43_ST5 & 43_ST6 #1); 4/16/10 (43_ST6 #2)
Sediment traps removed: 4/16/10 (43_ST5 & 43_ST6 #1); 6/15/10 (43_ST6 #2)
* Total Solids to be done at WPCL, care should be taken to use the smallest aliquot possible to retain sample volume for additional follow-up analyses.

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	PCB Congeners (All 209)	PCB Aroclors (Low-level)	Grain Size	TOC	TS*	Total Metals (As, Cd Cr, Cu, Pb, Ni, Ag, Zn) + Hg	Comments
FO105680	ST-43-ABC270-0410 N ALBINA & INTERSTATE	43_ST5	4/16/10	1252	C	•			•	•		TS = 50.3 44.3 g Total Wet Weight
FO105681	ST-43-ABC363-0410 N RIVER & ALBINA	43_ST6	4/16/10	1201	C	•			•	•		TS = 42.1 314.0 g Total Wet Weight
FO105682	ST-43-ABC363-0610 N RIVER & ALBINA	43_ST6	6/15/10	1600	C	•			•	•		TS = 46.6 151.5 g Total Wet Weight
FO105701	Duplicate	DVR	4/16/10	—	C	•			•			TS = 42.1 1/2 of FO105681 (after TS cons performed) was used to create this sample. RAK 6/18/10 1100

Relinquished By: 1.

Signature: *Mike Bryant* Time: 6/26

Printed Name: Peter Bryant Date: 6/15/10

Received By: *Mike Bryant* Time: 6/26

Signature: *Mike Bryant* Date: 6/15/10

Printed Name: Mike Bryant Date: 6/15/10

Relinquished By: 2.

Signature: Time: 6/26

Printed Name: Date: 6/15/10

Received By: 2. Time: 6/26

Signature: Date: 6/15/10

Printed Name: Date: 6/15/10

Relinquished By: 3.

Signature: Time: 6/26

Printed Name: Date: 6/15/10

Received By: 3. Time: 6/26

Signature: Date: 6/15/10

Printed Name: Date: 6/15/10

Relinquished By: 4.

Signature: Time: 6/26

Printed Name: Date: 6/15/10

Received By: 4. Time: 6/26

Signature: Date: 6/15/10

Printed Name: Date: 6/15/10



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 Sump		Project Number: 1020.005	
Sample Processing Conducted By: PTB	Sample Pt. Code: 43-ST5	Removal Date: 4/16/10 6/15/10 <small>PTB</small>	Processing Date: 6/15/10
Basin: 43	Hansen ID: ABC270	Subbasin: NA	
Sediment Trap Location Description/Address: N Albina and Interstate. SIFT placed 4' ft upstream from center of node.			

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

Filter Equipment/Method: Portland Harbor, 90 millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007]	
Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper):	
Sediment Trap Bottle ID: 43-ST5	Sediment Trap Bottle ID: - - -
Total ^{weight of jar + lid} Est. Depth of Accumulated Sed in Bottle (inches): 23.70 Prior to Homogenization	Total Est. Depth of Accumulated Sed in Bottle (inches):
Sample Processing Start Time: 1527	Sample Processing End Time: 1532
Sample Processing Start Time:	Sample Processing End Time:
Number of Filters Used:	Number of Filters Used:
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):	Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):
Tare Weight [empty jar in grams (g)]: 192.5 Weight of sed + jar + lid post-homogenization: 236.8g Dewatered/Filtered Sed. Weight (g): 44.3	Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]: Dewatered/Filtered Sed. Weight (g):
Sample Processing Notes/Comments: Homogenized all sed from monthly checks in archive jar using stainless steel spatula that has been fully decont.	Sample Processing Notes/Comments:

COC TIME GIVEN AS DATE/TIME THAT LAST COLLECTED SOLIDS WERE ADDED TO ARCHIVE JAR 4/16/10 1252. PTB 6/22/10

Visual Description of Final Composite Sample: Moist dark brown 90% fine sands, 10% fine silts		
COC Time (time composite jar is capped): 1532	Total Dewatered/Filtered Sed. Weight in grams (g): 44.3	Sample Jars Collected (number, size, full or partial): Partial (1/8 full) 8 oz. jar
Sample ID: FO105680 affix FO number	Duplicate sample collected? Y(N) DUPLICATE ID	
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? Y(N) Describe:	



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:

PTB

Sample Pt. Code:

43-ST6

Removal Date:

6/15/10

Processing Date:

6/15/10

Basin: 43

Hansen ID: ABC 363

Subbasin: NA

Sediment Trap Location Description/Address:

N River + Albina. SIFT^{Placed} 2 ft. downstream of ^{center of} node. PTB 6/22/10

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

~~Filter Equipment/Method:~~

Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system
~~Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007.~~

~~Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper):~~

Sediment Trap Bottle ID: 43-ST6

Sediment Trap Bottle ID:

Total ^{Weight of} Est. Depth of Accumulated Sed in Bottle (inches): ^{jar + lid} 342.1g
~~Pre-homogenization~~

Total Est. Depth of Accumulated Sed in Bottle (inches):

Sample Processing Start Time: 1555

Sample Processing End Time: 1600

Sample Processing Start Time:

Sample Processing End Time:

~~Number of Filters Used:~~

~~Number of Filters Used:~~

~~Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):~~

~~Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):~~

Tare Weight [empty jar in grams (g)]: 190.5
Weight of sed + jar + lid post-homogenization: 342.0g
Dewatered/Filtered Sed. Weight (g): 151.5

Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]:

Dewatered/Filtered Sed. Weight (g):

Sample Processing Notes/Comments:

Homogenized this deployment's seeds in its own archive jar since other jar was already full. Used a decontaminated stainless steel spatula. The other jar was submitted separately as it represents the same deployment period as

Sample Processing Notes/Comments:

all collected solids from 43-ST5. PTB 6/22/10

Visual Description of Final Composite Sample: Moist very dark brown 95% fine sands 5% fines

COC Time (time composite jar is capped): 1600

Total Dewatered/Filtered Sed. Weight in grams (g): 151.5

Sample Jars Collected (number, size, full or partial): 1/2 full 8 oz. jar

Sample ID: FO105682
affix FO number

Duplicate sample collected? ☒ DUPLICATE ID

Duplicate Sample ID on COC:
affix FO number sticker

Any deviations from standard operating procedures? ☒
Describe:



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:

PTB

Sample Pt. Code:

43-ST6

Removal Date:

4/16/10

Processing Date:

6/15/10

Basin: 43

Hansen ID: ABC363

Subbasin: NA

Sediment Trap Location Description/Address:

N River + Albina. SIFT location 2 ft. downstream of node.

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

~~Filter Equipment/Method:~~

Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system
~~Field Operations (FO) Standard Operating Procedure (SOP) 5-01b & Evaluation of Microfiltration
Equipment for Phthalates Technical Memorandum - September 18, 2007.~~

~~Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper).~~

Sediment Trap Bottle ID: 43-ST6

Sediment Trap Bottle ID:

Total ^{Weight of jar + lid} Est. Depth of Accumulated Sed in Bottle (inches): 504.6g
~~pre-homogenization~~

Total Est. Depth of Accumulated Sed in Bottle (inches):

Sample Processing Start Time: 1542

Sample Processing End Time: 1551

Sample Processing Start Time:

Sample Processing End Time:

~~Number of Filters Used:~~

Number of Filters Used:

~~Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):~~

Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):

Tare Weight [empty jar in grams (g)]: 190.0g

Weight of sed + jar + lid post-homogenization: 504.0g

~~Dewatered/Filtered Sed. Weight (g): 314.0g~~

Tare Weight [jar and filtered sed. from Bottle1 in grams (g)]:

Dewatered/Filtered Sed. Weight (g):

Sample Processing Notes/Comments:

Homogenized all months' accumulation (excluding most recent month's which was collected into a separate jar) in archive jar using a decontaminated stainless steel spatula.

Sample Processing Notes/Comments:

THIS SEPARATION WAS MAINTAINED TO PRESERVE COMPARABILITY WITH SOLIDS FROM 43-ST5. PTB 6/22/10

Visual Description of Final Composite Sample: Sandy fines slurry very dark grey.

~~COC Time~~ (time composite jar is capped): 1551

Total ~~Dewatered/Filtered~~ Sed. Weight in grams (g): 314.0g

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

Sample ID:
affix FO numb

FO105681

SAMPLE DATE & TIME WERE ASSIGNED TO LAST COLLECTED
DISTINCTION OF THIS SAMPLE FROM THE LAST MONTH'S SAMPLE

Duplicate sample collected? (Y/N) 4/16/10 1201
DUPLICATE ID

Duplicate Sample ID on COC:

affix FO number sticker

FO105701

SOLIDS DATE & TIME (FROM MONTHLY CHECK) TO ASSIST IN MAKING THE
Any deviations from standard operating procedures? (Y/N) AT THIS SITE.
PTB 6/22/10

Describe:

Phase 2 Stormwater Sampling
Event 5: December 7, 2010

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Page 1 of 1

Project Basin 43 Stormwater

Project No. —

Location Basin 43

Date 12/7/10

Subject Stormwater Sampling

By MJS, PTB

- 1400 - light but steady rain beginning
- 1630 - continued light but steady rain, ~0.14" of rain since 1400. Received go-ahead to sample
- 1655 - on site at 43-SW5 to steady light rain. ~~and~~ good runoff and abundant flow in the storm line. 1703 collected sample from main line (24") entering the manhole.
- 1710 collected sample at 43-SW6 from main line downstream of the manhole, capturing flow from the two laterals. Good runoff and abundant flow in pipe.
- 1726 - on site at 43-SW2 to continued steady light rain. Good runoff and visible flow in the manhole
- 1728 - collected sample from pipe downstream of manhole chamber.

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***January 2011 Follow-Up
Inline Solids Sampling***

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Water Pollution Control Laboratory

6543 N. Burlington Ave.
Portland, Oregon 97203-4552
Sample Custodian: (503) 823-5696
General Lab: (503) 823-5681



City of Portland
Chain-of-Custody

Bureau of Environmental Services



Date: 1/11/2011

Work Order #: 12114092

Collected By: JXB, PTB, AJA

Client Name: Director's Office

Project Name: Portland Harbor

Matrix: Sediment

Special Instructions:

Basin 43 Inline

Requested Analyses

Special Instructions:									
Basin 43 Inline									
Lab Number									
Location ID	Sample Date	Sample Time	Sample Type						
43_6	1/11/2011	935	C						
				●	TS				
				●	TOC				
				●	PCB Aroclors				

Relinquished By:

Signature:

Date: 1/11/11

Printed Name:

Time: 11:14

Received By:

Signature:

Date: 1/11/11

Printed Name:

Time: 11:14

Relinquished By:

Signature:

Date:

Printed Name:

Time:

Received By:

Signature:

Date:

Printed Name:

Time:



Page 1 of 1

Project ROSLAND Harbor

Project No.

Location Basin 43

Date 1/11/11

Subject Sampling @ ABCS31

By JXB, ITB, ASM

0815 Arrive on-site ABCS31. Co-ordinated with BOONE for Vac Set-up.

0840 Began vac of overlying water in MH chamber. JXB indicated (as the entrant) when enough water was removed to access the sed but not disturb them. Entrant observes two areas of deposition on either side of MH chamber near inlet pipe. North deposition had more larger cobbles & debris including metal & fork plugs. South deposition had some metal debris but much less.

0935 Homogenized sample & filled collection jars. Grave point code 43-6.

Attachments



CITY OF PORTLAND ENVIRONMENTAL SERVICES

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



INLINE SEDIMENT SAMPLING FIELD DATA SHEET

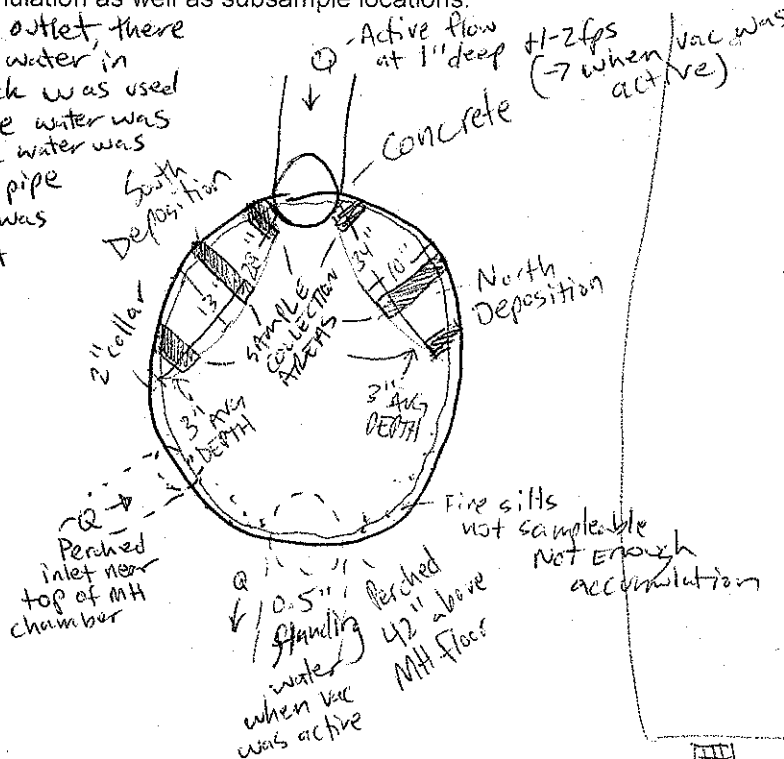
Project Name: <u>Portland Harbor</u>		Sample ID: <u>WIA 090-01</u>	
Sampling Team: <u>JXB/PTB/AJA</u>	Date: <u>1/11/10</u>	Arrival Time: <u>0815</u>	Point Code: <u>43-6</u>
Basin: <u>43</u>	Node: <u>ABC539</u>	Address: <u>N KERBY + WHEELER</u>	
Current weather: <u>Cold & overcast</u>			
Date and time of last known rainfall: <u>1/9/2010 0700 in the amount of 0.01"</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Is there water inline? <u>Yes</u> or No	If present, water is: <u>Flowing</u> or <u>Standing</u>	Depth of water = <u>42</u> in	Rate of flow = <u>1-2</u> fps
Does river back up to this location? Yes or <u>No</u>		Water Color: <input type="checkbox"/> Brown <input type="checkbox"/> Grey <input type="checkbox"/> Clear	Water Odor: <input type="checkbox"/> Hydrocarbon <input type="checkbox"/> Sanitary <input type="checkbox"/> Other
Are sediments observed in the line? <u>Yes</u> or No		Are recoverable quantities of sediments present in the line? <u>Yes</u> or No	
If sediments present: Avg Depth of seds = <u>3.0</u> in Sed Depth Range = <u>2.0</u> in. to <u>3.5</u> in.			
Estimated dimensions of sediment deposit: <u>28</u> in. by <u>13</u> in. OR <input type="checkbox"/> As far as can be seen			

SITE DIAGRAM: Include street intersections/main lines/laterals/catch basins/MH's/pipe sizes/ flow direction/ driveways cuts and extent of solids accumulation as well as subsample locations.

Due to elevated outlet, there was 42" of overlying water in MH chamber. Vac truck was used to remove water, while water was actively removed, more water was flowing in from inlet pipe (likely due to JTI) and was 1" deep and flowing at 1-2 fps.



* SAMPLE COLLECTION AREAS WERE TWO SPIN WIDTHS WIDE AND THE ENTIRE DEPTH OF ACCUMULATION.

N KERBY

N WHEELER

Date: <u>1/11/11</u>	SECTION 2 - SAMPLE COLLECTION REPORT		Node: <u>ABC539</u>	Point Code: <u>43-G</u>
Sampling Equipment: <input checked="" type="checkbox"/> Stainless steel utensil & stainless steel receptacle <input type="checkbox"/> Other (Describe)				
Equipment Decontamination process: <input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Deviations (Describe)				
Sample date: <u>1/11/11</u>	Sample time: <u>0935</u>	Sample Identification Code (IL-XX-NNNNNN-mmyy) <u>IL-43-ABC539-0111</u>		
Sample location: <input checked="" type="checkbox"/> From MH chamber <input type="checkbox"/> From line		If from line, segment is From Node _____ To Node _____		
Sample collection technique: <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe below)				
Visual and olfactory observations: <u>NONE</u>		<input type="checkbox"/> Odor _____ <input type="checkbox"/> Sheen _____ <input type="checkbox"/> Discoloration _____		
		<input type="checkbox"/> Brown <input type="checkbox"/> Grey <input checked="" type="checkbox"/> Other (describe) <u>Speckled grey</u>		
Sample composition/particle size distribution (estimated percentages):		Silt/Clay <u>5%</u> Sand <u>5%</u> Fine Gravel <u>60%</u> Coarse Gravel <u>20%</u> Debris <u>10%</u> Decomposed Organics _____ Other (describe) _____		
If present, type of debris in sample		<input checked="" type="checkbox"/> Wood <input checked="" type="checkbox"/> Large rocks <input checked="" type="checkbox"/> Metal <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Organics <input checked="" type="checkbox"/> Paper		
		Removed debris? <input checked="" type="checkbox"/> Yes (Type & Amount) <u><10% of bulk sample</u> <input type="checkbox"/> No		
Compositing notes <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe)				
Sample Jars Collected (number, size, full or partial)? <u>3x 4oz full jars</u>				
If not enough sample to fill all of the jars, list jars collected and related analytes sampled (as per analyte priority list in work order). <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> W11A090-01 Portland Harbor 43-G Sampled: 01/11/11 09:35 Field Data Sheet </div>	Jar Size	Amount Full	Target Analyses	
			<u>PCB</u>	
			<u>TOC</u>	
			<u>TS</u>	
		Duplicate sample collected? <u>Y/N</u>		
Duplicate sample identification # on COC:				

SECTION 3 - PHOTOGRAPH LOG	
Overview of node showing drainage area	Filename(s): _____
Plan view of sediments inline	Filename: <u>North Sed Deposition Area</u> <u>South Sed Deposition Area</u>
Homogenized sample (sediment in bowl)	Filename: <u>Homogenized composite</u>
Other?	Filename(s): <u>Main inlet</u> <u>Fine sed film → unsampleable</u> <u>Main outlet</u>

APPENDIX C

Laboratory Reports (on CD only)

D\ UgY`%Ghcfa k UhYf`GUa d`Yg`

9j Ybh%``Bcj Ya VYf`&\$Ž&\$\$, `



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 Albina Riverlots Source Control Investigation Fourth Quarter 2008 Stormwater Sampling – Event 1

To: File
From: Erin Carroll, GSI
Date: January 7, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on November 20, 2008. Five stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO081413) and field duplicate (FO081414) were also submitted for analysis.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL Laboratory
 - Total Metals – EPA 200.8
 - Total Mercury – WPCL SOP M-10.02
 - Total suspended solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The laboratory reports are attached to this document and included as Attachment A to the Fourth Quarter 2008 Albina Riverlots Quarterly Report.

This QA/QC review is based on the available documentation supplied from each laboratory. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report:

- 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
- Internal standard recoveries within accuracy control limits
- Matrix spike and matrix spike duplicate results within control limits
- If applicable, laboratory control sample and duplicate laboratory control sample recoveries 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 throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the laboratory analyses of PAHs, phthalates, SVOCs, and PCB congeners. There are no reported detections of PAHs or phthalates in the associated method blank(s).

Several SVOCs were detected in the method blank for the EPA 8270C analysis and in the field samples (including the field decontamination blank) at estimated concentrations (greater than the method detection limit but less than the method reporting limit). The presence of these SVOCs in the samples is considered to be a result of laboratory contamination. Therefore the sample result is noted as not detected at a concentration greater than the method reporting limit.

A low concentration of PCB Congener #11 (0.667 ng/L) was detected in the method blank but not detected in associated field samples. Therefore, the data are not qualified.

Surrogate Recoveries

Surrogate recoveries were completed during the laboratory analysis of PAHs and SVOCs. All surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. All of the labeled internal standard recoveries were within the target ranges specified in the method.

Matrix Spike/Matrix Spike Duplicates

CAS reports there was insufficient volume to perform a matrix spike/matrix spike duplicate (MS/MSD) analysis for SVOCs. Laboratory control sample/duplicate laboratory control sample (LCS/ DLCS) were analyzed and reported in lieu of the MS/MSD for these samples.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of PAHs, phthalates, and SVOCs. All laboratory control sample recoveries were within laboratory control limits except for benzoic acid and pentachlorophenol by EPA 8270C. The spike recovery of pentachlorophenol in the replicate LCS/DLCS was outside the lower control limit. Pentachlorophenol was detected in several field samples at estimated concentrations. The reduced recovery error indicates a potential low bias for this compound.

The advisory criterion was exceeded for benzoic acid in the replicate LCS/DLCS. Benzoic acid was detected in one or more field samples at concentrations less than the MRL and greater than or equal to the MDL, with one exception. Benzoic acid was detected at a concentration greater than the MRL in one sample from Basin 43 (FO081410). The lower LCS/DLCS recoveries for benzoic acid may indicate a low bias for this analyte.



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



Date: 11/20/08
Page: 1 of 1
Collected By: KCB/PHH

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

PCB Congeners (All 209)
PAH + Phthalates (TA)
SVOC's (CAS)
TSS

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)
Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO 081408

SW-43-ABC290-1108
N ALBINA & RIVER

43_SW1

11/20/08

0932

G1

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• • • • •

9.5

49

7.4

FO 081409

SW-43-ABC539-1108
N KERBY & WHEELER

43_SW2

11/20/08

0854

G1

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8.9

23

6.4

FO 081410

SW-43-ABC552-1108
N WHEELER PL & KERBY

43_SW3

11/20/08

0911

G1

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11.4

132

7.4

FO 081411

SW-44-ABC352-1108
N HARDING & RIVER

44_SW1

11/20/08

0941

G1

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9.4

48

7.6

FO 081412

SW-44A-ABC311-1108
N LARABEE & RANDOLPH

44A_SW1

11/20/08

0956

G1

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10.7

43

7.0

FO 081413

FIELD DECON BLANK

FDB

11/20/08

1006

G1

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• • • • •

FO 081414

DUPLICATE

DUP

11/20/08

G1

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• • • • •

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Received By: 1

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Relinquished By: 2

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Received By: 2

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Relinquished By: 3

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Received By: 3

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Relinquished By: 4

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08

Received By: 4

Signature: *[Signature]*

Time: 11/32

Printed Name: *[Signature]*

Date: 11/20/08



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: FO081408

Sample Collected: 11/20/08 09:32
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1108
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM10904
EID File # : 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	49	µmhos/cm	1	SM 2510 B	11/20/08
pH (FIELD)	7.4	pH Units	0.1	SM 4500-H B	11/20/08
TEMPERATURE	9.5	Deg. C	0.1	SM 2550 B	11/20/08
GENERAL					
TOTAL SUSPENDED SOLIDS	28	mg/L	2	SM 2540 D	11/20/08
METALS					
MERCURY	0.0089	µg/L	0.002	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.72	µg/L	0.1	EPA 200.8	11/24/08
CADMIUM	0.33	µg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	2.10	µg/L	0.4	EPA 200.8	11/24/08
COPPER	12.6	µg/L	0.2	EPA 200.8	11/24/08
LEAD	4.72	µg/L	0.1	EPA 200.8	11/24/08
NICKEL	1.85	µg/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	11/24/08
ZINC	78.2	µg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Acenaphthylene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Anthracene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	0.0129	µg/L	0.010	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	0.0122	µg/L	0.010	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	0.0151	µg/L	0.010	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	0.0257	µg/L	0.020	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	0.0105	µg/L	0.010	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	1.23	µg/L	1.00	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Chrysene	0.0324	µg/L	0.010	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	<0.0100	µg/L	0.010	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO081408

Sample Collected: 11/20/08 09:32
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1108
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AM10904
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Fluoranthene	0.0672	µg/L	0.020	EPA 8270M-SIM	11/21/08
Fluorene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	0.0114	µg/L	0.010	EPA 8270M-SIM	11/21/08
Naphthalene	0.0337	µg/L	0.020	EPA 8270M-SIM	11/21/08
Phenanthrene	0.0640	µg/L	0.020	EPA 8270M-SIM	11/21/08
Pyrene	0.0749	µg/L	0.020	EPA 8270M-SIM	11/21/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.23	µg/L	0.23	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.23	µg/L	0.23	EPA 8270	11/26/08
1,3-Dichlorobenzene	<0.23	µg/L	0.23	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.23	µg/L	0.23	EPA 8270	11/26/08
2,4,5-Trichlorophenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
2,4,6-Trichlorophenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
2,4-Dichlorophenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
2,4-Dimethylphenol	<4.5	µg/L	4.5	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.5	µg/L	4.5	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.23	µg/L	0.23	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.23	µg/L	0.23	EPA 8270	11/26/08
2-Chloronaphthalene	<0.23	µg/L	0.23	EPA 8270	11/26/08
2-Chlorophenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
2-Methylnaphthalene	<0.23	µg/L	0.23	EPA 8270	11/26/08
2-Methylphenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
2-Nitroaniline	<0.23	µg/L	0.23	EPA 8270	11/26/08
2-Nitrophenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.3	µg/L	2.3	EPA 8270	11/26/08
3-Nitroaniline	<1.2	µg/L	1.2	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.3	µg/L	2.3	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.23	µg/L	0.23	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
4-Chloroaniline	<0.23	µg/L	0.23	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By: 



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081408

Sample Collected: 11/20/08 09:32
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1108
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM10904
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
4-Chlorophenylphenyl ether	<0.23	µg/L	0.23	EPA 8270	11/26/08
4-Methylphenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
4-Nitroaniline	<1.2	µg/L	1.2	EPA 8270	11/26/08
4-Nitrophenol	<2.3	µg/L	2.3	EPA 8270	11/26/08
Acenaphthene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Acenaphthylene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Anthracene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Benzo(a)anthracene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Benzo(a)pyrene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Benzoic acid	<5.6	µg/L	5.6	EPA 8270	11/26/08
Benzyl alcohol	<0.56	µg/L	0.56	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.23	µg/L	0.23	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.23	µg/L	0.23	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.23	µg/L	0.23	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	1.9	µg/L	1.2	EPA 8270	11/26/08
Butyl benzyl phthalate	<0.23	µg/L	0.23	EPA 8270	11/26/08
Chrysene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Dibenzofuran	<0.23	µg/L	0.23	EPA 8270	11/26/08
Diethyl phthalate	<0.23	µg/L	0.23	EPA 8270	11/26/08
Dimethyl phthalate	<0.23	µg/L	0.23	EPA 8270	11/26/08
Di-n-butyl phthalate	<0.23	µg/L	0.23	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.23	µg/L	0.23	EPA 8270	11/26/08
Fluoranthene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Fluorene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Hexachlorobenzene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Hexachlorobutadiene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.2	µg/L	1.2	EPA 8270	11/26/08
Hexachloroethane	<0.23	µg/L	0.23	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Isophorone	<0.23	µg/L	0.23	EPA 8270	11/26/08
Naphthalene	<0.23	µg/L	0.23	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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: FO081408

Sample Collected: 11/20/08 09:32
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1108
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM10904
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Nitrobenzene	<0.23	µg/L	0.23	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.23	µg/L	0.23	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.23	µg/L	0.23	EPA 8270	11/26/08
Pentachlorophenol	<1.2	µg/L	1.2	EPA 8270	11/26/08
Phenanthrene	<0.23	µg/L	0.23	EPA 8270	11/26/08
Phenol	<0.56	µg/L	0.56	EPA 8270	11/26/08
Pyrene	<0.23	µg/L	0.23	EPA 8270	11/26/08

End of Report for Sample ID: FO081408



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: FO081409

Sample Collected: 11/20/08 08:54
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-1108
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM10905
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	23	µmhos/cm	1	SM 2510 B	11/20/08
pH (FIELD)	6.4	pH Units	0.1	SM 4500-H B	11/20/08
TEMPERATURE	8.9	Deg. C	0.1	SM 2550 B	11/20/08
GENERAL					
TOTAL SUSPENDED SOLIDS	28	mg/L	2	SM 2540 D	11/20/08
METALS					
MERCURY	0.010	µg/L	0.002	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.41	µg/L	0.1	EPA 200.8	11/24/08
CADMIUM	39.9	µg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	3.40	µg/L	0.4	EPA 200.8	11/24/08
COPPER	19.7	µg/L	0.2	EPA 200.8	11/24/08
LEAD	9.89	µg/L	0.1	EPA 200.8	11/24/08
NICKEL	2.59	µg/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	11/24/08
ZINC	132	µg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Acenaphthylene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Anthracene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	0.0260	µg/L	0.010	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	0.0213	µg/L	0.010	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	0.0236	µg/L	0.010	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	0.0276	µg/L	0.020	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	0.0180	µg/L	0.010	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	1.35	µg/L	1.00	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Chrysene	0.0441	µg/L	0.010	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	<0.0100	µg/L	0.010	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09

Validated By:



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: FO081409

Sample Collected: 11/20/08 08:54

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 11/20/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 4

**Address/Location: SW-43-ABC539-1108
N KERBY & WHEELER**

System ID: AM10905

Sample Point Code: 43_SW2

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	11/21/08
Fluoranthene	0.0794	µg/L	0.020	EPA 8270M-SIM	11/21/08
Fluorene	<0.0200	µg/L	0.020	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	0.0141	µg/L	0.010	EPA 8270M-SIM	11/21/08
Naphthalene	0.390	µg/L	0.020	EPA 8270M-SIM	11/21/08
Phenanthrene	0.0607	µg/L	0.020	EPA 8270M-SIM	11/21/08
Pyrene	0.0789	µg/L	0.020	EPA 8270M-SIM	11/21/08

SEMI-VOLATILE ORGANICS - CAS

1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	11/26/08
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	11/26/08
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	11/26/08
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	11/26/08
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	11/26/08
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	11/26/08
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	11/26/08
3-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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: FO081409

Sample Collected: 11/20/08 08:54
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-1108
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM10905
EID File # : 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	11/26/08
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
4-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	11/26/08
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	11/26/08
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Anthracene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	11/26/08
Benzyl alcohol	<0.50	µg/L	0.50	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	2.4	µg/L	1.0	EPA 8270	11/26/08
Butyl benzyl phthalate	0.35	µg/L	0.20	EPA 8270	11/26/08
Chrysene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	11/26/08
Diethyl phthalate	<0.20	µg/L	0.20	EPA 8270	11/26/08
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	11/26/08
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	11/26/08
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Fluorene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.0	µg/L	1.0	EPA 8270	11/26/08
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Isophorone	<0.20	µg/L	0.20	EPA 8270	11/26/08
Naphthalene	<0.20	µg/L	0.20	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO081409

Sample Collected: 11/20/08 08:54
Sample Received: 11/20/08

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-1108
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM10905
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	11/26/08
Pentachlorophenol	<1.0	µg/L	1.0	EPA 8270	11/26/08
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	11/26/08
Phenol	<0.50	µg/L	0.50	EPA 8270	11/26/08
Pyrene	<0.20	µg/L	0.20	EPA 8270	11/26/08

End of Report for Sample ID: FO081409

Report Date: 01/02/09

Validated By: 



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081410

Sample Collected: 11/20/08 09:11
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1108
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM10906
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	132	µmhos/cm	1	SM 2510 B	11/20/08
pH (FIELD)	7.4	pH Units	0.1	SM 4500-H B	11/20/08
TEMPERATURE	11.4	Deg. C	0.1	SM 2550 B	11/20/08
GENERAL					
TOTAL SUSPENDED SOLIDS	154	mg/L	2	SM 2540 D	11/20/08
METALS					
MERCURY	0.087	µg/L	0.006	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.86	µg/L	0.1	EPA 200.8	11/24/08
CADMIUM	0.25	µg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	2.51	µg/L	0.4	EPA 200.8	11/24/08
COPPER	33.2	µg/L	0.2	EPA 200.8	11/24/08
LEAD	16.2	µg/L	0.1	EPA 200.8	11/24/08
NICKEL	3.41	µg/L	0.2	EPA 200.8	11/24/08
SILVER	0.19	µg/L	0.1	EPA 200.8	11/24/08
ZINC	217	µg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Acenaphthylene	0.0464	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Anthracene	0.0917	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	0.0571	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	0.0448	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	0.0312	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	0.0259	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	0.0312	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	1.20	µg/L	0.971	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Chrysene	0.0507	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	0.0101	µg/L	0.00971	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09

Validated By:



LABORATORY ANALYSIS REPORT

Sample ID: **FO081410**

Sample Collected: 11/20/08 09:11
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1108
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AM10906
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Diethyl phthalate	1.14	µg/L	0.971	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Fluoranthene	<0.621	µg/L	0.621	EPA 8270M-SIM	11/21/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	0.0293	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Naphthalene	0.0573	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Phenanthrene	0.121	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Pyrene	0.0959	µg/L	0.0194	EPA 8270M-SIM	11/21/08

SEMI-VOLATILE ORGANICS - CAS

1,2,4-Trichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2,4,5-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4,6-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4-Dichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4-Dimethylphenol	<4.2	µg/L	4.2	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.2	µg/L	4.2	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Chloronaphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Chlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2-Methylnaphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2-Nitroaniline	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Nitrophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	11/26/08
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.1	µg/L	2.1	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
4-Chloroaniline	<0.21	µg/L	0.21	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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: **FO081410**

Sample Collected: 11/20/08 09:11
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1108
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM10906
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
4-Chlorophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Methylphenol	2.6	µg/L	0.53	EPA 8270	11/26/08
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4-Nitrophenol	<2.1	µg/L	2.1	EPA 8270	11/26/08
Acenaphthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Acenaphthylene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(a)pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzoic acid	7.3	µg/L	5.3	EPA 8270	11/26/08
Benzyl alcohol	9.4	µg/L	0.53	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	2.0	µg/L	1.1	EPA 8270	11/26/08
Butyl benzyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Chrysene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dibenzofuran	<0.21	µg/L	0.21	EPA 8270	11/26/08
Diethyl phthalate	1.2	µg/L	0.21	EPA 8270	11/26/08
Dimethyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Di-n-butyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Fluorene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorobutadiene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	11/26/08
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Isophorone	<0.21	µg/L	0.21	EPA 8270	11/26/08
Naphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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: FO081410

Sample Collected: 11/20/08 09:11

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 11/20/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 4 of 4

Address/Location: SW-43-ABC552-1108

N WHEELER AVE & WHEELER PL

Sample Point Code: 43_SW3

System ID: AM10906

Sample Type: GRAB

EID File #: 1020.005

Sample Matrix: STORMWTR

LocCode: PORTHASW

Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.21	µg/L	0.21	EPA 8270	11/26/08
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	11/26/08
Phenanthrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Phenol	1.3	µg/L	0.53	EPA 8270	11/26/08
Pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08

End of Report for Sample ID: FO081410

Report Date: 01/02/09

Validated By:



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO081414**

Sample Collected: 11/20/08 00:00
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 1 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM10910
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SUSPENDED SOLIDS	30	mg/L	2	SM 2540 D	11/20/08
METALS					
MERCURY	0.0082	µg/L	0.002	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.30	µg/L	0.1	EPA 200.8	11/24/08
CADMIUM	41.0	µg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	3.18	µg/L	0.4	EPA 200.8	11/24/08
COPPER	19.7	µg/L	0.2	EPA 200.8	11/24/08
LEAD	9.93	µg/L	0.1	EPA 200.8	11/24/08
NICKEL	2.55	µg/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	11/24/08
ZINC	137	µg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0196	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Acenaphthylene	<0.0196	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Anthracene	<0.0196	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	0.0409	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	0.0358	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	0.0403	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	0.0453	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	0.0268	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	2.23	µg/L	0.980	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<0.980	µg/L	0.980	EPA 8270M-SIM	11/21/08
Chrysene	0.0671	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	<0.00980	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Diethyl phthalate	<0.980	µg/L	0.980	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	<0.980	µg/L	0.980	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	<0.980	µg/L	0.980	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	<0.980	µg/L	0.980	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09

Validated By:



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: **FO081414**

Sample Collected: 11/20/08 00:00
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 2 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM10910
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluoranthene	0.116	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Fluorene	<0.0196	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	0.0233	µg/L	0.00980	EPA 8270M-SIM	11/21/08
Naphthalene	0.218	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Phenanthrene	0.0767	µg/L	0.0196	EPA 8270M-SIM	11/21/08
Pyrene	0.109	µg/L	0.0196	EPA 8270M-SIM	11/21/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2,4,5-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4,6-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4-Dichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4-Dimethylphenol	<4.2	µg/L	4.2	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.2	µg/L	4.2	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Chloronaphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Chlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2-Methylnaphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2-Nitroaniline	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Nitrophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	11/26/08
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.1	µg/L	2.1	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
4-Chloroaniline	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Chlorophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4-Nitrophenol	<2.1	µg/L	2.1	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By: 



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: **FO081414**

Sample Collected: 11/20/08 00:00
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 3 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM10910
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Acenaphthylene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(a)pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzoic acid	<5.3	µg/L	5.3	EPA 8270	11/26/08
Benzyl alcohol	<0.53	µg/L	0.53	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	2.0	µg/L	1.1	EPA 8270	11/26/08
Butyl benzyl phthalate	0.34	µg/L	0.21	EPA 8270	11/26/08
Chrysene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dibenzofuran	<0.21	µg/L	0.21	EPA 8270	11/26/08
Diethyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dimethyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Di-n-butyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Fluorene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorobutadiene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	11/26/08
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Isophorone	<0.21	µg/L	0.21	EPA 8270	11/26/08
Naphthalene	0.46	µg/L	0.21	EPA 8270	11/26/08
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.21	µg/L	0.21	EPA 8270	11/26/08
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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: FO081414

Sample Collected: 11/20/08 00:00
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 4 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM10910
EID File # : 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Phenanthrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Phenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
Pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08

End of Report for Sample ID: FO081414

Report Date: 01/02/09

Validated By:

December 15, 2008

Analytical Report for Service Request No: K0811464

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: Portland Harbor Stormwater

Dear Jennifer:

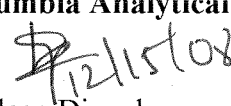
Enclosed are the results of the samples submitted to our laboratory on November 21, 2008. For your reference, these analyses have been assigned our service request number K0811464.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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 PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/lb

Page 1 of 37

cc: Peter Abrams, City of Portland

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)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request No.: K0811464
Date Received: 11/21/2008

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 II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Seven water samples were received for analysis at Columbia Analytical Services on 11/21/2008. 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.

Semivolatile Organic Compounds by EPA Method 8270C LL

Lab Control Sample Exceptions:

The spike recovery of Pentachlorophenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG0812669-1 and KWG0812669-2 was outside the lower control criterion. The analyte in question was not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. Additional analysis of the associated field samples could not be performed because insufficient sample remained for testing. The data is flagged to indicate the problem. No further corrective action was taken.

The advisory criterion was exceeded for Benzoic Acid in the replicate Laboratory Control Samples (LCS/DLCS) KWG0812669-1 and KWG0812669-2. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, this compound is not included in the subset of analytes used to control the analysis. The recovery information reported for this analyte is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

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  Date 

Chain of Custody Documentation

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request K08 11464
 Received: 11/21/08 Opened: 11/21/08 By: [Signature]

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): 1-1
 Temperature Blank (°C): NP
6. If applicable, list Chain of Custody Numbers: _____
7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
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.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate in the table below* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles tested* received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials and 1631 Mercury bottles received without headspace? *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

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: _____

Semi-Volatile Organic Compounds EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081408
Lab Code: K0811464-001
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.23	0.039	1	11/26/08	12/08/08	KWG0812669	
Phenol	0.27	J	0.56	0.070	1	11/26/08	12/08/08	KWG0812669	
2-Chlorophenol	ND	U	0.56	0.060	1	11/26/08	12/08/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.23	0.024	1	11/26/08	12/08/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.23	0.033	1	11/26/08	12/08/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.23	0.025	1	11/26/08	12/08/08	KWG0812669	
Benzyl Alcohol	0.33	J	0.56	0.082	1	11/26/08	12/08/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.23	0.029	1	11/26/08	12/08/08	KWG0812669	
2-Methylphenol	ND	U	0.56	0.13	1	11/26/08	12/08/08	KWG0812669	
Hexachloroethane	ND	U	0.23	0.027	1	11/26/08	12/08/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.23	0.042	1	11/26/08	12/08/08	KWG0812669	
4-Methylphenol†	ND	U	0.56	0.14	1	11/26/08	12/08/08	KWG0812669	
Nitrobenzene	ND	U	0.23	0.032	1	11/26/08	12/08/08	KWG0812669	
Isophorone	ND	U	0.23	0.018	1	11/26/08	12/08/08	KWG0812669	
2-Nitrophenol	ND	U	0.56	0.070	1	11/26/08	12/08/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.5	2.5	1	11/26/08	12/08/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.23	0.027	1	11/26/08	12/08/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.56	0.053	1	11/26/08	12/08/08	KWG0812669	
Benzoic Acid	ND	U	5.6	1.3	1	11/26/08	12/08/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.23	0.018	1	11/26/08	12/08/08	KWG0812669	
Naphthalene	ND	U	0.23	0.025	1	11/26/08	12/08/08	KWG0812669	
4-Chloroaniline	ND	U	0.23	0.028	1	11/26/08	12/08/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.23	0.030	1	11/26/08	12/08/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.56	0.042	1	11/26/08	12/08/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.23	0.029	1	11/26/08	12/08/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.2	0.22	1	11/26/08	12/08/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.56	0.065	1	11/26/08	12/08/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.56	0.035	1	11/26/08	12/08/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.23	0.046	1	11/26/08	12/08/08	KWG0812669	
2-Nitroaniline	ND	U	0.23	0.027	1	11/26/08	12/08/08	KWG0812669	
Acenaphthylene	0.034	J	0.23	0.017	1	11/26/08	12/08/08	KWG0812669	
Dimethyl Phthalate	0.17	J	0.23	0.024	1	11/26/08	12/08/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.23	0.037	1	11/26/08	12/08/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081408
Lab Code: K0811464-001
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.23	0.029	1	11/26/08	12/08/08	KWG0812669	
3-Nitroaniline	ND	U	1.2	0.033	1	11/26/08	12/08/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.5	0.19	1	11/26/08	12/08/08	KWG0812669	
Dibenzofuran	ND	U	0.23	0.020	1	11/26/08	12/08/08	KWG0812669	
4-Nitrophenol	ND	U	2.3	0.32	1	11/26/08	12/08/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.23	0.020	1	11/26/08	12/08/08	KWG0812669	
Fluorene	ND	U	0.23	0.030	1	11/26/08	12/08/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.23	0.030	1	11/26/08	12/08/08	KWG0812669	
Diethyl Phthalate	0.11	J	0.23	0.014	1	11/26/08	12/08/08	KWG0812669	
4-Nitroaniline	ND	U	1.2	0.022	1	11/26/08	12/08/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.3	0.028	1	11/26/08	12/08/08	KWG0812669	
N-Nitrosodiphenylamine	0.069	J	0.23	0.054	1	11/26/08	12/08/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.23	0.029	1	11/26/08	12/08/08	KWG0812669	
Hexachlorobenzene	ND	U	0.23	0.025	1	11/26/08	12/08/08	KWG0812669	
Pentachlorophenol	0.61	J	1.2	0.38	1	11/26/08	12/08/08	KWG0812669	
Phenanthrene	0.079	J	0.23	0.025	1	11/26/08	12/08/08	KWG0812669	
Anthracene	ND	U	0.23	0.027	1	11/26/08	12/08/08	KWG0812669	
Di-n-butyl Phthalate	0.18	J	0.23	0.026	1	11/26/08	12/08/08	KWG0812669	
Fluoranthene	0.073	J	0.23	0.023	1	11/26/08	12/08/08	KWG0812669	
Pyrene	0.11	J	0.23	0.022	1	11/26/08	12/08/08	KWG0812669	
Butyl Benzyl Phthalate	0.13	J	0.23	0.020	1	11/26/08	12/08/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.3	0.48	1	11/26/08	12/08/08	KWG0812669	
Benz(a)anthracene	ND	U	0.23	0.020	1	11/26/08	12/08/08	KWG0812669	
Chrysene	ND	U	0.23	0.032	1	11/26/08	12/08/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	1.9		1.2	0.15	1	11/26/08	12/08/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.23	0.020	1	11/26/08	12/08/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.23	0.019	1	11/26/08	12/08/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.23	0.027	1	11/26/08	12/08/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.23	0.035	1	11/26/08	12/08/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.23	0.024	1	11/26/08	12/08/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.23	0.019	1	11/26/08	12/08/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.23	0.022	1	11/26/08	12/08/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081408
Lab Code: K0811464-001

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	64	21-119	12/08/08	Acceptable
Phenol-d6	65	31-121	12/08/08	Acceptable
Nitrobenzene-d5	63	29-121	12/08/08	Acceptable
2-Fluorobiphenyl	61	25-109	12/08/08	Acceptable
2,4,6-Tribromophenol	92	30-131	12/08/08	Acceptable
Terphenyl-d14	82	20-140	12/08/08	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 Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081409
Lab Code: K0811464-002
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	11/26/08	12/08/08	KWG0812669	
Phenol	0.13	J	0.50	0.063	1	11/26/08	12/08/08	KWG0812669	
2-Chlorophenol	ND	U	0.50	0.054	1	11/26/08	12/08/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	11/26/08	12/08/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	11/26/08	12/08/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	11/26/08	12/08/08	KWG0812669	
Benzyl Alcohol	0.30	J	0.50	0.073	1	11/26/08	12/08/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	11/26/08	12/08/08	KWG0812669	
2-Methylphenol	ND	U	0.50	0.11	1	11/26/08	12/08/08	KWG0812669	
Hexachloroethane	ND	U	0.20	0.024	1	11/26/08	12/08/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	11/26/08	12/08/08	KWG0812669	
4-Methylphenol†	ND	U	0.50	0.12	1	11/26/08	12/08/08	KWG0812669	
Nitrobenzene	ND	U	0.20	0.028	1	11/26/08	12/08/08	KWG0812669	
Isophorone	ND	U	0.20	0.016	1	11/26/08	12/08/08	KWG0812669	
2-Nitrophenol	ND	U	0.50	0.063	1	11/26/08	12/08/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	11/26/08	12/08/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	11/26/08	12/08/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	11/26/08	12/08/08	KWG0812669	
Benzoic Acid	1.1	J	5.0	1.1	1	11/26/08	12/08/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	11/26/08	12/08/08	KWG0812669	
Naphthalene	0.14	J	0.20	0.022	1	11/26/08	12/08/08	KWG0812669	
4-Chloroaniline	ND	U	0.20	0.025	1	11/26/08	12/08/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.20	0.027	1	11/26/08	12/08/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	11/26/08	12/08/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.20	0.026	1	11/26/08	12/08/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	11/26/08	12/08/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	11/26/08	12/08/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	11/26/08	12/08/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.20	0.041	1	11/26/08	12/08/08	KWG0812669	
2-Nitroaniline	ND	U	0.20	0.024	1	11/26/08	12/08/08	KWG0812669	
Acenaphthylene	ND	U	0.20	0.015	1	11/26/08	12/08/08	KWG0812669	
Dimethyl Phthalate	0.079	J	0.20	0.021	1	11/26/08	12/08/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	11/26/08	12/08/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081409
Lab Code: K0811464-002
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	11/26/08	12/08/08	KWG0812669	
3-Nitroaniline	ND	U	1.0	0.029	1	11/26/08	12/08/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	11/26/08	12/08/08	KWG0812669	
Dibenzofuran	0.12	J	0.20	0.018	1	11/26/08	12/08/08	KWG0812669	
4-Nitrophenol	0.67	J	2.0	0.28	1	11/26/08	12/08/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	11/26/08	12/08/08	KWG0812669	
Fluorene	ND	U	0.20	0.027	1	11/26/08	12/08/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	11/26/08	12/08/08	KWG0812669	
Diethyl Phthalate	0.093	J	0.20	0.012	1	11/26/08	12/08/08	KWG0812669	
4-Nitroaniline	ND	U	1.0	0.019	1	11/26/08	12/08/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	11/26/08	12/08/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	11/26/08	12/08/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	11/26/08	12/08/08	KWG0812669	
Hexachlorobenzene	ND	U	0.20	0.022	1	11/26/08	12/08/08	KWG0812669	
Pentachlorophenol	0.42	J	1.0	0.34	1	11/26/08	12/08/08	KWG0812669	
Phenanthrene	0.11	J	0.20	0.022	1	11/26/08	12/08/08	KWG0812669	
Anthracene	ND	U	0.20	0.024	1	11/26/08	12/08/08	KWG0812669	
Di-n-butyl Phthalate	0.19	J	0.20	0.023	1	11/26/08	12/08/08	KWG0812669	
Fluoranthene	0.14	J	0.20	0.020	1	11/26/08	12/08/08	KWG0812669	
Pyrene	0.17	J	0.20	0.019	1	11/26/08	12/08/08	KWG0812669	
Butyl Benzyl Phthalate	0.35		0.20	0.018	1	11/26/08	12/08/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	11/26/08	12/08/08	KWG0812669	
Benz(a)anthracene	0.076	J	0.20	0.018	1	11/26/08	12/08/08	KWG0812669	
Chrysene	0.10	J	0.20	0.028	1	11/26/08	12/08/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	2.4		1.0	0.13	1	11/26/08	12/08/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	11/26/08	12/08/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	11/26/08	12/08/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	11/26/08	12/08/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.20	0.031	1	11/26/08	12/08/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	11/26/08	12/08/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	11/26/08	12/08/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	11/26/08	12/08/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081409
Lab Code: K0811464-002

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	69	21-119	12/08/08	Acceptable
Phenol-d6	68	31-121	12/08/08	Acceptable
Nitrobenzene-d5	65	29-121	12/08/08	Acceptable
2-Fluorobiphenyl	63	25-109	12/08/08	Acceptable
2,4,6-Tribromophenol	95	30-131	12/08/08	Acceptable
Terphenyl-d14	86	20-140	12/08/08	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 Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081410
Lab Code: K0811464-003
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.037	1	11/26/08	12/09/08	KWG0812669	
Phenol	1.3		0.53	0.066	1	11/26/08	12/09/08	KWG0812669	
2-Chlorophenol	ND	U	0.53	0.057	1	11/26/08	12/09/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
1,4-Dichlorobenzene	0.14	J	0.21	0.031	1	11/26/08	12/09/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Benzyl Alcohol	9.4		0.53	0.077	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
2-Methylphenol	0.34	J	0.53	0.12	1	11/26/08	12/09/08	KWG0812669	
Hexachloroethane	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.039	1	11/26/08	12/09/08	KWG0812669	
4-Methylphenol†	2.6		0.53	0.13	1	11/26/08	12/09/08	KWG0812669	
Nitrobenzene	ND	U	0.21	0.030	1	11/26/08	12/09/08	KWG0812669	
Isophorone	ND	U	0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
2-Nitrophenol	ND	U	0.53	0.066	1	11/26/08	12/09/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.2	2.3	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.53	0.049	1	11/26/08	12/09/08	KWG0812669	
Benzoic Acid	7.3		5.3	1.2	1	11/26/08	12/09/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
Naphthalene	0.056	J	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
4-Chloroaniline	ND	U	0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.53	0.039	1	11/26/08	12/09/08	KWG0812669	
2-Methylnaphthalene	0.054	J	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	11/26/08	12/09/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.53	0.061	1	11/26/08	12/09/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.53	0.033	1	11/26/08	12/09/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.21	0.043	1	11/26/08	12/09/08	KWG0812669	
2-Nitroaniline	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Acenaphthylene	0.13	J	0.21	0.016	1	11/26/08	12/09/08	KWG0812669	
Dimethyl Phthalate	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.21	0.035	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081410
Lab Code: K0811464-003

Units: ug/L

Basis: NA

Extraction Method: EPA 3520C

Level: Low

Analysis Method: 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
3-Nitroaniline	ND	U	1.1	0.031	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.2	0.18	1	11/26/08	12/09/08	KWG0812669	
Dibenzofuran	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
4-Nitrophenol	ND	U	2.1	0.30	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Fluorene	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
Diethyl Phthalate	1.2		0.21	0.013	1	11/26/08	12/09/08	KWG0812669	
4-Nitroaniline	ND	U	1.1	0.020	1	11/26/08	12/09/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.1	0.027	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.21	0.050	1	11/26/08	12/09/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobenzene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Pentachlorophenol	ND	U	1.1	0.36	1	11/26/08	12/09/08	KWG0812669	
Phenanthrene	0.057	J	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Anthracene	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Di-n-butyl Phthalate	0.17	J	0.21	0.024	1	11/26/08	12/09/08	KWG0812669	
Fluoranthene	0.042	J	0.21	0.021	1	11/26/08	12/09/08	KWG0812669	
Pyrene	0.068	J	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	
Butyl Benzyl Phthalate	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.1	0.45	1	11/26/08	12/09/08	KWG0812669	
Benz(a)anthracene	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Chrysene	ND	U	0.21	0.030	1	11/26/08	12/09/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	2.0		1.1	0.14	1	11/26/08	12/09/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.21	0.033	1	11/26/08	12/09/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081410
Lab Code: K0811464-003

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	75	21-119	12/09/08	Acceptable
Phenol-d6	75	31-121	12/09/08	Acceptable
Nitrobenzene-d5	80	29-121	12/09/08	Acceptable
2-Fluorobiphenyl	54	25-109	12/09/08	Acceptable
2,4,6-Tribromophenol	90	30-131	12/09/08	Acceptable
Terphenyl-d14	48	20-140	12/09/08	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 Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081414
Lab Code: K0811464-007
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.037	1	11/26/08	12/09/08	KWG0812669	
Phenol	0.12	J	0.53	0.066	1	11/26/08	12/09/08	KWG0812669	
2-Chlorophenol	ND	U	0.53	0.057	1	11/26/08	12/09/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.21	0.031	1	11/26/08	12/09/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Benzyl Alcohol	0.27	J	0.53	0.077	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
2-Methylphenol	ND	U	0.53	0.12	1	11/26/08	12/09/08	KWG0812669	
Hexachloroethane	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.039	1	11/26/08	12/09/08	KWG0812669	
4-Methylphenol†	ND	U	0.53	0.13	1	11/26/08	12/09/08	KWG0812669	
Nitrobenzene	ND	U	0.21	0.030	1	11/26/08	12/09/08	KWG0812669	
Isophorone	ND	U	0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
2-Nitrophenol	0.096	J	0.53	0.066	1	11/26/08	12/09/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.2	2.3	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.53	0.049	1	11/26/08	12/09/08	KWG0812669	
Benzoic Acid	ND	U	5.3	1.2	1	11/26/08	12/09/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
Naphthalene	0.46		0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
4-Chloroaniline	ND	U	0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.53	0.039	1	11/26/08	12/09/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	11/26/08	12/09/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.53	0.061	1	11/26/08	12/09/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.53	0.033	1	11/26/08	12/09/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.21	0.043	1	11/26/08	12/09/08	KWG0812669	
2-Nitroaniline	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Acenaphthylene	ND	U	0.21	0.016	1	11/26/08	12/09/08	KWG0812669	
Dimethyl Phthalate	0.085	J	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.21	0.035	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081414
Lab Code: K0811464-007

Units: ug/L

Basis: NA

Extraction Method: EPA 3520C

Level: Low

Analysis Method: 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
3-Nitroaniline	ND	U	1.1	0.031	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.2	0.18	1	11/26/08	12/09/08	KWG0812669	
Dibenzofuran	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
4-Nitrophenol	ND	U	2.1	0.30	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Fluorene	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
Diethyl Phthalate	0.088	J	0.21	0.013	1	11/26/08	12/09/08	KWG0812669	
4-Nitroaniline	ND	U	1.1	0.020	1	11/26/08	12/09/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.1	0.027	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.21	0.050	1	11/26/08	12/09/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobenzene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Pentachlorophenol	0.40	J	1.1	0.36	1	11/26/08	12/09/08	KWG0812669	
Phenanthrene	0.062	J	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Anthracene	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Di-n-butyl Phthalate	0.15	J	0.21	0.024	1	11/26/08	12/09/08	KWG0812669	
Fluoranthene	0.11	J	0.21	0.021	1	11/26/08	12/09/08	KWG0812669	
Pyrene	0.11	J	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	
Butyl Benzyl Phthalate	0.34		0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.1	0.45	1	11/26/08	12/09/08	KWG0812669	
Benz(a)anthracene	0.036	J	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Chrysene	0.058	J	0.21	0.030	1	11/26/08	12/09/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	2.0		1.1	0.14	1	11/26/08	12/09/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.21	0.033	1	11/26/08	12/09/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(g,h,i)perylene	0.052	J	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081414
Lab Code: K0811464-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	67	21-119	12/09/08	Acceptable
Phenol-d6	68	31-121	12/09/08	Acceptable
Nitrobenzene-d5	65	29-121	12/09/08	Acceptable
2-Fluorobiphenyl	66	25-109	12/09/08	Acceptable
2,4,6-Tribromophenol	95	30-131	12/09/08	Acceptable
Terphenyl-d14	76	20-140	12/09/08	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 Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0812669-3
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	11/26/08	12/05/08	KWG0812669	
Phenol	0.27	J	0.50	0.063	1	11/26/08	12/05/08	KWG0812669	
2-Chlorophenol	ND	U	0.50	0.054	1	11/26/08	12/05/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	11/26/08	12/05/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	11/26/08	12/05/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
Benzyl Alcohol	ND	U	0.50	0.073	1	11/26/08	12/05/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
2-Methylphenol	ND	U	0.50	0.11	1	11/26/08	12/05/08	KWG0812669	
Hexachloroethane	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	11/26/08	12/05/08	KWG0812669	
4-Methylphenol†	ND	U	0.50	0.12	1	11/26/08	12/05/08	KWG0812669	
Nitrobenzene	ND	U	0.20	0.028	1	11/26/08	12/05/08	KWG0812669	
Isophorone	ND	U	0.20	0.016	1	11/26/08	12/05/08	KWG0812669	
2-Nitrophenol	ND	U	0.50	0.063	1	11/26/08	12/05/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	11/26/08	12/05/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	11/26/08	12/05/08	KWG0812669	
Benzoic Acid	ND	U	5.0	1.1	1	11/26/08	12/05/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	11/26/08	12/05/08	KWG0812669	
Naphthalene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
4-Chloroaniline	ND	U	0.20	0.025	1	11/26/08	12/05/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.20	0.027	1	11/26/08	12/05/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	11/26/08	12/05/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	11/26/08	12/05/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	11/26/08	12/05/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	11/26/08	12/05/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.20	0.041	1	11/26/08	12/05/08	KWG0812669	
2-Nitroaniline	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
Acenaphthylene	ND	U	0.20	0.015	1	11/26/08	12/05/08	KWG0812669	
Dimethyl Phthalate	0.023	J	0.20	0.021	1	11/26/08	12/05/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	11/26/08	12/05/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0812669-3
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
3-Nitroaniline	ND	U	1.0	0.029	1	11/26/08	12/05/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	11/26/08	12/05/08	KWG0812669	
Dibenzofuran	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
4-Nitrophenol	ND	U	2.0	0.28	1	11/26/08	12/05/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
Fluorene	ND	U	0.20	0.027	1	11/26/08	12/05/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	11/26/08	12/05/08	KWG0812669	
Diethyl Phthalate	0.022	J	0.20	0.012	1	11/26/08	12/05/08	KWG0812669	
4-Nitroaniline	ND	U	1.0	0.019	1	11/26/08	12/05/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	11/26/08	12/05/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	11/26/08	12/05/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
Hexachlorobenzene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
Pentachlorophenol	ND	U	1.0	0.34	1	11/26/08	12/05/08	KWG0812669	
Phenanthrene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
Anthracene	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
Di-n-butyl Phthalate	0.10	J	0.20	0.023	1	11/26/08	12/05/08	KWG0812669	
Fluoranthene	ND	U	0.20	0.020	1	11/26/08	12/05/08	KWG0812669	
Pyrene	ND	U	0.20	0.019	1	11/26/08	12/05/08	KWG0812669	
Butyl Benzyl Phthalate	0.061	J	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	11/26/08	12/05/08	KWG0812669	
Benz(a)anthracene	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
Chrysene	ND	U	0.20	0.028	1	11/26/08	12/05/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	0.15	J	1.0	0.13	1	11/26/08	12/05/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	11/26/08	12/05/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.20	0.031	1	11/26/08	12/05/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	11/26/08	12/05/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	11/26/08	12/05/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	11/26/08	12/05/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0812669-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	82	21-119	12/05/08	Acceptable
Phenol-d6	79	31-121	12/05/08	Acceptable
Nitrobenzene-d5	81	29-121	12/05/08	Acceptable
2-Fluorobiphenyl	74	25-109	12/05/08	Acceptable
2,4,6-Tribromophenol	88	30-131	12/05/08	Acceptable
Terphenyl-d14	98	20-140	12/05/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 081408	K0811464-001	64	65	63	61	92	82
FO 081409	K0811464-002	69	68	65	63	95	86
FO 081410	K0811464-003	75	75	80	54	90	48
FO 081411	K0811464-004	61	60	58	60	89	74
FO 081412	K0811464-005	68	72	70	69	89	60
FO 081413	K0811464-006	79	78	80	73	90	101
FO 081414	K0811464-007	67	68	65	66	95	76
Method Blank	KWG0812669-3	82	79	81	74	88	98
Lab Control Sample	KWG0812669-1	83	82	81	75	97	99
Duplicate Lab Control Sample	KWG0812669-2	75	72	74	68	90	95

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Extracted: 11/26/2008
Date Analyzed: 12/05/2008

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0812669

Analyte Name	Lab Control Sample KWG0812669-1 Lab Control Spike			Duplicate Lab Control Sample KWG0812669-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	4.60	5.00	92	3.68	5.00	74	39-115	22	30
Phenol	4.66	5.00	93	3.82	5.00	76	39-117	20	30
2-Chlorophenol	4.58	5.00	92	3.75	5.00	75	40-113	20	30
1,3-Dichlorobenzene	1.83	5.00	37	1.51	5.00	30	18-71	20	30
1,4-Dichlorobenzene	2.04	5.00	41	1.65	5.00	33	19-73	21	30
1,2-Dichlorobenzene	2.17	5.00	43	1.80	5.00	36	22-78	19	30
Benzyl Alcohol	4.34	5.00	87	3.65	5.00	73	37-119	17	30
Bis(2-chloroisopropyl) Ether	4.03	5.00	81	3.29	5.00	66	35-113	20	30
2-Methylphenol	4.37	5.00	87	3.76	5.00	75	26-113	15	30
Hexachloroethane	1.42	5.00	28	1.13	5.00	23	11-62	23	30
N-Nitrosodi-n-propylamine	4.22	5.00	84	3.55	5.00	71	32-117	17	30
4-Methylphenol	4.04	5.00	81	3.53	5.00	71	25-118	13	30
Nitrobenzene	4.24	5.00	85	3.55	5.00	71	37-116	18	30
Isophorone	4.74	5.00	95	3.84	5.00	77	39-112	21	30
2-Nitrophenol	4.83	5.00	97	3.70	5.00	74	42-116	27	30
2,4-Dimethylphenol	3.99	5.00	80	3.96	5.00	79	10-113	1	30
Bis(2-chloroethoxy)methane	4.76	5.00	95	3.80	5.00	76	40-113	22	30
2,4-Dichlorophenol	4.74	5.00	95	3.89	5.00	78	39-115	20	30
Benzoic Acid	ND	15.0	0 *	0.664	15.0	4 *	10-102		30
1,2,4-Trichlorobenzene	2.45	5.00	49	1.89	5.00	38	21-78	26	30
Naphthalene	3.47	5.00	69	2.79	5.00	56	33-98	22	30
4-Chloroaniline	4.34	5.00	87	3.78	5.00	76	10-119	14	30
Hexachlorobutadiene	1.45	5.00	29	1.11	5.00	22	10-61	27	30
4-Chloro-3-methylphenol	4.73	5.00	95	3.82	5.00	76	37-119	21	30
2-Methylnaphthalene	3.33	5.00	67	2.63	5.00	53	32-95	23	30
Hexachlorocyclopentadiene	0.776	5.00	16	0.717	5.00	14	10-39	8	30
2,4,6-Trichlorophenol	4.86	5.00	97	4.21	5.00	84	40-117	14	30
2,4,5-Trichlorophenol	4.80	5.00	96	4.10	5.00	82	44-116	16	30
2-Chloronaphthalene	3.42	5.00	68	2.83	5.00	57	21-115	19	30
2-Nitroaniline	4.74	5.00	95	3.82	5.00	76	43-124	22	30
Acenaphthylene	4.25	5.00	85	3.46	5.00	69	41-114	21	30
Dimethyl Phthalate	4.97	5.00	99	4.12	5.00	82	47-117	19	30
2,6-Dinitrotoluene	4.94	5.00	99	4.05	5.00	81	45-120	20	30
Acenaphthene	4.04	5.00	81	3.37	5.00	67	38-106	18	30
3-Nitroaniline	4.86	5.00	97	4.11	5.00	82	31-125	17	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Extracted: 11/26/2008
Date Analyzed: 12/05/2008

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0812669

Analyte Name	Lab Control Sample KWG0812669-1 Lab Control Spike			Duplicate Lab Control Sample KWG0812669-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	1.10	5.00	22	1.21	5.00	24	10-121	9	30
Dibenzofuran	4.25	5.00	85	3.51	5.00	70	40-107	19	30
4-Nitrophenol	4.54	5.00	91	3.81	5.00	76	43-133	18	30
2,4-Dinitrotoluene	4.99	5.00	100	4.25	5.00	85	47-125	16	30
Fluorene	4.38	5.00	88	3.60	5.00	72	40-112	19	30
4-Chlorophenyl Phenyl Ether	4.06	5.00	81	3.35	5.00	67	39-108	19	30
Diethyl Phthalate	4.83	5.00	97	4.59	5.00	92	47-120	5	30
4-Nitroaniline	4.81	5.00	96	4.27	5.00	85	36-128	12	30
2-Methyl-4,6-dinitrophenol	1.01	5.00	20	1.16	5.00	23	19-127	14	30
N-Nitrosodiphenylamine	4.80	5.00	96	4.03	5.00	81	36-114	17	30
4-Bromophenyl Phenyl Ether	4.41	5.00	88	3.52	5.00	70	43-110	22	30
Hexachlorobenzene	4.37	5.00	87	3.45	5.00	69	42-107	24	30
Pentachlorophenol	1.19	5.00	24 *	1.29	5.00	26 *	28-114	8	30
Phenanthrene	4.50	5.00	90	3.70	5.00	74	43-110	20	30
Anthracene	4.29	5.00	86	3.47	5.00	69	40-110	21	30
Di-n-butyl Phthalate	4.72	5.00	94	4.01	5.00	80	45-135	16	30
Fluoranthene	4.64	5.00	93	3.85	5.00	77	42-119	19	30
Pyrene	4.36	5.00	87	3.69	5.00	74	43-118	17	30
Butyl Benzyl Phthalate	4.62	5.00	92	3.96	5.00	79	48-124	15	30
3,3'-Dichlorobenzidine	2.78	5.00	56	2.53	5.00	51	15-108	9	30
Benz(a)anthracene	4.45	5.00	89	3.76	5.00	75	45-112	17	30
Chrysene	4.44	5.00	89	3.80	5.00	76	47-112	16	30
Bis(2-ethylhexyl) Phthalate	4.89	5.00	98	4.09	5.00	82	32-149	18	30
Di-n-octyl Phthalate	4.73	5.00	95	4.09	5.00	82	49-127	14	30
Benzo(b)fluoranthene	4.51	5.00	90	3.71	5.00	74	45-115	20	30
Benzo(k)fluoranthene	4.56	5.00	91	3.77	5.00	75	46-115	19	30
Benzo(a)pyrene	4.44	5.00	89	3.68	5.00	74	40-117	19	30
Indeno(1,2,3-cd)pyrene	4.61	5.00	92	3.84	5.00	77	44-119	18	30
Dibenz(a,h)anthracene	4.52	5.00	90	3.79	5.00	76	45-118	18	30
Benzo(g,h,i)perylene	4.69	5.00	94	3.95	5.00	79	45-116	17	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

December 12, 2008

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 11/20/08 18:10.
The following list is a summary of the Work Orders contained in this report, generated on 12/12/08 15:28.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PRK0762	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

12/12/08 15:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO081408	PRK0762-01	Water	11/20/08 09:32	11/20/08 18:10
FO081409	PRK0762-02	Water	11/20/08 08:54	11/20/08 18:10
FO081410	PRK0762-03	Water	11/20/08 09:11	11/20/08 18:10
FO081411	PRK0762-04	Water	11/20/08 09:41	11/20/08 18:10
FO081412	PRK0762-05	Water	11/20/08 09:56	11/20/08 18:10
FO081413	PRK0762-06	Water	11/20/08 10:06	11/20/08 18:10
FO081414	PRK0762-07	Water	11/20/08 00:00	11/20/08 18:10

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-01 (FO081408)		Water				Sampled: 11/20/08 09:32				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.23	0.526	1.00	ug/l	1x	8110790	11/21/08 17:50	11/25/08 23:12	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	"	"	11/25/08 16:06	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	"	"	"	
Anthracene	"	ND	0.0200	0.0200	"	"	"	"	"	
Benzo (a) anthracene	"	0.0129	0.0100	0.0100	"	"	"	"	"	
Benzo (a) pyrene	"	0.0122	0.0100	0.0100	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0151	0.0100	0.0100	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0257	0.0200	0.0200	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0105	0.0100	0.0100	"	"	"	"	"	
Chrysene	"	0.0324	0.0100	0.0100	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	"	"	"	
Fluoranthene	"	0.0672	0.0200	0.0200	"	"	"	"	"	
Fluorene	"	ND	0.0200	0.0200	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0114	0.0100	0.0100	"	"	"	"	"	
Naphthalene	"	0.0337	0.0200	0.0200	"	"	"	"	"	
Phenanthrene	"	0.0640	0.0200	0.0200	"	"	"	"	"	
Pyrene	"	0.0749	0.0200	0.0200	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10			81.4%			25 - 125 %	"			"
Pyrene-d10			81.9%			23 - 150 %	"			"
Benzo (a) pyrene-d12			66.0%			10 - 125 %	"			"

PRK0762-02 (FO081409)

		Water				Sampled: 11/20/08 08:54				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.35	0.526	1.00	ug/l	1x	8110790	11/21/08 17:50	11/25/08 23:42	
Butyl benzyl phthalate	"	0.632	0.526	1.00	"	"	"	"	"	J
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	"	"	11/25/08 16:36	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	"	"	"	
Anthracene	"	ND	0.0200	0.0200	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-02 (FO081409)		Water				Sampled: 11/20/08 08:54				
Benzo (a) anthracene	EPA 8270m	0.0260	0.0100	0.0100	ug/l	1x	8110790	11/21/08 17:50	11/25/08 16:36	
Benzo (a) pyrene	"	0.0213	0.0100	0.0100	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0236	0.0100	0.0100	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0276	0.0200	0.0200	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0180	0.0100	0.0100	"	"	"	"	"	
Chrysene	"	0.0441	0.0100	0.0100	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	"	"	"	
Fluoranthene	"	0.0794	0.0200	0.0200	"	"	"	"	"	
Fluorene	"	ND	0.0200	0.0200	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0141	0.0100	0.0100	"	"	"	"	"	
Naphthalene	"	0.390	0.0200	0.0200	"	"	"	"	"	
Phenanthrene	"	0.0607	0.0200	0.0200	"	"	"	"	"	
Pyrene	"	0.0789	0.0200	0.0200	"	"	"	"	"	
Surrogate(s): Fluorene-d10			81.0%			25 - 125 %	"			"
Pyrene-d10			87.8%			23 - 150 %	"			"
Benzo (a) pyrene-d12			66.0%			10 - 125 %	"			"
PRK0762-03 (FO081410)		Water				Sampled: 11/20/08 09:11				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.20	0.511	0.971	ug/l	1x	8110790	11/21/08 17:50	11/26/08 00:13	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	1.14	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	11/25/08 17:06	
Acenaphthylene	"	0.0464	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	0.0917	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0571	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0448	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0312	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0259	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0312	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0507	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.0101	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	ND	0.621	0.621	"	"	"	"	"	RL1
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-03 (FO081410)		Water				Sampled: 11/20/08 09:11				
Indeno (1,2,3-cd) pyrene	EPA 8270m	0.0293	0.00971	0.00971	ug/l	1x	8110790	11/21/08 17:50	11/25/08 17:06	
Naphthalene	"	0.0573	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.121	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0959	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10				58.7%		25 - 125 %	"			"
Pyrene-d10				58.3%		23 - 150 %	"			"
Benzo (a) pyrene-d12				52.9%		10 - 125 %	"			"
PRK0762-04 (FO081411)		Water				Sampled: 11/20/08 09:41				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.94	0.516	0.980	ug/l	1x	8110790	11/21/08 17:50	11/26/08 00:44	
Butyl benzyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Di-n-octyl phthalate	"	0.628	0.516	0.980	"	"	"	"	"	J
Diethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Acenaphthene	"	ND	0.0196	0.0196	"	"	"	"	11/25/08 17:37	
Acenaphthylene	"	ND	0.0196	0.0196	"	"	"	"	"	
Anthracene	"	0.0234	0.0196	0.0196	"	"	"	"	"	
Benzo (a) anthracene	"	0.0289	0.00980	0.00980	"	"	"	"	"	
Benzo (a) pyrene	"	0.0199	0.00980	0.00980	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0302	0.00980	0.00980	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0349	0.0196	0.0196	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0179	0.00980	0.00980	"	"	"	"	"	
Chrysene	"	0.0609	0.00980	0.00980	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00980	0.00980	"	"	"	"	"	
Fluoranthene	"	0.131	0.0196	0.0196	"	"	"	"	"	
Fluorene	"	ND	0.0196	0.0196	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0137	0.00980	0.00980	"	"	"	"	"	
Naphthalene	"	0.0399	0.0196	0.0196	"	"	"	"	"	
Phenanthrene	"	0.0859	0.0196	0.0196	"	"	"	"	"	
Pyrene	"	0.114	0.0196	0.0196	"	"	"	"	"	
Surrogate(s): Fluorene-d10				83.8%		25 - 125 %	"			"
Pyrene-d10				81.1%		23 - 150 %	"			"
Benzo (a) pyrene-d12				67.8%		10 - 125 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-06 (FO081413)		Water				Sampled: 11/20/08 10:06				
Benzo (a) anthracene	EPA 8270m	ND	0.00990	0.00990	ug/l	1x	8110790	11/21/08 17:50	11/25/08 18:37	
Benzo (a) pyrene	"	ND	0.00990	0.00990	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00990	0.00990	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0198	0.0198	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00990	0.00990	"	"	"	"	"	
Chrysene	"	ND	0.00990	0.00990	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00990	0.00990	"	"	"	"	"	
Fluoranthene	"	ND	0.0198	0.0198	"	"	"	"	"	
Fluorene	"	ND	0.0198	0.0198	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00990	0.00990	"	"	"	"	"	
Naphthalene	"	ND	0.0198	0.0198	"	"	"	"	"	
Phenanthrene	"	ND	0.0198	0.0198	"	"	"	"	"	
Pyrene	"	ND	0.0198	0.0198	"	"	"	"	"	
<hr/>										
<i>Surrogate(s): Fluorene-d10</i>				101%		25 - 125 %	"			"
<i>Pyrene-d10</i>				116%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				106%		10 - 125 %	"			"
<hr/>										
PRK0762-07 (FO081414)		Water				Sampled: 11/20/08 00:00				
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.23	0.516	0.980	ug/l	1x	8110790	11/21/08 17:50	11/26/08 02:17	
Butyl benzyl phthalate	"	0.647	0.516	0.980	"	"	"	"	"	J
Di-n-butyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Di-n-octyl phthalate	"	0.516	0.516	0.980	"	"	"	"	"	J
Diethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Acenaphthene	"	ND	0.0196	0.0196	"	"	"	"	11/25/08 19:07	
Acenaphthylene	"	ND	0.0196	0.0196	"	"	"	"	"	
Anthracene	"	ND	0.0196	0.0196	"	"	"	"	"	
Benzo (a) anthracene	"	0.0409	0.00980	0.00980	"	"	"	"	"	
Benzo (a) pyrene	"	0.0358	0.00980	0.00980	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0403	0.00980	0.00980	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0453	0.0196	0.0196	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0268	0.00980	0.00980	"	"	"	"	"	
Chrysene	"	0.0671	0.00980	0.00980	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00980	0.00980	"	"	"	"	"	
Fluoranthene	"	0.116	0.0196	0.0196	"	"	"	"	"	
Fluorene	"	ND	0.0196	0.0196	"	"	"	"	"	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-07 (FO081414)		Water				Sampled: 11/20/08 00:00				
Indeno (1,2,3-cd) pyrene	EPA 8270m	0.0233	0.00980	0.00980	ug/l	1x	8110790	11/21/08 17:50	11/25/08 19:07	
Naphthalene	"	0.218	0.0196	0.0196	"	"	"	"	"	
Phenanthrene	"	0.0767	0.0196	0.0196	"	"	"	"	"	
Pyrene	"	0.109	0.0196	0.0196	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				93.5%		25 - 125 %	"			"
<i>Pyrene-d10</i>				104%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				89.8%		10 - 125 %	"			"

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8110790

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8110790-BLK1)										Extracted: 11/21/08 17:50				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	11/25/08 18:02	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	11/25/08 14:07	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10														
		Recovery:	96.5%	Limits: 25-125%		"								11/25/08 14:07
		Pyrene-d10	129%	23-150%		"								"
		Benzo (a) pyrene-d12	103%	10-125%		"								"

LCS (8110790-BS1)

Extracted: 11/21/08 17:50

Bis(2-ethylhexyl)phthalate	EPA 8270m	2.52	0.526	1.00	ug/l	1x	--	4.00	62.9%	(20-150)	--	--	11/25/08 18:33	
Butyl benzyl phthalate	"	2.44	0.526	1.00	"	"	--	"	61.0%	"	--	--	"	
Di-n-butyl phthalate	"	3.51	0.526	1.00	"	"	--	"	87.9%	"	--	--	"	
Di-n-octyl phthalate	"	2.12	0.526	1.00	"	"	--	"	53.0%	"	--	--	"	
Diethyl phthalate	"	3.35	0.526	1.00	"	"	--	"	83.8%	"	--	--	"	
Dimethyl phthalate	"	3.06	0.526	1.00	"	"	--	"	76.5%	"	--	--	"	
Acenaphthene	"	1.96	0.0200	0.0200	"	"	--	2.50	78.5%	(35-120)	--	--	11/25/08 14:36	
Acenaphthylene	"	2.02	0.0200	0.0200	"	"	--	"	80.7%	(34-116)	--	--	"	
Anthracene	"	2.25	0.0200	0.0200	"	"	--	"	90.2%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.52	0.0100	0.0100	"	"	--	"	101%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.14	0.0100	0.0100	"	"	--	"	85.7%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.29	0.0100	0.0100	"	"	--	"	91.6%	(37-131)	--	--	"	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8110790

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (8110790-BS1)										Extracted: 11/21/08 17:50				
Benzo (ghi) perylene	EPA 8270m	2.07	0.0200	0.0200	ug/l	1x	--	2.50	82.8%	(26-126)	--	--	11/25/08 14:36	
Benzo (k) fluoranthene	"	1.98	0.0100	0.0100	"	"	--	"	79.3%	(18-145)	--	--	"	
Chrysene	"	2.46	0.0100	0.0100	"	"	--	"	98.6%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.23	0.0100	0.0100	"	"	--	"	89.2%	(20-141)	--	--	"	
Fluoranthene	"	2.33	0.0200	0.0200	"	"	--	"	93.3%	(31-125)	--	--	"	
Fluorene	"	2.24	0.0200	0.0200	"	"	--	"	89.7%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.18	0.0100	0.0100	"	"	--	"	87.0%	(30-135)	--	--	"	
Naphthalene	"	1.96	0.0200	0.0200	"	"	--	"	78.5%	(30-113)	--	--	"	
Phenanthrene	"	1.98	0.0200	0.0200	"	"	--	"	79.1%	(34-126)	--	--	"	
Pyrene	"	2.67	0.0200	0.0200	"	"	--	"	107%	(21-141)	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 99.0% Limits: 25-125% "</i>														
<i>Pyrene-d10 136% 23-150% "</i>														
<i>Benzo (a) pyrene-d12 101% 10-125% "</i>														

Matrix Spike (8110790-MS1)

QC Source: PRK0765-02

Extracted: 11/21/08 17:50

Bis(2-ethylhexyl)phthalate	EPA 8270m	3.56	0.521	0.990	ug/l	1x	1.15	3.96	61.0%	(10-150)	--	--	11/25/08 19:04	
Butyl benzyl phthalate	"	2.88	0.521	0.990	"	"	ND	"	72.6%	"	--	--	"	
Di-n-butyl phthalate	"	3.40	0.521	0.990	"	"	ND	"	85.7%	"	--	--	"	
Di-n-octyl phthalate	"	3.10	0.521	0.990	"	"	ND	"	78.2%	"	--	--	"	
Diethyl phthalate	"	3.21	0.521	0.990	"	"	ND	"	81.2%	"	--	--	"	
Dimethyl phthalate	"	2.85	0.521	0.990	"	"	ND	"	72.1%	"	--	--	"	
Acenaphthene	"	1.70	0.0198	0.0198	"	"	ND	2.48	68.5%	(35-120)	--	--	11/25/08 15:06	
Acenaphthylene	"	1.67	0.0198	0.0198	"	"	ND	"	67.5%	(34-116)	--	--	"	
Anthracene	"	2.00	0.0198	0.0198	"	"	ND	"	80.8%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.93	0.00990	0.00990	"	"	ND	"	77.9%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.44	0.00990	0.00990	"	"	ND	"	58.0%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.57	0.00990	0.00990	"	"	ND	"	63.3%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	1.29	0.0198	0.0198	"	"	0.0210	"	51.3%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.39	0.00990	0.00990	"	"	ND	"	56.3%	(0-145)	--	--	"	
Chrysene	"	1.89	0.00990	0.00990	"	"	0.0226	"	75.6%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.36	0.00990	0.00990	"	"	ND	"	54.8%	(0-141)	--	--	"	
Fluoranthene	"	2.13	0.0198	0.0198	"	"	0.0387	"	84.6%	(30-125)	--	--	"	
Fluorene	"	2.13	0.0198	0.0198	"	"	ND	"	86.1%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.33	0.00990	0.00990	"	"	ND	"	53.7%	(0-135)	--	--	"	
Naphthalene	"	1.76	0.0198	0.0198	"	"	0.0374	"	69.7%	(30-126)	--	--	"	
Phenanthrene	"	2.16	0.0198	0.0198	"	"	0.0299	"	85.9%	(34-126)	--	--	"	
Pyrene	"	1.84	0.0198	0.0198	"	"	0.0535	"	72.0%	(14-168)	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 93.2% Limits: 25-125% "</i>														
<i>Pyrene-d10 89.0% 23-150% "</i>														

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8110790

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Matrix Spike (8110790-MS1)

QC Source: PRK0765-02

Extracted: 11/21/08 17:50

Surrogate(s): Benzo (a) pyrene-d12

Recovery: 73.7%

Limits: 10-125% 1x

11/25/08 15:06

Matrix Spike Dup (8110790-MSD1)

QC Source: PRK0765-02

Extracted: 11/21/08 17:50

Bis(2-ethylhexyl)phthalate	EPA 8270m	3.97	0.521	0.990	ug/l	1x	1.15	3.96	71.2%	(10-150)	15.5%	(50)	11/25/08 19:35	
Butyl benzyl phthalate	"	3.13	0.521	0.990	"	"	ND	"	79.0%	"	8.42%	"	"	
Di-n-butyl phthalate	"	3.68	0.521	0.990	"	"	ND	"	92.9%	"	7.98%	"	"	
Di-n-octyl phthalate	"	3.41	0.521	0.990	"	"	ND	"	86.0%	"	9.50%	"	"	
Diethyl phthalate	"	3.39	0.521	0.990	"	"	ND	"	85.5%	"	5.16%	"	"	
Dimethyl phthalate	"	2.97	0.521	0.990	"	"	ND	"	74.9%	"	3.90%	"	"	
Acenaphthene	"	1.69	0.0198	0.0198	"	"	ND	2.48	68.2%	(35-120)	0.406%	(45)	11/25/08 15:36	
Acenaphthylene	"	1.67	0.0198	0.0198	"	"	ND	"	67.3%	(34-116)	0.252%	"	"	
Anthracene	"	2.10	0.0198	0.0198	"	"	ND	"	84.8%	(24-119)	4.92%	"	"	
Benzo (a) anthracene	"	2.19	0.00990	0.00990	"	"	ND	"	88.4%	(22-129)	12.6%	"	"	
Benzo (a) pyrene	"	1.65	0.00990	0.00990	"	"	ND	"	66.7%	(4-112)	14.0%	"	"	
Benzo (b) fluoranthene	"	1.72	0.00990	0.00990	"	"	ND	"	69.3%	(0-136)	9.13%	"	"	
Benzo (ghi) perylene	"	1.54	0.0198	0.0198	"	"	0.0210	"	61.5%	(0-126)	18.1%	"	"	
Benzo (k) fluoranthene	"	1.70	0.00990	0.00990	"	"	ND	"	68.7%	(0-145)	19.8%	"	"	
Chrysene	"	2.11	0.00990	0.00990	"	"	0.0226	"	84.4%	(7-137)	11.0%	"	"	
Dibenzo (a,h) anthracene	"	1.63	0.00990	0.00990	"	"	ND	"	65.8%	(0-141)	18.1%	"	"	
Fluoranthene	"	2.47	0.0198	0.0198	"	"	0.0387	"	98.2%	(30-125)	14.9%	"	"	
Fluorene	"	2.15	0.0198	0.0198	"	"	ND	"	87.0%	(27-124)	1.04%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.59	0.00990	0.00990	"	"	ND	"	64.3%	(0-135)	17.8%	"	"	
Naphthalene	"	1.71	0.0198	0.0198	"	"	0.0374	"	67.7%	(30-126)	2.91%	"	"	
Phenanthrene	"	2.39	0.0198	0.0198	"	"	0.0299	"	95.3%	(34-126)	10.4%	"	"	
Pyrene	"	2.00	0.0198	0.0198	"	"	0.0535	"	78.8%	(14-168)	8.96%	"	"	

Surrogate(s): Fluorene-d10

Recovery: 90.1%

Limits: 25-125% "

11/25/08 15:36

Pyrene-d10

93.4%

23-150% "

"

Benzo (a) pyrene-d12

79.9%

10-125% "

"

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

12/12/08 15:28

Notes and DefinitionsReport Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- RL1 - Reporting limit raised due to sample matrix effects.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave. Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9710
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PRK0762**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.			
REPORT TO: Jennifer Shackelford		P.O. NUMBER: 36238					
PHONE: _____ FAX: _____		PRESERVATIVE					
PROJECT NAME: Portland Harbor		PROJECT NUMBER: _____		REQUESTED ANALYSES			
SAMPLED BY: Stormwater		PCB Congeners (*)		PAH + Phthalates (*)			
		PAH + Phthalates (*)		UIC (*)			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME						
1 FO 081408	11/20/08 0932	X	X				
2 FO 081409	0854	X	X				
3 FO 081410	0911	X	X				
4 FO 081411	0941	X	X				
5 FO 081412	0956	X	X				
6 FO 081413	1006	X	X				
7 FO 081414	0000	X	X				
8							
9							
10							
RELEASED BY: Kristen Whit		DATE: 11/20/08		RECEIVED BY: Bob F		DATE: 11/20/08	
PRINT NAME: Kristen Whit		FIRM: City of Portland		PRINT NAME: Bob F		FIRM: TAP	
RELEASED BY: Bob F		DATE: 11/20/08		RECEIVED BY: Jim M		DATE: 11/20/08	
PRINT NAME: Bob F		FIRM: TAP		PRINT NAME: Jim M		FIRM: TAP	
ADDITIONAL REMARKS:		DATE: 11/20/08		DATE: 11/20/08		DATE: 11/20/08	
		TIME: 15:15		TIME: 18:10		TIME: 15:15	
		TIME: 18:10		TIME: 18:10		TIME: 18:10	

(*) Low-level RLs as per UIC projects. Thanks.
(**) PCB congeners to PACE. Thanks

TestAmerica Sample Receipt Checklist

Cooler ID(s):

Received by:

Unpacked by:

Logged-in by:

Work Order No.

*(section A)

*(section B)

Date:

Date:

Date:

Client:

Time:

Initials:

Initials:

Project:

Temperature out of range:

Initials:

Digi #1

Digi #2

Temperature Blank: C

***ESI Clients (see Section C)

Cooler Temperature (IR): C plastic (glass) NA (oil/air samples, ESI client)

Not enough Ice
No Ice
Ice Melted
W/in 4 Hours
Other:

A

Custody Seals: (#)

Signature: Y N Dated:

None

Container Type:

#Cooler(s)

#Box(s)

None (#Other:)

Coolant Type:

Gel Ice

Loose Ice

None

Packing Material:

Bubble Bags

Styrofoam Cubbies

Peanuts

None (#Other:)

Received from:

TA Courier

Envoy

UPS

Fed Ex

Client

TDP

DHL

SDS

Mid-Valley

GS/TA

GS/Envoy

Other:

B

Sample Status:
(If N circled, see NOD)

General:

Intact? Y N

Containers Match COC? Y N none given

IDs Match COC? Y N

For Analyses Requested:

Cyanide Checked? Y N NA

Correct Type & Preservation? Y N

Adequate Volume? Y N

Within Hold Time? Y N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace? Y N NA

TB on COC? not provided Y N NA

Metals:

HNO3 Preserved? Y N NA

Dissolved Metals Filtered? Y N NA

C

***ESI Clients Only:

Temperature Blank: C not provided Digi: # 1 #2

All preserved bottles checked Y N NA (voas/soils/all unp.)

All preserved accordingly? Y N (see NOD) NA (voas/soils/all unp.)

FED EX/ UPS: Was the tracking paper keepable? YES NO

If circled NO, what is the Tracking number?

FED EX Goldstreak UPS DHL Other:

Project Managers:

Comments:

PM Reviewed: (Initial/Date)

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

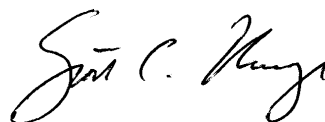
Pace Project #: 1085193
Sample Receipt Date: 11/25/2008
Client Project #: PRK0762
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:

December 22, 2008



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on seven samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.5 parts-per-trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 52-145%. All of the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain a low level of PCB congener #11. This analyte was not present in the field samples. This indicates that the analytical process did not introduce significant levels of PCB congeners to the sample extracts.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds in the lab spikes were generally recovered at 101-116% with relative percent differences of 0.0-13.8%. Congener #209 in the LCSD was recovered at an elevated level. However, since the samples did not contain this analyte, these results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PRK0762

1154

1085193

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone: (612) 607-1700
Fax: (612) 607-6444
Project Location:
Receipt Temperature: °C Ice: Y / N

Analysis	Units	Due	Expires	Comments
Sample ID: PRK0762-01	Water		Sampled: 11/20/08 09:32	001
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:32	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-02	Water		Sampled: 11/20/08 08:54	002
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 08:54	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-03	Water		Sampled: 11/20/08 09:11	003
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:11	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-04	Water		Sampled: 11/20/08 09:41	004
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:41	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-05	Water		Sampled: 11/20/08 09:56	005
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:56	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-06	Water		Sampled: 11/20/08 10:06	006
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 10:06	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				

Amica Morgan 11/24/08
Released By Date/Time

Mendel Esmy Pace 11/28/08 12:30 T-26
Received By Date/Time

SUBCONTRACT ORDER

TestAmerica Portland

PRK0762

1085193

Analysis	Units	Due	Expires	Comments
Sample ID: PRK0762-07	Water		Sampled: 11/20/08 00:00	007
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				
1L Amber - Unpres. (B)				

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 1085193

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 979687117152

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other Temp Blank: Yes ☐ No ☒

Thermometer Used 80344042, 179425

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 2.10

Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: ME 11-25-08

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>—</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: (u)

Date: 11/25/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Report No.....1085193_1668A

Page 6 of 66

F-ALLC003rev.5, 5Aug2008

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRK0762-01		
Lab Sample ID	1085193001		
Filename	P81218A_08		
Injected By	SMT		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2008
ICAL ID	P81218A03	Received	11/25/2008
CCal Filename(s)	P81218A_02	Extracted	12/02/2008
Method Blank ID	BLANK-18405	Analyzed	12/18/2008 11:38

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.133	3.03	2.0	1.53	77
13C-4-MoCB	3	10.176	3.30	2.0	1.63	82
13C-2,2'-DiCB	4	10.500	1.58	2.0	1.57	78
13C-4,4'-DiCB	15	18.383	1.58	2.0	1.84	92
13C-2,2',6-TrCB	19	14.753	1.07	2.0	1.68	84
13C-3,4,4'-TrCB	37	26.660	1.05	2.0	2.01	101
13C-2,2',6,6'-TeCB	54	18.695	0.81	2.0	1.60	80
13C-3,4,4',5-TeCB	81	34.005	0.79	2.0	2.00	100
13C-3,3',4,4'-TeCB	77	34.592	0.80	2.0	2.00	100
13C-2,2',4,6,6'-PeCB	104	25.251	1.61	2.0	1.75	87
13C-2,3,3',4,4'-PeCB	105	38.231	1.56	2.0	2.00	100
13C-2,3,4,4',5-PeCB	114	37.577	1.58	2.0	1.95	97
13C-2,3',4,4',5-PeCB	118	37.040	1.55	2.0	1.99	100
13C-2,3',4,4',5'-PeCB	123	36.705	1.55	2.0	2.02	101
13C-3,3',4,4',5-PeCB	126	41.451	1.56	2.0	1.90	95
13C-2,2',4,4',6,6'-HxCB	155	31.540	1.28	2.0	1.86	93
13C-HxCB (156/157)	156/157	44.536	1.27	4.0	3.80	95
13C-2,3',4,4',5,5'-HxCB	167	43.379	1.26	2.0	1.95	97
13C-3,3',4,4',5,5'-HxCB	169	47.857	1.27	2.0	1.84	92
13C-2,2',3,4',5,6,6'-HpCB	188	37.560	1.06	2.0	2.34	117
13C-2,3,3',4,4',5,5'-HpCB	189	50.381	1.01	2.0	2.34	117
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.077	0.91	2.0	2.17	109
13C-2,3,3',4,4',5,5',6-OxCB	205	52.968	0.91	2.0	1.86	93
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.692	0.79	2.0	1.91	95
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.864	0.80	2.0	1.95	98
13C--DeCB	209	56.266	0.70	2.0	1.82	91
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.082	1.04	2.0	2.00	100
13C-2,3,3',5,5'-PeCB	111	34.693	1.60	2.0	2.01	101
13C-2,2',3,3',5,5',6-HpCB	178	40.729	1.06	2.0	1.98	99
Recovery Standards						
13C-2,5-DiCB	9	13.291	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.212	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.791	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.243	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.494	0.93	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-01
Lab Sample ID 1085193001
Filename P81218A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.484
2		---	---	ND	---	0.484
3		---	---	ND	---	0.484
4		---	---	ND	---	0.484
5		---	---	ND	---	0.484
6		---	---	ND	---	0.484
7		---	---	ND	---	0.484
8		---	---	ND	---	0.484
9		---	---	ND	---	0.484
10		---	---	ND	---	0.484
11		---	---	ND	---	0.581
12	12/13	---	---	ND	---	0.484
13	12/13	---	---	ND	---	0.484
14		---	---	ND	---	0.484
15		---	---	ND	---	0.484
16		---	---	ND	---	0.484
17		---	---	ND	---	0.484
18	18/30	---	---	ND	---	0.484
19		---	---	ND	---	0.484
20	20/28	---	---	ND	---	0.581
21	21/33	---	---	ND	---	0.484
22		---	---	ND	---	0.484
23		---	---	ND	---	0.484
24		---	---	ND	---	0.484
25		---	---	ND	---	0.484
26	26/29	---	---	ND	---	0.484
27		---	---	ND	---	0.484
28	20/28	---	---	ND	---	0.581
29	26/29	---	---	ND	---	0.484
30	18/30	---	---	ND	---	0.484
31		---	---	ND	---	0.484
32		---	---	ND	---	0.484
33	21/33	---	---	ND	---	0.484
34		---	---	ND	---	0.484
35		---	---	ND	---	0.484
36		---	---	ND	---	0.484
37		---	---	ND	---	0.484
38		---	---	ND	---	0.484
39		---	---	ND	---	0.484
40	40/41/71	---	---	ND	---	0.484
41	40/41/71	---	---	ND	---	0.484
42		---	---	ND	---	0.484
43		---	---	ND	---	0.484
44	44/47/65	---	---	ND	---	0.581
45	45/51	---	---	ND	---	0.484
46		---	---	ND	---	0.484
47	44/47/65	---	---	ND	---	0.581
48		---	---	ND	---	0.484

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*= See Discussion
! = Outside QC Limits
RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-01
Lab Sample ID 1085193001
Filename P81218A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.484
50	50/53	---	---	ND	---	0.484
51	45/51	---	---	ND	---	0.484
52		24.245	0.79	0.607	---	0.484
53	50/53	---	---	ND	---	0.484
54		---	---	ND	---	0.484
55		---	---	ND	---	0.484
56		---	---	ND	---	0.484
57		---	---	ND	---	0.484
58		---	---	ND	---	0.484
59	59/62/75	---	---	ND	---	0.484
60		---	---	ND	---	0.484
61	61/70/74/76	29.578	0.76	1.31	---	0.484
62	59/62/75	---	---	ND	---	0.484
63		---	---	ND	---	0.484
64		---	---	ND	---	0.484
65	44/47/65	---	---	ND	---	0.581
66		---	---	ND	---	0.484
67		---	---	ND	---	0.484
68		---	---	ND	---	0.484
69	49/69	---	---	ND	---	0.484
70	61/70/74/76	29.578	0.76	(1.31)	---	0.484
71	40/41/71	---	---	ND	---	0.484
72		---	---	ND	---	0.484
73		---	---	ND	---	0.484
74	61/70/74/76	29.578	0.76	(1.31)	---	0.484
75	59/62/75	---	---	ND	---	0.484
76	61/70/74/76	29.578	0.76	(1.31)	---	0.484
77		---	---	ND	---	0.484
78		---	---	ND	---	0.484
79		---	---	ND	---	0.484
80		---	---	ND	---	0.484
81		---	---	ND	---	0.484
82		34.189	1.59	0.487	---	0.484
83		---	---	ND	---	0.484
84		29.746	1.60	0.605	---	0.484
85	85/116/117	33.703	1.62	0.618	---	0.581
86	86/87/97/108/119/125	33.016	1.57	2.42	---	0.968
87	86/87/97/108/119/125	33.016	1.57	(2.42)	---	0.968
88	88/91	---	---	ND	---	0.484
89		---	---	ND	---	0.484
90	90/101/113	31.825	1.57	2.56	---	0.484
91	88/91	---	---	ND	---	0.484
92		---	---	ND	---	0.484
93	93/98/100/102	---	---	ND	---	0.726
94		---	---	ND	---	0.484
95		28.588	1.55	1.31	---	0.484
96		---	---	ND	---	0.484

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-01
Lab Sample ID 1085193001
Filename P81218A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	33.016	1.57	(2.42)	---	0.968
98	93/98/100/102	---	---	ND	---	0.726
99		32.445	1.61	1.23	---	0.484
100	93/98/100/102	---	---	ND	---	0.726
101	90/101/113	31.825	1.57	(2.56)	---	0.484
102	93/98/100/102	---	---	ND	---	0.726
103		---	---	ND	---	0.484
104		---	---	ND	---	0.484
105		38.264	1.53	2.09	---	0.484
106		---	---	ND	---	0.484
107	107/124	---	---	ND	---	0.484
108	86/87/97/108/119/125	33.016	1.57	(2.42)	---	0.968
109		---	---	ND	---	0.484
110	110/115	33.888	1.57	4.50	---	0.484
111		---	---	ND	---	0.484
112		---	---	ND	---	0.484
113	90/101/113	31.825	1.57	(2.56)	---	0.484
114		---	---	ND	---	0.484
115	110/115	33.888	1.57	(4.50)	---	0.484
116	85/116/117	33.703	1.62	(0.618)	---	0.581
117	85/116/117	33.703	1.62	(0.618)	---	0.581
118		37.074	1.55	4.52	---	0.484
119	86/87/97/108/119/125	33.016	1.57	(2.42)	---	0.968
120		---	---	ND	---	0.484
121		---	---	ND	---	0.484
122		---	---	ND	---	0.484
123		---	---	ND	---	0.484
124	107/124	---	---	ND	---	0.484
125	86/87/97/108/119/125	33.016	1.57	(2.42)	---	0.968
126		---	---	ND	---	0.484
127		---	---	ND	---	0.484
128	128/166	---	---	ND	---	0.968
129	129/138/163	40.277	1.27	4.76	---	0.484
130		---	---	ND	---	0.484
131		---	---	ND	---	0.484
132		37.124	1.26	1.54	---	0.484
133		---	---	ND	---	0.484
134	134/143	---	---	ND	---	0.484
135	135/151	34.894	1.28	0.612	---	0.494
136		---	---	ND	---	0.484
137		---	---	ND	---	0.484
138	129/138/163	40.277	1.27	(4.76)	---	0.484
139	139/140	---	---	ND	---	0.484
140	139/140	---	---	ND	---	0.484
141		39.203	1.23	0.608	---	0.484
142		---	---	ND	---	0.484
143	134/143	---	---	ND	---	0.484
144		---	---	ND	---	0.484

Conc = Concentration
EML = Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-01
Lab Sample ID 1085193001
Filename P81218A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.484
146		---	---	ND	---	0.484
147	147/149	35.850	1.24	2.14	---	0.484
148		---	---	ND	---	0.484
149	147/149	35.850	1.24	(2.14)	---	0.484
150		---	---	ND	---	0.484
151	135/151	34.894	1.28	(0.612)	---	0.494
152		---	---	ND	---	0.484
153	153/168	39.019	1.27	2.59	---	0.581
154		---	---	ND	---	0.484
155		---	---	ND	---	0.484
156	156/157	---	---	ND	---	0.968
157	156/157	---	---	ND	---	0.968
158		40.679	1.23	0.508	---	0.484
159		---	---	ND	---	0.484
160		---	---	ND	---	0.484
161		---	---	ND	---	0.484
162		---	---	ND	---	0.484
163	129/138/163	40.277	1.27	(4.76)	---	0.484
164		---	---	ND	---	0.484
165		---	---	ND	---	0.484
166	128/166	---	---	ND	---	0.968
167		---	---	ND	---	0.484
168	153/168	39.019	1.27	(2.59)	---	0.581
169		---	---	ND	---	0.484
170		---	---	ND	---	0.484
171	171/173	---	---	ND	---	0.484
172		---	---	ND	---	0.484
173	171/173	---	---	ND	---	0.484
174		---	---	ND	---	0.484
175		---	---	ND	---	0.484
176		---	---	ND	---	0.484
177		---	---	ND	---	0.484
178		---	---	ND	---	0.484
179		---	---	ND	---	0.484
180	180/193	45.978	1.04	0.623	---	0.484
181		---	---	ND	---	0.484
182		---	---	ND	---	0.484
183	183/185	---	---	ND	---	0.484
184		---	---	ND	---	0.484
185	183/185	---	---	ND	---	0.484
186		---	---	ND	---	0.484
187		---	---	ND	---	0.484
188		---	---	ND	---	0.484
189		---	---	ND	---	0.484
190		---	---	ND	---	0.484
191		---	---	ND	---	0.484
192		---	---	ND	---	0.484

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-01
Lab Sample ID 1085193001
Filename P81218A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.978	1.04	(0.623)	---	0.484
194		---	---	ND	---	0.484
195		---	---	ND	---	0.484
196		---	---	ND	---	0.678
197	197/200	---	---	ND	---	2.42
198	198/199	---	---	ND	---	0.484
199	198/199	---	---	ND	---	0.484
200	197/200	---	---	ND	---	2.42
201		---	---	ND	---	0.484
202		---	---	ND	---	0.484
203		---	---	ND	---	0.484
204		---	---	ND	---	0.484
205		---	---	ND	---	0.484
206		---	---	ND	---	0.484
207		---	---	ND	---	0.484
208		---	---	ND	---	0.484
209		---	---	ND	---	0.484

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-01
Lab Sample ID 1085193001
Filename P81218A_08

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	1.91
Total Pentachloro Biphenyls	20.3
Total Hexachloro Biphenyls	12.8
Total Heptachloro Biphenyls	0.623
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	35.6

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRK0762-02		
Lab Sample ID	1085193002		
Filename	P81218A_09		
Injected By	SMT		
Total Amount Extracted	976 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2008
ICAL ID	P81218A03	Received	11/25/2008
CCal Filename(s)	P81218A_02	Extracted	12/02/2008
Method Blank ID	BLANK-18405	Analyzed	12/18/2008 12:40

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.133	3.08	2.0	1.22	61
13C-4-MoCB	3	10.177	3.07	2.0	1.40	70
13C-2,2'-DiCB	4	10.501	1.60	2.0	1.31	65
13C-4,4'-DiCB	15	18.386	1.54	2.0	1.60	80
13C-2,2',6-TrCB	19	14.767	1.06	2.0	1.43	71
13C-3,4,4'-TrCB	37	26.668	1.05	2.0	1.87	93
13C-2,2',6,6'-TeCB	54	18.686	0.81	2.0	1.50	75
13C-3,4,4',5-TeCB	81	34.013	0.80	2.0	1.95	98
13C-3,3',4,4'-TeCB	77	34.600	0.80	2.0	1.94	97
13C-2,2',4,6,6'-PeCB	104	25.259	1.58	2.0	1.63	82
13C-2,3,3',4,4'-PeCB	105	38.239	1.58	2.0	1.91	96
13C-2,3,4,4',5-PeCB	114	37.585	1.59	2.0	1.90	95
13C-2,3',4,4',5-PeCB	118	37.048	1.60	2.0	1.92	96
13C-2,3',4,4',5'-PeCB	123	36.713	1.58	2.0	1.93	96
13C-3,3',4,4',5-PeCB	126	41.459	1.56	2.0	1.86	93
13C-2,2',4,4',6,6'-HxCB	155	31.548	1.26	2.0	1.77	89
13C-HxCB (156/157)	156/157	44.528	1.26	4.0	3.72	93
13C-2,3',4,4',5,5'-HxCB	167	43.371	1.25	2.0	1.90	95
13C-3,3',4,4',5,5'-HxCB	169	47.848	1.28	2.0	1.82	91
13C-2,2',3,4',5,6,6'-HpCB	188	37.568	1.07	2.0	2.23	112
13C-2,3,3',4,4',5,5'-HpCB	189	50.390	1.05	2.0	2.24	112
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.086	0.91	2.0	2.09	104
13C-2,3,3',4,4',5,5',6-OxCB	205	52.954	0.92	2.0	1.79	89
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.679	0.80	2.0	1.82	91
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.851	0.79	2.0	1.84	92
13C--DeCB	209	56.274	0.72	2.0	1.73	87
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.073	1.04	2.0	1.85	92
13C-2,3,3',5,5'-PeCB	111	34.684	1.58	2.0	1.90	95
13C-2,2',3,3',5,5',6-HpCB	178	40.721	1.06	2.0	1.90	95
Recovery Standards						
13C-2,5-DiCB	9	13.293	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.220	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.800	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.252	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.480	0.94	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-02
Lab Sample ID 1085193002
Filename P81218A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.512
2		---	---	ND	---	0.512
3		---	---	ND	---	0.512
4		---	---	ND	---	0.512
5		---	---	ND	---	0.512
6		---	---	ND	---	0.512
7		---	---	ND	---	0.512
8		---	---	ND	---	0.512
9		---	---	ND	---	0.512
10		---	---	ND	---	0.512
11		---	---	ND	---	0.615
12	12/13	---	---	ND	---	0.512
13	12/13	---	---	ND	---	0.512
14		---	---	ND	---	0.512
15		---	---	ND	---	0.512
16		---	---	ND	---	0.512
17		---	---	ND	---	0.512
18	18/30	---	---	ND	---	0.512
19		---	---	ND	---	0.512
20	20/28	---	---	ND	---	0.615
21	21/33	---	---	ND	---	0.512
22		---	---	ND	---	0.512
23		---	---	ND	---	0.512
24		---	---	ND	---	0.512
25		---	---	ND	---	0.512
26	26/29	---	---	ND	---	0.512
27		---	---	ND	---	0.512
28	20/28	---	---	ND	---	0.615
29	26/29	---	---	ND	---	0.512
30	18/30	---	---	ND	---	0.512
31		---	---	ND	---	0.512
32		---	---	ND	---	0.512
33	21/33	---	---	ND	---	0.512
34		---	---	ND	---	0.512
35		---	---	ND	---	0.512
36		---	---	ND	---	0.512
37		---	---	ND	---	0.512
38		---	---	ND	---	0.512
39		---	---	ND	---	0.512
40	40/41/71	---	---	ND	---	0.512
41	40/41/71	---	---	ND	---	0.512
42		---	---	ND	---	0.512
43		---	---	ND	---	0.512
44	44/47/65	---	---	ND	---	0.615
45	45/51	---	---	ND	---	0.512
46		---	---	ND	---	0.512
47	44/47/65	---	---	ND	---	0.615
48		---	---	ND	---	0.512

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-02
Lab Sample ID 1085193002
Filename P81218A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.512
50	50/53	---	---	ND	---	0.512
51	45/51	---	---	ND	---	0.512
52		---	---	ND	---	0.512
53	50/53	---	---	ND	---	0.512
54		---	---	ND	---	0.512
55		---	---	ND	---	0.512
56		---	---	ND	---	0.512
57		---	---	ND	---	0.512
58		---	---	ND	---	0.512
59	59/62/75	---	---	ND	---	0.512
60		---	---	ND	---	0.512
61	61/70/74/76	29.586	0.77	0.554	---	0.512
62	59/62/75	---	---	ND	---	0.512
63		---	---	ND	---	0.512
64		---	---	ND	---	0.512
65	44/47/65	---	---	ND	---	0.615
66		---	---	ND	---	0.512
67		---	---	ND	---	0.512
68		---	---	ND	---	0.512
69	49/69	---	---	ND	---	0.512
70	61/70/74/76	29.586	0.77	(0.554)	---	0.512
71	40/41/71	---	---	ND	---	0.512
72		---	---	ND	---	0.512
73		---	---	ND	---	0.512
74	61/70/74/76	29.586	0.77	(0.554)	---	0.512
75	59/62/75	---	---	ND	---	0.512
76	61/70/74/76	29.586	0.77	(0.554)	---	0.512
77		---	---	ND	---	0.512
78		---	---	ND	---	0.512
79		---	---	ND	---	0.512
80		---	---	ND	---	0.512
81		---	---	ND	---	0.512
82		---	---	ND	---	0.512
83		---	---	ND	---	0.512
84		---	---	ND	---	0.512
85	85/116/117	---	---	ND	---	0.615
86	86/87/97/108/119/125	---	---	ND	---	1.02
87	86/87/97/108/119/125	---	---	ND	---	1.02
88	88/91	---	---	ND	---	0.512
89		---	---	ND	---	0.512
90	90/101/113	31.833	1.59	1.34	---	0.512
91	88/91	---	---	ND	---	0.512
92		---	---	ND	---	0.512
93	93/98/100/102	---	---	ND	---	0.769
94		---	---	ND	---	0.512
95		28.597	1.58	0.882	---	0.512
96		---	---	ND	---	0.512

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-02
Lab Sample ID 1085193002
Filename P81218A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	1.02
98	93/98/100/102	---	---	ND	---	0.769
99		---	---	ND	---	0.512
100	93/98/100/102	---	---	ND	---	0.769
101	90/101/113	31.833	1.59	(1.34)	---	0.512
102	93/98/100/102	---	---	ND	---	0.769
103		---	---	ND	---	0.512
104		---	---	ND	---	0.512
105		---	---	ND	---	0.512
106		---	---	ND	---	0.512
107	107/124	---	---	ND	---	0.512
108	86/87/97/108/119/125	---	---	ND	---	1.02
109		---	---	ND	---	0.512
110	110/115	33.896	1.59	1.38	---	0.512
111		---	---	ND	---	0.512
112		---	---	ND	---	0.512
113	90/101/113	31.833	1.59	(1.34)	---	0.512
114		---	---	ND	---	0.512
115	110/115	33.896	1.59	(1.38)	---	0.512
116	85/116/117	---	---	ND	---	0.615
117	85/116/117	---	---	ND	---	0.615
118		37.082	1.55	1.06	---	0.512
119	86/87/97/108/119/125	---	---	ND	---	1.02
120		---	---	ND	---	0.512
121		---	---	ND	---	0.512
122		---	---	ND	---	0.512
123		---	---	ND	---	0.512
124	107/124	---	---	ND	---	0.512
125	86/87/97/108/119/125	---	---	ND	---	1.02
126		---	---	ND	---	0.512
127		---	---	ND	---	0.512
128	128/166	---	---	ND	---	1.02
129	129/138/163	40.285	1.26	4.14	---	0.512
130		---	---	ND	---	0.512
131		---	---	ND	---	0.512
132		37.116	1.27	1.26	---	0.512
133		---	---	ND	---	0.512
134	134/143	---	---	ND	---	0.512
135	135/151	34.885	1.25	1.51	---	0.523
136		---	---	ND	---	0.512
137		---	---	ND	---	0.512
138	129/138/163	40.285	1.26	(4.14)	---	0.512
139	139/140	---	---	ND	---	0.512
140	139/140	---	---	ND	---	0.512
141		39.195	1.28	1.07	---	0.512
142		---	---	ND	---	0.512
143	134/143	---	---	ND	---	0.512
144		---	---	ND	---	0.512

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-02
Lab Sample ID 1085193002
Filename P81218A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.512
146		38.390	1.26	0.576	---	0.512
147	147/149	35.841	1.28	3.58	---	0.512
148		---	---	ND	---	0.512
149	147/149	35.841	1.28	(3.58)	---	0.512
150		---	---	ND	---	0.512
151	135/151	34.885	1.25	(1.51)	---	0.523
152		---	---	ND	---	0.512
153	153/168	39.027	1.27	3.89	---	0.615
154		---	---	ND	---	0.512
155		---	---	ND	---	0.512
156	156/157	---	---	ND	---	1.02
157	156/157	---	---	ND	---	1.02
158		---	---	ND	---	0.512
159		---	---	ND	---	0.512
160		---	---	ND	---	0.512
161		---	---	ND	---	0.512
162		---	---	ND	---	0.512
163	129/138/163	40.285	1.26	(4.14)	---	0.512
164		---	---	ND	---	0.512
165		---	---	ND	---	0.512
166	128/166	---	---	ND	---	1.02
167		---	---	ND	---	0.512
168	153/168	39.027	1.27	(3.89)	---	0.615
169		---	---	ND	---	0.512
170		47.211	1.02	1.56	---	0.512
171	171/173	---	---	ND	---	0.512
172		---	---	ND	---	0.512
173	171/173	---	---	ND	---	0.512
174		42.532	1.06	1.88	---	0.512
175		---	---	ND	---	0.512
176		---	---	ND	---	0.512
177		42.968	1.03	1.05	---	0.512
178		---	---	ND	---	0.512
179		37.904	1.05	0.691	---	0.512
180	180/193	45.970	1.04	3.87	---	0.512
181		---	---	ND	---	0.512
182		---	---	ND	---	0.512
183	183/185	42.314	1.03	1.29	---	0.512
184		---	---	ND	---	0.512
185	183/185	42.314	1.03	(1.29)	---	0.512
186		---	---	ND	---	0.512
187		41.677	1.05	2.19	---	0.512
188		---	---	ND	---	0.512
189		---	---	ND	---	0.512
190		---	---	ND	---	0.512
191		---	---	ND	---	0.512
192		---	---	ND	---	0.512

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-02
Lab Sample ID 1085193002
Filename P81218A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.970	1.04	(3.87)	---	0.512
194		52.502	0.91	0.726	---	0.512
195		---	---	ND	---	0.512
196		---	---	ND	---	0.717
197	197/200	---	---	ND	---	2.56
198	198/199	47.949	0.90	0.937	---	0.512
199	198/199	47.949	0.90	(0.937)	---	0.512
200	197/200	---	---	ND	---	2.56
201		---	---	ND	---	0.512
202		---	---	ND	---	0.512
203		48.804	0.90	0.536	---	0.512
204		---	---	ND	---	0.512
205		---	---	ND	---	0.512
206		---	---	ND	---	0.512
207		---	---	ND	---	0.512
208		---	---	ND	---	0.512
209		---	---	ND	---	0.512

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-02
Lab Sample ID 1085193002
Filename P81218A_09

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	0.554
Total Pentachloro Biphenyls	4.66
Total Hexachloro Biphenyls	16.0
Total Heptachloro Biphenyls	12.5
Total Octachloro Biphenyls	2.20
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	36.0

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRK0762-03		
Lab Sample ID	1085193003		
Filename	P81218A_10		
Injected By	SMT		
Total Amount Extracted	978 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2008
ICAL ID	P81218A03	Received	11/25/2008
CCal Filename(s)	P81218A_02	Extracted	12/02/2008
Method Blank ID	BLANK-18405	Analyzed	12/18/2008 13:42

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.145	3.03	2.0	1.11	55
13C-4-MoCB	3	10.201	2.89	2.0	1.26	63
13C-2,2'-DiCB	4	10.537	1.60	2.0	1.03	52
13C-4,4'-DiCB	15	18.409	1.56	2.0	1.48	74
13C-2,2',6-TrCB	19	14.778	1.04	2.0	1.30	65
13C-3,4,4'-TrCB	37	26.684	1.05	2.0	1.61	80
13C-2,2',6,6'-TeCB	54	18.735	0.80	2.0	1.21	60
13C-3,4,4',5-TeCB	81	34.047	0.78	2.0	1.63	81
13C-3,3',4,4'-TeCB	77	34.633	0.79	2.0	1.61	81
13C-2,2',4,6,6'-PeCB	104	25.275	1.60	2.0	1.47	73
13C-2,3,3',4,4'-PeCB	105	38.273	1.62	2.0	1.64	82
13C-2,3,4,4',5-PeCB	114	37.619	1.58	2.0	1.61	81
13C-2,3',4,4',5-PeCB	118	37.082	1.58	2.0	1.64	82
13C-2,3',4,4',5'-PeCB	123	36.747	1.56	2.0	1.65	83
13C-3,3',4,4',5-PeCB	126	41.493	1.54	2.0	1.57	79
13C-2,2',4,4',6,6'-HxCB	155	31.581	1.27	2.0	1.51	75
13C-HxCB (156/157)	156/157	44.579	1.26	4.0	2.60	65
13C-2,3',4,4',5,5'-HxCB	167	43.422	1.25	2.0	1.59	79
13C-3,3',4,4',5,5'-HxCB	169	48.050	1.30	2.0	1.07	53
13C-2,2',3,4',5,6,6'-HpCB	188	37.602	1.05	2.0	2.39	119
13C-2,3,3',4,4',5,5'-HpCB	189	50.499	1.03	2.0	2.03	102
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.120	0.90	2.0	2.22	111
13C-2,3,3',4,4',5,5',6-OxCB	205	53.086	0.94	2.0	1.54	77
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.767	0.82	2.0	1.77	89
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.003	0.80	2.0	1.73	87
13C--DeCB	209	56.341	0.71	2.0	1.70	85
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.106	1.04	2.0	1.81	90
13C-2,3,3',5,5'-PeCB	111	34.717	1.59	2.0	1.82	91
13C-2,2',3,3',5,5',6-HpCB	178	40.755	1.07	2.0	1.78	89
Recovery Standards						
13C-2,5-DiCB	9	13.305	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.236	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.833	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.285	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.590	0.90	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-03
Lab Sample ID 1085193003
Filename P81218A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.511
2		---	---	ND	---	0.511
3		---	---	ND	---	0.511
4		---	---	ND	---	0.511
5		---	---	ND	---	0.511
6		---	---	ND	---	0.511
7		---	---	ND	---	0.511
8		---	---	ND	---	0.511
9		---	---	ND	---	0.511
10		---	---	ND	---	0.511
11		---	---	ND	---	0.613
12	12/13	---	---	ND	---	0.511
13	12/13	---	---	ND	---	0.511
14		---	---	ND	---	0.511
15		---	---	ND	---	0.511
16		---	---	ND	---	0.511
17		---	---	ND	---	0.511
18	18/30	---	---	ND	---	0.511
19		---	---	ND	---	0.511
20	20/28	---	---	ND	---	0.613
21	21/33	---	---	ND	---	0.511
22		---	---	ND	---	0.511
23		---	---	ND	---	0.511
24		---	---	ND	---	0.511
25		---	---	ND	---	0.511
26	26/29	---	---	ND	---	0.511
27		---	---	ND	---	0.511
28	20/28	---	---	ND	---	0.613
29	26/29	---	---	ND	---	0.511
30	18/30	---	---	ND	---	0.511
31		---	---	ND	---	0.511
32		---	---	ND	---	0.511
33	21/33	---	---	ND	---	0.511
34		---	---	ND	---	0.511
35		---	---	ND	---	0.511
36		---	---	ND	---	0.511
37		---	---	ND	---	0.511
38		---	---	ND	---	0.511
39		---	---	ND	---	0.511
40	40/41/71	---	---	ND	---	0.511
41	40/41/71	---	---	ND	---	0.511
42		---	---	ND	---	0.511
43		---	---	ND	---	0.511
44	44/47/65	---	---	ND	---	0.613
45	45/51	---	---	ND	---	0.511
46		---	---	ND	---	0.511
47	44/47/65	---	---	ND	---	0.613
48		---	---	ND	---	0.511

Conc = Concentration
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-03
Lab Sample ID 1085193003
Filename P81218A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.511
50	50/53	---	---	ND	---	0.511
51	45/51	---	---	ND	---	0.511
52		24.269	0.78	1.15	---	0.511
53	50/53	---	---	ND	---	0.511
54		---	---	ND	---	0.511
55		---	---	ND	---	0.511
56		---	---	ND	---	0.511
57		---	---	ND	---	0.511
58		---	---	ND	---	0.511
59	59/62/75	---	---	ND	---	0.511
60		---	---	ND	---	0.511
61	61/70/74/76	29.619	0.78	1.03	---	0.511
62	59/62/75	---	---	ND	---	0.511
63		---	---	ND	---	0.511
64		---	---	ND	---	0.511
65	44/47/65	---	---	ND	---	0.613
66		---	---	ND	---	0.511
67		---	---	ND	---	0.511
68		---	---	ND	---	0.511
69	49/69	---	---	ND	---	0.511
70	61/70/74/76	29.619	0.78	(1.03)	---	0.511
71	40/41/71	---	---	ND	---	0.511
72		---	---	ND	---	0.511
73		---	---	ND	---	0.511
74	61/70/74/76	29.619	0.78	(1.03)	---	0.511
75	59/62/75	---	---	ND	---	0.511
76	61/70/74/76	29.619	0.78	(1.03)	---	0.511
77		---	---	ND	---	0.511
78		---	---	ND	---	0.511
79		---	---	ND	---	0.511
80		---	---	ND	---	0.511
81		---	---	ND	---	0.511
82		---	---	ND	---	0.511
83		---	---	ND	---	0.511
84		29.787	1.57	0.514	---	0.511
85	85/116/117	---	---	ND	---	0.613
86	86/87/97/108/119/125	33.040	1.61	1.45	---	1.02
87	86/87/97/108/119/125	33.040	1.61	(1.45)	---	1.02
88	88/91	---	---	ND	---	0.511
89		---	---	ND	---	0.511
90	90/101/113	31.866	1.60	2.02	---	0.511
91	88/91	---	---	ND	---	0.511
92		---	---	ND	---	0.511
93	93/98/100/102	---	---	ND	---	0.767
94		---	---	ND	---	0.511
95		28.629	1.58	1.56	---	0.511
96		---	---	ND	---	0.511

Conc = Concentration
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Client Sample ID PRK0762-03
Lab Sample ID 1085193003
Filename P81218A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	33.040	1.61	(1.45)	---	1.02
98	93/98/100/102	---	---	ND	---	0.767
99		32.487	1.55	0.804	---	0.511
100	93/98/100/102	---	---	ND	---	0.767
101	90/101/113	31.866	1.60	(2.02)	---	0.511
102	93/98/100/102	---	---	ND	---	0.767
103		---	---	ND	---	0.511
104		---	---	ND	---	0.511
105		38.290	1.54	0.704	---	0.511
106		---	---	ND	---	0.511
107	107/124	---	---	ND	---	0.511
108	86/87/97/108/119/125	33.040	1.61	(1.45)	---	1.02
109		---	---	ND	---	0.511
110	110/115	33.929	1.56	2.25	---	0.511
111		---	---	ND	---	0.511
112		---	---	ND	---	0.511
113	90/101/113	31.866	1.60	(2.02)	---	0.511
114		---	---	ND	---	0.511
115	110/115	33.929	1.56	(2.25)	---	0.511
116	85/116/117	---	---	ND	---	0.613
117	85/116/117	---	---	ND	---	0.613
118		37.116	1.55	1.86	---	0.511
119	86/87/97/108/119/125	33.040	1.61	(1.45)	---	1.02
120		---	---	ND	---	0.511
121		---	---	ND	---	0.511
122		---	---	ND	---	0.511
123		---	---	ND	---	0.511
124	107/124	---	---	ND	---	0.511
125	86/87/97/108/119/125	33.040	1.61	(1.45)	---	1.02
126		---	---	ND	---	0.511
127		---	---	ND	---	0.511
128	128/166	---	---	ND	---	1.02
129	129/138/163	40.319	1.26	2.25	---	0.511
130		---	---	ND	---	0.511
131		---	---	ND	---	0.511
132		37.166	1.26	0.855	---	0.511
133		---	---	ND	---	0.511
134	134/143	---	---	ND	---	0.511
135	135/151	34.919	1.28	0.540	---	0.521
136		---	---	ND	---	0.511
137		---	---	ND	---	0.511
138	129/138/163	40.319	1.26	(2.25)	---	0.511
139	139/140	---	---	ND	---	0.511
140	139/140	---	---	ND	---	0.511
141		---	---	ND	---	0.511
142		---	---	ND	---	0.511
143	134/143	---	---	ND	---	0.511
144		---	---	ND	---	0.511

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-03
Lab Sample ID 1085193003
Filename P81218A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.511
146		---	---	ND	---	0.511
147	147/149	35.874	1.24	1.53	---	0.511
148		---	---	ND	---	0.511
149	147/149	35.874	1.24	(1.53)	---	0.511
150		---	---	ND	---	0.511
151	135/151	34.919	1.28	(0.540)	---	0.521
152		---	---	ND	---	0.511
153	153/168	39.061	1.28	1.49	---	0.613
154		---	---	ND	---	0.511
155		---	---	ND	---	0.511
156	156/157	---	---	ND	---	1.02
157	156/157	---	---	ND	---	1.02
158		---	---	ND	---	0.511
159		---	---	ND	---	0.511
160		---	---	ND	---	0.511
161		---	---	ND	---	0.511
162		---	---	ND	---	0.511
163	129/138/163	40.319	1.26	(2.25)	---	0.511
164		---	---	ND	---	0.511
165		---	---	ND	---	0.511
166	128/166	---	---	ND	---	1.02
167		---	---	ND	---	0.511
168	153/168	39.061	1.28	(1.49)	---	0.613
169		---	---	ND	---	0.511
170		---	---	ND	---	0.511
171	171/173	---	---	ND	---	0.511
172		---	---	ND	---	0.511
173	171/173	---	---	ND	---	0.511
174		---	---	ND	---	0.511
175		---	---	ND	---	0.511
176		---	---	ND	---	0.511
177		---	---	ND	---	0.511
178		---	---	ND	---	0.511
179		---	---	ND	---	0.511
180	180/193	---	---	ND	---	0.511
181		---	---	ND	---	0.511
182		---	---	ND	---	0.511
183	183/185	---	---	ND	---	0.511
184		---	---	ND	---	0.511
185	183/185	---	---	ND	---	0.511
186		---	---	ND	---	0.511
187		---	---	ND	---	0.511
188		---	---	ND	---	0.511
189		---	---	ND	---	0.511
190		---	---	ND	---	0.511
191		---	---	ND	---	0.511
192		---	---	ND	---	0.511

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-03
Lab Sample ID 1085193003
Filename P81218A_10

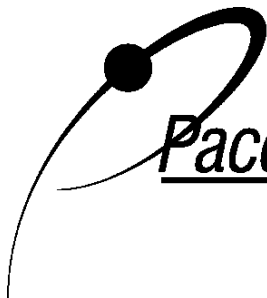
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.511
194		---	---	ND	---	0.511
195		---	---	ND	---	0.511
196		---	---	ND	---	0.716
197	197/200	---	---	ND	---	2.56
198	198/199	---	---	ND	---	0.511
199	198/199	---	---	ND	---	0.511
200	197/200	---	---	ND	---	2.56
201		---	---	ND	---	0.511
202		---	---	ND	---	0.511
203		---	---	ND	---	0.511
204		---	---	ND	---	0.511
205		---	---	ND	---	0.511
206		---	---	ND	---	0.511
207		---	---	ND	---	0.511
208		---	---	ND	---	0.511
209		---	---	ND	---	0.511

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-03
Lab Sample ID 1085193003
Filename P81218A_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	2.18
Total Pentachloro Biphenyls	11.2
Total Hexachloro Biphenyls	6.67
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 20.0

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRK0762-07		
Lab Sample ID	1085193007		
Filename	P81219A_07		
Injected By	CVS		
Total Amount Extracted	951 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2008
ICAL ID	P81219A_02	Received	11/25/2008
CCal Filename(s)	P81219A_01	Extracted	12/02/2008
Method Blank ID	BLANK-18405	Analyzed	12/19/2008 15:00

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.145	3.08	2.0	1.21	60
13C-4-MoCB	3	10.189	3.22	2.0	1.29	65
13C-2,2'-DiCB	4	10.513	1.57	2.0	1.05	52
13C-4,4'-DiCB	15	18.397	1.60	2.0	1.76	88
13C-2,2',6-TrCB	19	14.767	1.07	2.0	1.26	63
13C-3,4,4'-TrCB	37	26.668	1.07	2.0	2.45	122
13C-2,2',6,6'-TeCB	54	18.702	0.82	2.0	1.51	75
13C-3,4,4',5-TeCB	81	34.012	0.80	2.0	2.38	119
13C-3,3',4,4'-TeCB	77	34.599	0.80	2.0	2.35	118
13C-2,2',4,6,6'-PeCB	104	25.259	1.60	2.0	1.47	73
13C-2,3,3',4,4'-PeCB	105	38.238	1.59	2.0	2.42	121
13C-2,3,4,4',5-PeCB	114	37.584	1.59	2.0	2.39	119
13C-2,3',4,4',5-PeCB	118	37.047	1.59	2.0	2.46	123
13C-2,3',4,4',5'-PeCB	123	36.712	1.59	2.0	2.49	125
13C-3,3',4,4',5-PeCB	126	41.457	1.59	2.0	2.30	115
13C-2,2',4,4',6,6'-HxCB	155	31.548	1.24	2.0	1.47	73
13C-HxCB (156/157)	156/157	44.526	1.26	4.0	4.38	109
13C-2,3',4,4',5,5'-HxCB	167	43.386	1.25	2.0	2.26	113
13C-3,3',4,4',5,5'-HxCB	169	47.863	1.28	2.0	2.16	108
13C-2,2',3,4',5,6,6'-HpCB	188	37.567	1.06	2.0	1.68	84
13C-2,3,3',4,4',5,5'-HpCB	189	50.387	1.05	2.0	2.33	117
13C-2,2',3,3',5,5',6'-OxCB	202	43.084	0.90	2.0	1.68	84
13C-2,3,3',4,4',5,5',6-OxCB	205	52.973	0.93	2.0	1.74	87
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.698	0.80	2.0	1.62	81
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	49.848	0.81	2.0	1.64	82
13C--DeCB	209	56.271	0.70	2.0	1.42	71
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.090	1.06	2.0	2.44	122
13C-2,3,3',5,5'-PeCB	111	34.700	1.60	2.0	1.89	95
13C-2,2',3,3',5,5',6-HpCB	178	40.736	1.06	2.0	1.75	88
Recovery Standards						
13C-2,5-DiCB	9	13.305	1.63	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.220	0.81	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.816	1.61	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.250	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.478	0.92	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-07
Lab Sample ID 1085193007
Filename P81219A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.526
2		---	---	ND	---	0.526
3		---	---	ND	---	0.526
4		---	---	ND	---	0.526
5		---	---	ND	---	0.526
6		---	---	ND	---	0.526
7		---	---	ND	---	0.526
8		---	---	ND	---	0.526
9		---	---	ND	---	0.526
10		---	---	ND	---	0.526
11		---	---	ND	---	0.631
12	12/13	---	---	ND	---	0.526
13	12/13	---	---	ND	---	0.526
14		---	---	ND	---	0.526
15		---	---	ND	---	0.526
16		---	---	ND	---	0.526
17		---	---	ND	---	0.526
18	18/30	---	---	ND	---	0.526
19		---	---	ND	---	0.526
20	20/28	---	---	ND	---	0.631
21	21/33	---	---	ND	---	0.526
22		---	---	ND	---	0.526
23		---	---	ND	---	0.526
24		---	---	ND	---	0.526
25		---	---	ND	---	0.526
26	26/29	---	---	ND	---	0.526
27		---	---	ND	---	0.526
28	20/28	---	---	ND	---	0.631
29	26/29	---	---	ND	---	0.526
30	18/30	---	---	ND	---	0.526
31		---	---	ND	---	0.526
32		---	---	ND	---	0.526
33	21/33	---	---	ND	---	0.526
34		---	---	ND	---	0.526
35		---	---	ND	---	0.526
36		---	---	ND	---	0.526
37		---	---	ND	---	0.526
38		---	---	ND	---	0.526
39		---	---	ND	---	0.526
40	40/41/71	---	---	ND	---	0.526
41	40/41/71	---	---	ND	---	0.526
42		---	---	ND	---	0.526
43		---	---	ND	---	0.526
44	44/47/65	---	---	ND	---	0.631
45	45/51	---	---	ND	---	0.526
46		---	---	ND	---	0.526
47	44/47/65	---	---	ND	---	0.631
48		---	---	ND	---	0.526

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-07
Lab Sample ID 1085193007
Filename P81219A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.526
50	50/53	---	---	ND	---	0.526
51	45/51	---	---	ND	---	0.526
52		---	---	ND	---	0.526
53	50/53	---	---	ND	---	0.526
54		---	---	ND	---	0.526
55		---	---	ND	---	0.526
56		---	---	ND	---	0.526
57		---	---	ND	---	0.526
58		---	---	ND	---	0.526
59	59/62/75	---	---	ND	---	0.526
60		---	---	ND	---	0.526
61	61/70/74/76	29.603	0.75	0.595	---	0.526
62	59/62/75	---	---	ND	---	0.526
63		---	---	ND	---	0.526
64		---	---	ND	---	0.526
65	44/47/65	---	---	ND	---	0.631
66		---	---	ND	---	0.526
67		---	---	ND	---	0.526
68		---	---	ND	---	0.526
69	49/69	---	---	ND	---	0.526
70	61/70/74/76	29.603	0.75	(0.595)	---	0.526
71	40/41/71	---	---	ND	---	0.526
72		---	---	ND	---	0.526
73		---	---	ND	---	0.526
74	61/70/74/76	29.603	0.75	(0.595)	---	0.526
75	59/62/75	---	---	ND	---	0.526
76	61/70/74/76	29.603	0.75	(0.595)	---	0.526
77		---	---	ND	---	0.526
78		---	---	ND	---	0.526
79		---	---	ND	---	0.526
80		---	---	ND	---	0.526
81		---	---	ND	---	0.526
82		---	---	ND	---	0.526
83		---	---	ND	---	0.526
84		---	---	ND	---	0.526
85	85/116/117	---	---	ND	---	0.631
86	86/87/97/108/119/125	---	---	ND	---	1.05
87	86/87/97/108/119/125	---	---	ND	---	1.05
88	88/91	---	---	ND	---	0.526
89		---	---	ND	---	0.526
90	90/101/113	31.833	1.60	1.72	---	0.526
91	88/91	---	---	ND	---	0.526
92		---	---	ND	---	0.526
93	93/98/100/102	---	---	ND	---	0.788
94		---	---	ND	---	0.526
95		28.597	1.63	1.18	---	0.526
96		---	---	ND	---	0.526

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Minneapolis, MN 55414

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-07
Lab Sample ID 1085193007
Filename P81219A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	1.05
98	93/98/100/102	---	---	ND	---	0.788
99		---	---	ND	---	0.526
100	93/98/100/102	---	---	ND	---	0.788
101	90/101/113	31.833	1.60	(1.72)	---	0.526
102	93/98/100/102	---	---	ND	---	0.788
103		---	---	ND	---	0.526
104		---	---	ND	---	0.526
105		---	---	ND	---	0.526
106		---	---	ND	---	0.526
107	107/124	---	---	ND	---	0.526
108	86/87/97/108/119/125	---	---	ND	---	1.05
109		---	---	ND	---	0.526
110	110/115	33.895	1.65	1.46	---	0.526
111		---	---	ND	---	0.526
112		---	---	ND	---	0.526
113	90/101/113	31.833	1.60	(1.72)	---	0.526
114		---	---	ND	---	0.526
115	110/115	33.895	1.65	(1.46)	---	0.526
116	85/116/117	---	---	ND	---	0.631
117	85/116/117	---	---	ND	---	0.631
118		37.081	1.54	1.27	---	0.526
119	86/87/97/108/119/125	---	---	ND	---	1.05
120		---	---	ND	---	0.526
121		---	---	ND	---	0.526
122		---	---	ND	---	0.526
123		---	---	ND	---	0.526
124	107/124	---	---	ND	---	0.526
125	86/87/97/108/119/125	---	---	ND	---	1.05
126		---	---	ND	---	0.526
127		---	---	ND	---	0.526
128	128/166	---	---	ND	---	1.05
129	129/138/163	40.284	1.29	4.92	---	0.526
130		---	---	ND	---	0.526
131		---	---	ND	---	0.526
132		37.131	1.27	1.39	---	0.526
133		---	---	ND	---	0.526
134	134/143	---	---	ND	---	0.526
135	135/151	34.884	1.26	1.74	---	0.536
136		32.285	1.22	0.535	---	0.526
137		---	---	ND	---	0.526
138	129/138/163	40.284	1.29	(4.92)	---	0.526
139	139/140	---	---	ND	---	0.526
140	139/140	---	---	ND	---	0.526
141		39.210	1.24	1.09	---	0.526
142		---	---	ND	---	0.526
143	134/143	---	---	ND	---	0.526
144		---	---	ND	---	0.526

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-07
Lab Sample ID 1085193007
Filename P81219A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.526
146		38.389	1.27	0.632	---	0.526
147	147/149	35.857	1.28	4.10	---	0.526
148		---	---	ND	---	0.526
149	147/149	35.857	1.28	(4.10)	---	0.526
150		---	---	ND	---	0.526
151	135/151	34.884	1.26	(1.74)	---	0.536
152		---	---	ND	---	0.526
153	153/168	39.026	1.27	5.10	---	0.631
154		---	---	ND	---	0.526
155		---	---	ND	---	0.526
156	156/157	---	---	ND	---	1.05
157	156/157	---	---	ND	---	1.05
158		---	---	ND	---	0.526
159		---	---	ND	---	0.526
160		---	---	ND	---	0.526
161		---	---	ND	---	0.526
162		---	---	ND	---	0.526
163	129/138/163	40.284	1.29	(4.92)	---	0.526
164		---	---	ND	---	0.526
165		---	---	ND	---	0.526
166	128/166	---	---	ND	---	1.05
167		---	---	ND	---	0.526
168	153/168	39.026	1.27	(5.10)	---	0.631
169		---	---	ND	---	0.526
170		47.225	1.06	1.95	---	0.526
171	171/173	43.620	1.06	0.598	---	0.526
172		---	---	ND	---	0.526
173	171/173	43.620	1.06	(0.598)	---	0.526
174		42.530	1.05	1.98	---	0.526
175		---	---	ND	---	0.526
176		---	---	ND	---	0.526
177		42.983	1.04	1.12	---	0.526
178		---	---	ND	---	0.526
179		37.903	1.06	0.735	---	0.526
180	180/193	45.968	1.06	4.66	---	0.526
181		---	---	ND	---	0.526
182		---	---	ND	---	0.526
183	183/185	42.329	1.08	1.53	---	0.526
184		---	---	ND	---	0.526
185	183/185	42.329	1.08	(1.53)	---	0.526
186		---	---	ND	---	0.526
187		41.692	1.06	2.42	---	0.526
188		---	---	ND	---	0.526
189		---	---	ND	---	0.526
190		---	---	ND	---	0.526
191		---	---	ND	---	0.526
192		---	---	ND	---	0.526

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-07
Lab Sample ID 1085193007
Filename P81219A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.968	1.06	(4.66)	---	0.526
194		52.521	0.92	0.931	---	0.526
195		---	---	ND	---	0.526
196		---	---	ND	---	0.736
197	197/200	---	---	ND	---	2.63
198	198/199	47.946	0.89	0.956	---	0.526
199	198/199	47.946	0.89	(0.956)	---	0.526
200	197/200	---	---	ND	---	2.63
201		---	---	ND	---	0.526
202		---	---	ND	---	0.526
203		48.802	0.91	0.590	---	0.526
204		---	---	ND	---	0.526
205		---	---	ND	---	0.526
206		---	---	ND	---	0.526
207		---	---	ND	---	0.526
208		---	---	ND	---	0.526
209		---	---	ND	---	0.526

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-07
Lab Sample ID 1085193007
Filename P81219A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	0.595
Total Pentachloro Biphenyls	5.64
Total Hexachloro Biphenyls	19.5
Total Heptachloro Biphenyls	15.0
Total Octachloro Biphenyls	2.48
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	43.2

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-18405		
Filename	P81218A_07		
Injected By	SMT	Matrix	Water
Total Amount Extracted	955 mL	Extracted	12/02/2008
ICAL ID	P81218A03	Analyzed	12/18/2008 10:37
CCal Filename(s)	P81218A_02	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	7.121	3.21	2.0	0.524	26
13C-4-MoCB	3	10.153	3.07	2.0	0.636	32
13C-2,2'-DiCB	4	10.489	1.61	2.0	0.594	30
13C-4,4'-DiCB	15	18.362	1.57	2.0	0.851	43
13C-2,2',6-TrCB	19	14.731	1.07	2.0	0.690	34
13C-3,4,4'-TrCB	37	26.634	1.07	2.0	1.06	53
13C-2,2',6,6'-TeCB	54	18.669	0.81	2.0	0.725	36
13C-3,4,4',5-TeCB	81	33.962	0.78	2.0	1.13	56
13C-3,3',4,4'-TeCB	77	34.549	0.79	2.0	1.14	57
13C-2,2',4,6,6'-PeCB	104	25.226	1.63	2.0	0.903	45
13C-2,3,3',4,4'-PeCB	105	38.188	1.56	2.0	1.11	56
13C-2,3,4,4',5-PeCB	114	37.534	1.60	2.0	1.10	55
13C-2,3',4,4',5-PeCB	118	36.998	1.56	2.0	1.12	56
13C-2,3',4,4',5'-PeCB	123	36.662	1.57	2.0	1.11	56
13C-3,3',4,4',5-PeCB	126	41.391	1.56	2.0	1.14	57
13C-2,2',4,4',6,6'-HxCB	155	31.514	1.28	2.0	0.981	49
13C-HxCB (156/157)	156/157	44.460	1.24	4.0	2.31	58
13C-2,3',4,4',5,5'-HxCB	167	43.320	1.26	2.0	1.16	58
13C-3,3',4,4',5,5'-HxCB	169	47.780	1.28	2.0	1.19	59
13C-2,2',3,4',5,6,6'-HpCB	188	37.517	1.05	2.0	1.10	55
13C-2,3,3',4,4',5,5'-HpCB	189	50.302	1.04	2.0	1.27	64
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.018	0.90	2.0	1.13	57
13C-2,3,3',4,4',5,5',6-OxCB	205	52.889	0.90	2.0	1.13	56
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.613	0.78	2.0	1.14	57
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.785	0.80	2.0	1.11	55
13C--DeCB	209	56.208	0.72	2.0	1.10	55

Cleanup Standards

13C-2,4,4'-TrCB	28	22.056	1.04	2.0	1.57	78
13C-2,3,3',5,5'-PeCB	111	34.650	1.57	2.0	1.59	79
13C-2,2',3,3',5,5',6-HpCB	178	40.670	1.05	2.0	1.69	84

Recovery Standards

13C-2,5-DiCB	9	13.269	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.186	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.766	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.201	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.415	0.91	2.0	NA	NA

Conc = Concentration
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P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.524
2		---	---	ND	---	0.524
3		---	---	ND	---	0.524
4		---	---	ND	---	0.524
5		---	---	ND	---	0.524
6		---	---	ND	---	0.524
7		---	---	ND	---	0.524
8		---	---	ND	---	0.524
9		---	---	ND	---	0.524
10		---	---	ND	---	0.524
11		17.619	1.50	0.667	---	0.628
12	12/13	---	---	ND	---	0.524
13	12/13	---	---	ND	---	0.524
14		---	---	ND	---	0.524
15		---	---	ND	---	0.524
16		---	---	ND	---	0.524
17		---	---	ND	---	0.524
18	18/30	---	---	ND	---	0.524
19		---	---	ND	---	0.524
20	20/28	---	---	ND	---	0.628
21	21/33	---	---	ND	---	0.524
22		---	---	ND	---	0.524
23		---	---	ND	---	0.524
24		---	---	ND	---	0.524
25		---	---	ND	---	0.524
26	26/29	---	---	ND	---	0.524
27		---	---	ND	---	0.524
28	20/28	---	---	ND	---	0.628
29	26/29	---	---	ND	---	0.524
30	18/30	---	---	ND	---	0.524
31		---	---	ND	---	0.524
32		---	---	ND	---	0.524
33	21/33	---	---	ND	---	0.524
34		---	---	ND	---	0.524
35		---	---	ND	---	0.524
36		---	---	ND	---	0.524
37		---	---	ND	---	0.524
38		---	---	ND	---	0.524
39		---	---	ND	---	0.524
40	40/41/71	---	---	ND	---	0.524
41	40/41/71	---	---	ND	---	0.524
42		---	---	ND	---	0.524
43		---	---	ND	---	0.524
44	44/47/65	---	---	ND	---	0.628
45	45/51	---	---	ND	---	0.524

Conc = Concentration
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P = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.524
47	44/47/65	---	---	ND	---	0.628
48		---	---	ND	---	0.524
49	49/69	---	---	ND	---	0.524
50	50/53	---	---	ND	---	0.524
51	45/51	---	---	ND	---	0.524
52		---	---	ND	---	0.524
53	50/53	---	---	ND	---	0.524
54		---	---	ND	---	0.524
55		---	---	ND	---	0.524
56		---	---	ND	---	0.524
57		---	---	ND	---	0.524
58		---	---	ND	---	0.524
59	59/62/75	---	---	ND	---	0.524
60		---	---	ND	---	0.524
61	61/70/74/76	---	---	ND	---	0.524
62	59/62/75	---	---	ND	---	0.524
63		---	---	ND	---	0.524
64		---	---	ND	---	0.524
65	44/47/65	---	---	ND	---	0.628
66		---	---	ND	---	0.524
67		---	---	ND	---	0.524
68		---	---	ND	---	0.524
69	49/69	---	---	ND	---	0.524
70	61/70/74/76	---	---	ND	---	0.524
71	40/41/71	---	---	ND	---	0.524
72		---	---	ND	---	0.524
73		---	---	ND	---	0.524
74	61/70/74/76	---	---	ND	---	0.524
75	59/62/75	---	---	ND	---	0.524
76	61/70/74/76	---	---	ND	---	0.524
77		---	---	ND	---	0.524
78		---	---	ND	---	0.524
79		---	---	ND	---	0.524
80		---	---	ND	---	0.524
81		---	---	ND	---	0.524
82		---	---	ND	---	0.524
83		---	---	ND	---	0.524
84		---	---	ND	---	0.524
85	85/116/117	---	---	ND	---	0.628
86	86/87/97/108/119/125	---	---	ND	---	1.05
87	86/87/97/108/119/125	---	---	ND	---	1.05
88	88/91	---	---	ND	---	0.524
89		---	---	ND	---	0.524
90	90/101/113	---	---	ND	---	0.524

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.524
92		---	---	ND	---	0.524
93	93/98/100/102	---	---	ND	---	0.786
94		---	---	ND	---	0.524
95		---	---	ND	---	0.524
96		---	---	ND	---	0.524
97	86/87/97/108/119/125	---	---	ND	---	1.05
98	93/98/100/102	---	---	ND	---	0.786
99		---	---	ND	---	0.524
100	93/98/100/102	---	---	ND	---	0.786
101	90/101/113	---	---	ND	---	0.524
102	93/98/100/102	---	---	ND	---	0.786
103		---	---	ND	---	0.524
104		---	---	ND	---	0.524
105		---	---	ND	---	0.524
106		---	---	ND	---	0.524
107	107/124	---	---	ND	---	0.524
108	86/87/97/108/119/125	---	---	ND	---	1.05
109		---	---	ND	---	0.524
110	110/115	---	---	ND	---	0.524
111		---	---	ND	---	0.524
112		---	---	ND	---	0.524
113	90/101/113	---	---	ND	---	0.524
114		---	---	ND	---	0.524
115	110/115	---	---	ND	---	0.524
116	85/116/117	---	---	ND	---	0.628
117	85/116/117	---	---	ND	---	0.628
118		---	---	ND	---	0.524
119	86/87/97/108/119/125	---	---	ND	---	1.05
120		---	---	ND	---	0.524
121		---	---	ND	---	0.524
122		---	---	ND	---	0.524
123		---	---	ND	---	0.524
124	107/124	---	---	ND	---	0.524
125	86/87/97/108/119/125	---	---	ND	---	1.05
126		---	---	ND	---	0.524
127		---	---	ND	---	0.524
128	128/166	---	---	ND	---	1.05
129	129/138/163	---	---	ND	---	0.524
130		---	---	ND	---	0.524
131		---	---	ND	---	0.524
132		---	---	ND	---	0.524
133		---	---	ND	---	0.524
134	134/143	---	---	ND	---	0.524
135	135/151	---	---	ND	---	0.534

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-18405
P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.524
137		---	---	ND	---	0.524
138	129/138/163	---	---	ND	---	0.524
139	139/140	---	---	ND	---	0.524
140	139/140	---	---	ND	---	0.524
141		---	---	ND	---	0.524
142		---	---	ND	---	0.524
143	134/143	---	---	ND	---	0.524
144		---	---	ND	---	0.524
145		---	---	ND	---	0.524
146		---	---	ND	---	0.524
147	147/149	---	---	ND	---	0.524
148		---	---	ND	---	0.524
149	147/149	---	---	ND	---	0.524
150		---	---	ND	---	0.524
151	135/151	---	---	ND	---	0.534
152		---	---	ND	---	0.524
153	153/168	---	---	ND	---	0.628
154		---	---	ND	---	0.524
155		---	---	ND	---	0.524
156	156/157	---	---	ND	---	1.05
157	156/157	---	---	ND	---	1.05
158		---	---	ND	---	0.524
159		---	---	ND	---	0.524
160		---	---	ND	---	0.524
161		---	---	ND	---	0.524
162		---	---	ND	---	0.524
163	129/138/163	---	---	ND	---	0.524
164		---	---	ND	---	0.524
165		---	---	ND	---	0.524
166	128/166	---	---	ND	---	1.05
167		---	---	ND	---	0.524
168	153/168	---	---	ND	---	0.628
169		---	---	ND	---	0.524
170		---	---	ND	---	0.524
171	171/173	---	---	ND	---	0.524
172		---	---	ND	---	0.524
173	171/173	---	---	ND	---	0.524
174		---	---	ND	---	0.524
175		---	---	ND	---	0.524
176		---	---	ND	---	0.524
177		---	---	ND	---	0.524
178		---	---	ND	---	0.524
179		---	---	ND	---	0.524
180	180/193	---	---	ND	---	0.524

Conc = Concentration
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RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.524
182		---	---	ND	---	0.524
183	183/185	---	---	ND	---	0.524
184		---	---	ND	---	0.524
185	183/185	---	---	ND	---	0.524
186		---	---	ND	---	0.524
187		---	---	ND	---	0.524
188		---	---	ND	---	0.524
189		---	---	ND	---	0.524
190		---	---	ND	---	0.524
191		---	---	ND	---	0.524
192		---	---	ND	---	0.524
193	180/193	---	---	ND	---	0.524
194		---	---	ND	---	0.524
195		---	---	ND	---	0.524
196		---	---	ND	---	0.733
197	197/200	---	---	ND	---	2.62
198	198/199	---	---	ND	---	0.524
199	198/199	---	---	ND	---	0.524
200	197/200	---	---	ND	---	2.62
201		---	---	ND	---	0.524
202		---	---	ND	---	0.524
203		---	---	ND	---	0.524
204		---	---	ND	---	0.524
205		---	---	ND	---	0.524
206		---	---	ND	---	0.524
207		---	---	ND	---	0.524
208		---	---	ND	---	0.524
209		---	---	ND	---	0.524

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKBC
Lab Sample ID BLANK-18405
Filename P81218A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	0.667
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	0.667

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-18406	
Filename	P81218A_04	Matrix
Total Amount Extracted	965 mL	Water
ICAL ID	P81218A03	Dilution
CCal Filename(s)	P81218A_02	Extracted
Method Blank ID	BLANK-18405	Analyzed
		12/18/2008 07:35
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.13	113	2.0	0.855	43
3	1.0	1.15	115	2.0	0.955	48
4	1.0	1.07	107	2.0	0.902	45
15	1.0	1.15	115	2.0	1.09	54
19	1.0	1.03	103	2.0	1.00	50
37	1.0	1.12	112	2.0	1.28	64
54	1.0	1.06	106	2.0	0.988	49
81	1.0	1.05	105	2.0	1.36	68
77	1.0	1.05	105	2.0	1.37	69
104	1.0	1.03	103	2.0	1.17	58
105	1.0	1.06	106	2.0	1.36	68
114	1.0	1.08	108	2.0	1.34	67
118	1.0	1.11	111	2.0	1.36	68
123	1.0	1.04	104	2.0	1.36	68
126	1.0	1.03	103	2.0	1.39	70
155	1.0	1.05	105	2.0	1.20	60
156/157	2.0	2.15	108	4.0	2.76	69
167	1.0	1.13	113	2.0	1.41	70
169	1.0	1.11	111	2.0	1.43	71
188	1.0	1.02	102	2.0	1.29	65
189	1.0	1.08	108	2.0	1.50	75
202	1.0	1.02	102	2.0	1.35	67
205	1.0	1.04	104	2.0	1.35	67
206	1.0	1.01	101	2.0	1.38	69
208	1.0	1.03	103	2.0	1.31	65
209	1.0	1.04	104	2.0	1.35	67

P = Recovery outside of method 1668A control limits
 Nn = Result obtained from alternate analysis
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 ! = See Discussion
 ng = Nanograms
 I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-18407	
Filename	P81218A_05	Matrix
Total Amount Extracted	961 mL	Water
ICAL ID	P81218A03	Dilution
CCal Filename(s)	P81218A_02	Extracted
Method Blank ID	BLANK-18405	Analyzed
		12/18/2008 08:34
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.11	111	2.0	0.840	42
3	1.0	1.16	116	2.0	0.909	45
4	1.0	1.06	106	2.0	0.865	43
15	1.0	1.16	116	2.0	1.06	53
19	1.0	1.02	102	2.0	0.963	48
37	1.0	1.12	112	2.0	1.23	61
54	1.0	1.04	104	2.0	0.935	47
81	1.0	1.08	108	2.0	1.30	65
77	1.0	1.05	105	2.0	1.35	68
104	1.0	1.04	104	2.0	1.07	54
105	1.0	1.06	106	2.0	1.35	67
114	1.0	1.09	109	2.0	1.31	66
118	1.0	1.11	111	2.0	1.34	67
123	1.0	1.05	105	2.0	1.32	66
126	1.0	1.03	103	2.0	1.37	68
155	1.0	1.07	107	2.0	1.17	58
156/157	2.0	2.16	108	4.0	2.72	68
167	1.0	1.14	114	2.0	1.38	69
169	1.0	1.07	107	2.0	1.41	71
188	1.0	1.04	104	2.0	1.28	64
189	1.0	1.07	107	2.0	1.47	73
202	1.0	1.000	100	2.0	1.32	66
205	1.0	1.05	105	2.0	1.32	66
206	1.0	1.16	116	2.0	1.30	65
208	1.0	1.10	110	2.0	1.31	65
209	1.0	4.20	420 P	2.0	1.29	65

P = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
! = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-18406
Spike 1 Filename P81218A_04

Spike 2 ID LCSD-18407
Spike 2 Filename P81218A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	113	111	1.8
4-MoCB	3	115	116	0.9
2,2'-DiCB	4	107	106	0.9
4,4'-DiCB	15	115	116	0.9
2,2',6-TrCB	19	103	102	1.0
3,4,4'-TrCB	37	112	112	0.0
2,2',6,6'-TeCB	54	106	104	1.9
3,3,4,4'-TeCB	77	105	105	0.0
3,4,4',5-TeCB	81	105	108	2.8
2,2',4,6,6'-PeCB	104	103	104	1.0
2,3,3',4,4'-PeCB	105	106	106	0.0
2,3,4,4',5-PeCB	114	108	109	0.9
2,3',4,4',5-PeCB	118	111	111	0.0
2,3,4,4',5'-PeCB	123	104	105	1.0
3,3',4,4',5-PeCB	126	103	103	0.0
2,2',4,4',6,6'-HxCB	155	105	107	1.9
(156/157)	156/157	108	108	0.0
2,3',4,4',5,5'-HxCB	167	113	114	0.9
3,3',4,4',5,5'-HxCB	169	111	107	3.7
2,2',3,4',5,6,6'-HpCB	188	102	104	1.9
2,3,3',4,4',5,5'-HpCB	189	108	107	0.9
2,2',3,3',5,5',6,6'-OcCB	202	102	100	2.0
2,3,3',4,4',5,5',6-OcCB	205	104	105	1.0
2,2',3,3',4,4',5,5',6-NoCB	206	101	116	13.8
2,2',3,3',4,5,5',6,6'-NoCB	208	103	110	6.6
Decachlorobiphenyl	209	104	420	120.6

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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P: 503.239.8799 F: 503.239.8940
info@gsiwatersolutions.com www.gsiwatersolutions.com

Laboratory Data QA/QC Review Albina Riverlots Source Control Investigation Fourth Quarter 2008 Stormwater Sampling – Event 2

To: File
From: Erin Carroll, GSI
Date: February 20, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on December 12, 2008. Six stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO081481) and field duplicate (FO081482) were also submitted for analysis.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
 - Metals – EPA 200.8
 - Mercury – WPCL SOP M-10.02
 - Total suspended solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Organochlorine Pesticides – EPA 8081
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The following QA/QC review is based on the available documentation supplied from each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample (LCS/DLCS) recoveries within laboratory control limits

The results of the QA/QC review of the subcontracted laboratory reports 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 throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of PAHs, phthalates, pesticides, SVOCs, and PCB congeners. There are no reported detections of PAHs, pesticides, and PCB congeners in the associated method blanks.

Four SVOCs including phenol, diethyl phthalate, di-n-butyl phthalate, and butyl benzyl phthalate, were detected in the method blank for the EPA 8270C analysis and in the field samples (including the field decontamination blank) at estimated concentrations (greater than the method detection limit but less than the method reporting limit). The presence of these SVOCs in the samples at concentrations less than the MRL is considered to be a result of laboratory contamination; therefore, these data are shown as not detected ("U") at a concentration greater than the MRL. Di-n-butyl phthalate and/or butyl benzyl phthalate were detected at concentrations greater than the respective MRLs in samples FO081475 and F0181482. These data are flagged accordingly ("B") in the data table and may be biased high.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, pesticides, and SVOCs. All surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the target ranges specified in the method with 14 exceptions. These exceptions are flagged “P” in the Pace laboratory report. Pace states that the data were automatically corrected for variation in recovery and accurate values were obtained.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of PAHs, phthalates, SVOCs and PCB congeners. The laboratory advisory criteria were exceeded during the SVOC analysis for benzoic acid and 2,4-dinitrophenol; however, CAS reports that because these compounds are not included in the subset of analytes used to control the analysis, no further corrective action was required.

The recovery of pentachlorophenol in the LCS was outside the lower control limit. Pentachlorophenol was not detected in field samples at concentrations greater than the MRL but was detected in one sample at a concentration greater than the MDL. This detection is flagged as estimated (“J”) because the value is less than the MRL; the estimated concentration may be biased low because of the LCS control limit exceedance.

The relative percent difference (RPD) for 2,4-Dinitrophenol between the LCS/DLCS was outside of control limits. CAS reports that the RPD criterion for this analyte is not applicable because the analyte concentration was not significantly greater than the MRL.

The RPD for 4-Chloroaniline between the LCS/DLCS was outside of control limits. However, because the percent recoveries for the LCS and the DLCS were within acceptance limits, the analytical batch was in control and no further corrective action was taken.

Other

Some organochlorine pesticide compounds are flagged “P” in the subcontracted CAS report because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD. These values are flagged “J” in the report tables to indicate that they are estimated values.

The laboratory reports for PAHs, phthalates, pesticides, and SVOCs indicate that the method reporting limit was elevated in a number of samples due to sample matrix effects.

A field decontamination blank was collected and analyzed for metals, PAHs, phthalates, pesticides, SVOC, and PCB Congeners. Three SVOCs were detected in the field decontamination blank at estimated concentrations between the MDL and the MRL. Because two of the three of these detected compounds (diethyl phthalate and di-n-butyl phthalate) were also detected in the method blank at similar concentrations these results are considered a result of laboratory contamination and are shown as not detected (“U”) at a concentration greater than the MRL (as discussed above). The third SVOC, bis(2-ethylhexyl)phthalate, was not detected in the method blank and is flagged as an estimated value “J”. No other analytes were detected in the field decontamination blank.



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



Date: 12/12/08
Page: 1 of 1
Collected By: M. S. J. V. 13

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

TSS

PCB Congeners (All 209)

PAH + Phthalates (TA)

SVOC's (CAS)

Pesticides (CAS)

Total Metals (As, Cd, Cr, Cu,

Pb, Ni, Ag, Zn)

Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO 081475

SW-43-ABC290-1208
N ALBINA & RIVER

43_SW1

12/12/08

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7.8

56

7.9

FO 081476

SW-43-ABC339-1208
N KERBY & WHEELER

43_SW2

12/12/08

1321

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29

7.1

FO 081477

SW-43-ABC552-1208
N WHEELER PL & KERBY

43_SW3

12/12/08

1330

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106

7.2

FO 081478

SW-43-ABC410-1208
N KERBY & TILLAMOOK

43_SW4

12/12/08

1310

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7.8

34

7.5

FO 081479

SW-44-ABC352-1208
N HARDING & RIVER

44_SW1

12/12/08

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7.1

81

10.1

FO 081480

SW-44A-ABC311-1208
N LARABEE & RANDOLPH

44A_SW1

12/12/08

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6.2

FO 081481

FIELD DECON BLANK

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FO 081482

DUPLICATE

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12/12/08

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Relinquished By: 1

Signature: *Matt Sullivan*
Time: 1435
Printed Name: Matt Sullivan
Date: 12/12/08

Relinquished By: 2

Signature: *Rona Kueh*
Time: 1425
Printed Name: Rona Kueh
Date: 12/12/08

Relinquished By: 3

Signature: *Matt Sullivan*
Time: 1435
Printed Name: Matt Sullivan
Date: 12/12/08

Relinquished By: 4

Signature: *Rona Kueh*
Time: 1425
Printed Name: Rona Kueh
Date: 12/12/08

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Relinquished By: 4

Signature: *Rona Kueh*
Time: 1425
Printed Name: Rona Kueh
Date: 12/12/08

S:\EID\1000\1020.005 - Portland Harbor Stormwater Sample\Sample\Portland Harbor Stormwater Of Grab COC FY08-09.xls



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: FO081475

Sample Collected: 12/12/08 11:57
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1208
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM11634
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Di-n-butyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	56	µmhos/cm	1	SM 2510 B	12/12/08
pH (FIELD)	7.9	pH Units	0.1	SM 4500-H B	12/12/08
TEMPERATURE	7.8	Deg. C	0.1	SM 2550 B	12/12/08
GENERAL					
TOTAL SUSPENDED SOLIDS	42	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	0.011	µg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.28	µg/L	0.1	EPA 200.8	12/15/08
CADMIUM	0.40	µg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	3.23	µg/L	0.4	EPA 200.8	12/15/08
COPPER	16.8	µg/L	0.2	EPA 200.8	12/15/08
LEAD	9.96	µg/L	0.1	EPA 200.8	12/15/08
NICKEL	2.45	µg/L	0.2	EPA 200.8	12/15/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	12/15/08
ZINC	86.6	µg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.90	ng/L	0.90	EPA 8081	12/17/08
4,4'-DDE	<0.52	ng/L	0.52	EPA 8081	12/17/08
4,4'-DDT	<3.1	ng/L	3.1	EPA 8081	12/17/08
Aldrin	<2.0	ng/L	2.0	EPA 8081	12/17/08
Alpha-BHC	<0.52	ng/L	0.52	EPA 8081	12/17/08
Alpha-Chlordane	<0.52	ng/L	0.52	EPA 8081	12/17/08
Beta-BHC	<1.2	ng/L	1.2	EPA 8081	12/17/08
Delta-BHC	<1.2	ng/L	1.2	EPA 8081	12/17/08
Dieldrin	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endosulfan I	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endosulfan II	<0.57	ng/L	0.57	EPA 8081	12/17/08
Endosulfan Sulfate	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endrin	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endrin Aldehyde	<0.52	ng/L	0.52	EPA 8081	12/17/08

Report Date: 02/02/09

Validated By:



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: FO081475

Sample Collected: 12/12/08 11:57

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 12/12/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 4

Address/Location: SW-43-ABC290-1208

2100 N ALBINA AVE

System ID: AM11634

Sample Point Code: 43_SW1

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Di-n-butyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<0.62	ng/L	0.62	EPA 8081	12/17/08
Gamma-BHC(Lindane)	<0.52	ng/L	0.52	EPA 8081	12/17/08
Gamma-Chlordane	<0.92	ng/L	0.92	EPA 8081	12/17/08
Heptachlor	<3.1	ng/L	3.1	EPA 8081	12/17/08
Heptachlor Epoxide	<0.52	ng/L	0.52	EPA 8081	12/17/08
Methoxychlor	<0.52	ng/L	0.52	EPA 8081	12/17/08
Toxaphene	<86	ng/L	86	EPA 8081	12/17/08

POLYCHLORINATED BIPHENYL CONGENERS -PACE

Refer to Contract Report Completed ng/L EPA 1668 MOD 01/05/09

POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0169	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0156	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0224	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0232	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0136	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	0.0364	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	0.0544	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0127	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	0.0898	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	0.0793	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0549	µg/L	0.0194	EPA 8270M-SIM	12/17/08

SEMI-VOLATILE ORGANICS - CAS

Report Date: 02/02/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081475

Sample Collected: 12/12/08 11:57
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1208
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM11634
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

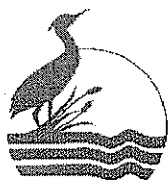
Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Di-n-butyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dichlorophenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
2,4-Dimethylphenol	<4.1	µg/L	4.1	EPA 8270	12/18/08
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chlorophenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
2-Methylnaphthalene	<0.21	µg/L	0.21	EPA 8270	12/18/08
2-Methylphenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Nitrophenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	12/18/08
3-Nitroaniline	<5.1	µg/L	5.1	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
4-Chloroaniline	<0.21	µg/L	0.21	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Methylphenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
4-Nitroaniline	<5.1	µg/L	5.1	EPA 8270	12/18/08
4-Nitrophenol	<11	µg/L	11	EPA 8270	12/18/08
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Anthracene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Benzo(a)pyrene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Benzo(b)fluoranthene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Benzo(k)fluoranthene	<0.21	µg/L	0.21	EPA 8270	12/18/08

Report Date: 02/02/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081475

Sample Collected: 12/12/08 11:57
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-1208
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM11634
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Di-n-butyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	<5.1	µg/L	5.1	EPA 8270	12/18/08
Benzyl alcohol	1.1	µg/L	0.51	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	3.1	µg/L	1.1	EPA 8270	12/18/08
Butyl benzyl phthalate	<0.21	µg/L	0.21	EPA 8270	12/18/08
Chrysene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	12/18/08
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-butyl phthalate	EST 0.26	µg/L	0.21	EPA 8270	12/18/08
Di-n-octyl phthalate	<0.21	µg/L	0.21	EPA 8270	12/18/08
Fluoranthene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Fluorene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Hexachlorobutadiene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<5.1	µg/L	5.1	EPA 8270	12/18/08
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Isophorone	<0.21	µg/L	0.21	EPA 8270	12/18/08
Naphthalene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	12/18/08
Phenanthrene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Phenol	<0.51	µg/L	0.51	EPA 8270	12/18/08
Pyrene	<0.21	µg/L	0.21	EPA 8270	12/18/08

End of Report for Sample ID: FO081475

Report Date: 02/02/09

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO081476

Sample Collected: 12/12/08 13:21
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-1208
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM11635
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	29	µmhos/cm	1	SM 2510 B	12/12/08
pH (FIELD)	7.1	pH Units	0.1	SM 4500-H B	12/12/08
TEMPERATURE	7.7	Deg. C	0.1	SM 2550 B	12/12/08
GENERAL					
TOTAL SUSPENDED SOLIDS	36	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	0.0096	µg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.94	µg/L	0.1	EPA 200.8	12/15/08
CADMIUM	89.8	µg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	5.07	µg/L	0.4	EPA 200.8	12/15/08
COPPER	23.1	µg/L	0.2	EPA 200.8	12/15/08
LEAD	13.5	µg/L	0.1	EPA 200.8	12/15/08
NICKEL	4.11	µg/L	0.2	EPA 200.8	12/15/08
SILVER	0.14	µg/L	0.1	EPA 200.8	12/15/08
ZINC	193	µg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.50	ng/L	0.5	EPA 8081	12/17/08
4,4'-DDE	<1.1	ng/L	1.1	EPA 8081	12/17/08
4,4'-DDT	<5.3	ng/L	5.3	EPA 8081	12/17/08
Aldrin	<1.4	ng/L	1.4	EPA 8081	12/17/08
Alpha-BHC	<0.50	ng/L	0.5	EPA 8081	12/17/08
Alpha-Chlordane	<0.50	ng/L	0.5	EPA 8081	12/17/08
Beta-BHC	<0.50	ng/L	0.5	EPA 8081	12/17/08
Delta-BHC	<0.50	ng/L	0.5	EPA 8081	12/17/08
Dieldrin	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endosulfan I	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endosulfan II	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endosulfan Sulfate	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endrin	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endrin Aldehyde	<1.0	ng/L	1.0	EPA 8081	12/17/08
Endrin Ketone	3.2	ng/L	0.5	EPA 8081	12/17/08

Report Date: 02/02/09

Validated By: 



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: FO081476

Sample Collected: 12/12/08 13:21

Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 4

**Address/Location: SW-43-ABC539-1208
N KERBY & WHEELER**

System ID: AM11635

Sample Point Code: 43_SW2

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<0.50	ng/L	0.5	EPA 8081	12/17/08
Gamma-Chlordane	<0.80	ng/L	0.8	EPA 8081	12/17/08
Heptachlor	<0.50	ng/L	0.5	EPA 8081	12/17/08
Heptachlor Epoxide	<0.50	ng/L	0.5	EPA 8081	12/17/08
Methoxychlor	<0.50	ng/L	0.5	EPA 8081	12/17/08
Toxaphene	<150	ng/L	150	EPA 8081	12/17/08
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0213	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0212	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0267	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0240	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0222	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	1.46	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	0.0439	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	0.0710	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0147	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	0.242	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	0.0803	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0560	µg/L	0.0194	EPA 8270M-SIM	12/17/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08

Report Date: 02/02/09

Validated By:



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: FO081476

Sample Collected: 12/12/08 13:21
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-1208
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM11635
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dimethylphenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chlorophenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Methylphenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Nitrophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<11	µg/L	11	EPA 8270	12/18/08
3-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Methylphenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
4-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	12/18/08
4-Nitrophenol	<11	µg/L	11	EPA 8270	12/18/08
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzoic acid	<26	µg/L	26	EPA 8270	12/18/08
Benzyl alcohol	0.88	µg/L	0.52	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	12/18/08

Report Date: 02/02/09

Validated By:



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: FO081476

Sample Collected: 12/12/08 13:21

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 12/12/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 4 of 4

Address/Location: SW-43-ABC539-1208

N KERBY & WHEELER

System ID: AM11635

Sample Point Code: 43_SW2

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	<5.2	µg/L	5.2	EPA 8270	12/18/08
Butyl benzyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Chrysene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	12/18/08
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluorene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<5.2	µg/L	5.2	EPA 8270	12/18/08
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Isophorone	<1.1	µg/L	1.1	EPA 8270	12/18/08
Naphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
Pentachlorophenol	<5.2	µg/L	5.2	EPA 8270	12/18/08
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Phenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
Pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08

End of Report for Sample ID: FO081476

Report Date: 02/02/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081477

Sample Collected: 12/12/08 13:32

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 12/12/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1208
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM11636
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	106	µmhos/cm	1	SM 2510 B	12/12/08
pH (FIELD)	7.2	pH Units	0.1	SM 4500-H B	12/12/08
TEMPERATURE	7.9	Deg. C	0.1	SM 2550 B	12/12/08
GENERAL					
TOTAL SUSPENDED SOLIDS	292	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	0.049	µg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	3.46	µg/L	0.1	EPA 200.8	12/15/08
CADMIUM	1.72	µg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	14.1	µg/L	0.4	EPA 200.8	12/15/08
COPPER	40.0	µg/L	0.2	EPA 200.8	12/15/08
LEAD	39.0	µg/L	0.1	EPA 200.8	12/15/08
NICKEL	13.9	µg/L	0.2	EPA 200.8	12/15/08
SILVER	0.14	µg/L	0.1	EPA 200.8	12/15/08
ZINC	174	µg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.50	ng/L	0.50	EPA 8081	12/17/08
4,4'-DDE	<1.4	ng/L	1.4	EPA 8081	12/17/08
4,4'-DDT	<0.49	ng/L	0.49	EPA 8081	12/17/08
Aldrin	EST 5.5	ng/L	0.49	EPA 8081	12/17/08
Alpha-BHC	<0.49	ng/L	0.49	EPA 8081	12/17/08
Alpha-Chlordane	<0.49	ng/L	0.49	EPA 8081	12/17/08
Beta-BHC	<0.49	ng/L	0.49	EPA 8081	12/17/08
Delta-BHC	<15	ng/L	15	EPA 8081	12/17/08
Dieldrin	EST 5.0	ng/L	0.49	EPA 8081	12/17/08
Endosulfan I	<0.58	ng/L	0.58	EPA 8081	12/17/08
Endosulfan II	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endosulfan Sulfate	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endrin	<0.74	ng/L	0.74	EPA 8081	12/17/08
Endrin Aldehyde	<0.49	ng/L	0.49	EPA 8081	12/17/08

Report Date: 02/02/09

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO081477

Sample Collected: 12/12/08 13:32
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1208
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AM11636
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<0.49	ng/L	0.49	EPA 8081	12/17/08
Gamma-BHC(Lindane)	<0.49	ng/L	0.49	EPA 8081	12/17/08
Gamma-Chlordane	<0.96	ng/L	0.96	EPA 8081	12/17/08
Heptachlor	<6.1	ng/L	6.1	EPA 8081	12/17/08
Heptachlor Epoxide	<0.49	ng/L	0.49	EPA 8081	12/17/08
Methoxychlor	<0.78	ng/L	0.78	EPA 8081	12/17/08
Toxaphene	<140	ng/L	140	EPA 8081	12/17/08
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0165	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0184	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0181	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0239	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0136	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	0.0323	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	0.0715	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0145	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	<0.0291	µg/L	0.0291	EPA 8270M-SIM	12/17/08
Phenanthrene	0.0540	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0651	µg/L	0.0194	EPA 8270M-SIM	12/17/08

SEMI-VOLATILE ORGANICS - CAS

Report Date: 02/02/09

Validated By:



LABORATORY ANALYSIS REPORT

Sample ID: **FO081477**

Sample Collected: 12/12/08 13:32
Sample Received: 12/12/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1208
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM11636
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<0.98	µg/L	0.98	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.98	µg/L	0.98	EPA 8270	12/18/08
1,3-Dichlorobenzene	<0.98	µg/L	0.98	EPA 8270	12/18/08
1,4-Dichlorobenzene	<0.98	µg/L	0.98	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
2,4-Dichlorophenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
2,4-Dimethylphenol	<20	µg/L	20	EPA 8270	12/18/08
2,4-Dinitrophenol	<20	µg/L	20	EPA 8270	12/18/08
2,4-Dinitrotoluene	<0.98	µg/L	0.98	EPA 8270	12/18/08
2,6-Dinitrotoluene	<0.98	µg/L	0.98	EPA 8270	12/18/08
2-Chloronaphthalene	<0.98	µg/L	0.98	EPA 8270	12/18/08
2-Chlorophenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
2-Methylnaphthalene	<0.98	µg/L	0.98	EPA 8270	12/18/08
2-Methylphenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
2-Nitroaniline	<0.98	µg/L	0.98	EPA 8270	12/18/08
2-Nitrophenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<9.8	µg/L	9.8	EPA 8270	12/18/08
3-Nitroaniline	<4.9	µg/L	4.9	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<9.8	µg/L	9.8	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<0.98	µg/L	0.98	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
4-Chloroaniline	<0.98	µg/L	0.98	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<0.98	µg/L	0.98	EPA 8270	12/18/08
4-Methylphenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
4-Nitroaniline	<4.9	µg/L	4.9	EPA 8270	12/18/08
4-Nitrophenol	<9.8	µg/L	9.8	EPA 8270	12/18/08
Acenaphthene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Acenaphthylene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Anthracene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Benzo(a)anthracene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Benzo(a)pyrene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Benzo(b)fluoranthene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Benzo(k)fluoranthene	<0.98	µg/L	0.98	EPA 8270	12/18/08

Report Date: 02/02/09

Validated By: 



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081477

Sample Collected: 12/12/08 13:32
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-1208
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM11636
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	<25	µg/L	25	EPA 8270	12/18/08
Benzyl alcohol	<2.5	µg/L	2.5	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<0.98	µg/L	0.98	EPA 8270	12/18/08
Bis(2-chloroethyl) ether	<0.98	µg/L	0.98	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<0.98	µg/L	0.98	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	<4.9	µg/L	4.9	EPA 8270	12/18/08
Butyl benzyl phthalate	<0.98	µg/L	0.98	EPA 8270	12/18/08
Chrysene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Dibenzofuran	<0.98	µg/L	0.98	EPA 8270	12/18/08
Diethyl phthalate	<0.98	µg/L	0.98	EPA 8270	12/18/08
Dimethyl phthalate	<0.98	µg/L	0.98	EPA 8270	12/18/08
Di-n-butyl phthalate	<0.98	µg/L	0.98	EPA 8270	12/18/08
Di-n-octyl phthalate	<0.98	µg/L	0.98	EPA 8270	12/18/08
Fluoranthene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Fluorene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Hexachlorobenzene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Hexachlorobutadiene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<4.9	µg/L	4.9	EPA 8270	12/18/08
Hexachloroethane	<0.98	µg/L	0.98	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Isophorone	<0.98	µg/L	0.98	EPA 8270	12/18/08
Naphthalene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Nitrobenzene	<0.98	µg/L	0.98	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<0.98	µg/L	0.98	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<0.98	µg/L	0.98	EPA 8270	12/18/08
Pentachlorophenol	<4.9	µg/L	4.9	EPA 8270	12/18/08
Phenanthrene	<0.98	µg/L	0.98	EPA 8270	12/18/08
Phenol	<2.5	µg/L	2.5	EPA 8270	12/18/08
Pyrene	<0.98	µg/L	0.98	EPA 8270	12/18/08

End of Report for Sample ID: FO081477

Report Date: 02/02/09

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: **FO081478**

Sample Collected: 12/12/08 13:10
Sample Received: 12/12/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC499-1208
N KERBY & TILLAMOOK
Sample Point Code: 43_SW4
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM11637
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

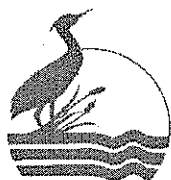
Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	34	μ mhos/cm	1	SM 2510 B	12/12/08
pH (FIELD)	7.5	pH Units	0.1	SM 4500-H B	12/12/08
TEMPERATURE	7.8	Deg. C	0.1	SM 2550 B	12/12/08
GENERAL					
TOTAL SUSPENDED SOLIDS	48	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	0.012	μ g/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.77	μ g/L	0.1	EPA 200.8	12/15/08
CADMIUM	150	μ g/L	0.1	EPA 200.8	12/15/08
CHROMIUM	7.22	μ g/L	0.4	EPA 200.8	12/15/08
COPPER	31.8	μ g/L	0.2	EPA 200.8	12/15/08
LEAD	24.1	μ g/L	0.1	EPA 200.8	12/15/08
NICKEL	5.77	μ g/L	0.2	EPA 200.8	12/15/08
SILVER	0.30	μ g/L	0.1	EPA 200.8	12/15/08
ZINC	286	μ g/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.88	ng/L	0.88	EPA 8081	12/17/08
4,4'-DDE	<1.6	ng/L	1.6	EPA 8081	12/17/08
4,4'-DDT	<0.88	ng/L	0.88	EPA 8081	12/17/08
Aldrin	<4.8	ng/L	4.8	EPA 8081	12/17/08
Alpha-BHC	<2.2	ng/L	2.2	EPA 8081	12/17/08
Alpha-Chlordane	<0.50	ng/L	0.5	EPA 8081	12/17/08
Beta-BHC	<0.50	ng/L	0.5	EPA 8081	12/17/08
Delta-BHC	<5.2	ng/L	5.2	EPA 8081	12/17/08
Dieldrin	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endosulfan I	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endosulfan II	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endosulfan Sulfate	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endrin	<0.50	ng/L	0.5	EPA 8081	12/17/08
Endrin Aldehyde	<6.7	ng/L	6.7	EPA 8081	12/17/08

Report Date: 02/02/09

Validated By: 



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: FO081478

Sample Collected: 12/12/08 13:10

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 12/12/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 4

**Address/Location: SW-43-ABC499-1208
N KERBY & TILLAMOOK**

System ID: AM11637

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	EST 6.3	ng/L	0.5	EPA 8081	12/17/08
Gamma-BHC(Lindane)	<0.50	ng/L	0.5	EPA 8081	12/17/08
Gamma-Chlordane	<5.5	ng/L	5.5	EPA 8081	12/17/08
Heptachlor	<1.1	ng/L	1.1	EPA 8081	12/17/08
Heptachlor Epoxide	<0.62	ng/L	0.62	EPA 8081	12/17/08
Methoxychlor	<0.50	ng/L	0.5	EPA 8081	12/17/08
Toxaphene	<950	ng/L	950	EPA 8081	12/17/08

POLYCHLORINATED BIPHENYL CONGENERS - PACE

Refer to Contract Report Completed ng/L EPA 1668 MOD 01/05/09

POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0149	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0162	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0293	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0302	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0192	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	2.34	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	0.0510	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	0.107	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0152	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	1.70	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	0.107	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0637	µg/L	0.0194	EPA 8270M-SIM	12/17/08

SEMI-VOLATILE ORGANICS - CAS

Report Date: 02/02/09

Validated By:



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: FO081478

Sample Collected: 12/12/08 13:10

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 12/12/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 3 of 4

**Address/Location: SW-43-ABC499-1208
N KERBY & TILLAMOOK**

System ID: AM11637

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,2-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,3-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,4-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dimethylphenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Nitrophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<11	µg/L	11	EPA 8270	12/18/08
3-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
4-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	12/18/08
4-Nitrophenol	<11	µg/L	11	EPA 8270	12/18/08
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08

Report Date: 02/02/09

Validated By:



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: **FO081478**

Sample Collected: 12/12/08 13:10
Sample Received: 12/12/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC499-1208
N KERBY & TILLAMOOK
Sample Point Code: 43_SW4
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM11637
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	<26	µg/L	26	EPA 8270	12/18/08
Benzyl alcohol	<2.6	µg/L	2.6	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	12/18/08
Bis(2-chloroethyl) ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	6.7	µg/L	5.2	EPA 8270	12/18/08
Butyl benzyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Chrysene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	12/18/08
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluorene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<5.2	µg/L	5.2	EPA 8270	12/18/08
Hexachloroethane	<1.1	µg/L	1.1	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Isophorone	<1.1	µg/L	1.1	EPA 8270	12/18/08
Naphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Nitrobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
Pentachlorophenol	<5.2	µg/L	5.2	EPA 8270	12/18/08
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Phenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
Pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08

End of Report for Sample ID: FO081478

Report Date: 02/02/09

Validated By:

January 22, 2009

Analytical Report for Service Request No: K0812190

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: Portland Harbor Stormwater Samp

Dear Jennifer:

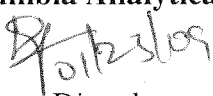
Enclosed are the results of the samples submitted to our laboratory on December 16, 2008. For your reference, these analyses have been assigned our service request number K0812190.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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 PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/lb

Page 1 of 53

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)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request No.: K0812190
Date Received: 12/16/2008

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 II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix Spike (MS), and Laboratory Control Sample (LCS).

Sample Receipt

Eight water samples were received for analysis at Columbia Analytical Services on 12/16/2008. 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.

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for few analytes in CCV 0102F055, 0102F056, 0102F073 and 0102F074. 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.

Second Source Exceptions:

The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are 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 4,4'-DDE in ICAL 8115. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action was necessary.

Sample Confirmation Notes:

The confirmation comparison criterion of 40% difference for at least one analyte was exceeded in several 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.

Elevated Method Reporting Limits:

The reporting limit is elevated for at least one analyte in most 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.

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

Approved by  Date 

Semivolatile Organic Compounds by EPA Method 8270C

Lab Control Sample (LCS) Exceptions:

The advisory criteria were exceeded for the following analytes in replicate Laboratory Control Sample (LCS/DLCS) KWG0813479-1 and KWG0813479-2: Benzoic Acid, 2,4-dinitrophenol. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

The spike recovery of Pentachlorophenol for LCS KWG0813479-1 was outside the lower control criterion. The analyte in question was not detected at levels greater than the MRL in the associated field samples. The error associated with reduced recovery equates to a potential low bias. Additional analysis of the associated field samples could not be performed because insufficient sample remained for testing. The data is flagged to indicate the problem.

Relative Percent Difference Exceptions:


The Relative Percent Difference (RPD) criterion for the replicate analysis of 2,4-Dinitrophenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG0813479-1 and KWG0813479-2 is not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

The Relative Percent Difference (RPD) for 4-Chloroaniline in the replicate Laboratory Control Sample (LCS/DLCS) analyses KWG0813479-1 and KWG0813479-2) was outside control criteria. All spike recoveries for the analyte in question were within acceptance limits in the LCS/DLCS, indicating the analytical batch was in control. No further corrective action was appropriate.

Elevated Method Reporting Limits:

The reporting limits are elevated for most samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

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

Approved by  Date 01/23/09

Chain of Custody Documentation

CHAIN OF CUSTODY

PROJECT NAME <u>Portland Harbor Stormwater Samp</u>				PROJECT NUMBER _____				
PROJECT MANAGER <u>Jennifer Shackelford</u>				COMPANY/ADDRESS <u>City of Portland BES-WPCL</u>				
CITY/STATE/ZIP _____				E-MAIL ADDRESS _____				
PHONE # _____				FAX# _____				
SAMPLER'S SIGNATURE _____				SAMPLER'S SIGNATURE _____				
SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS			REMARKS
<u>F0081475</u>	<u>12/12/08</u>	<u>1157</u>		<u>Storm water</u>	Semivolatile Organics by GC/MS <u>LOW</u> 625 <input type="checkbox"/> 8270 <input checked="" type="checkbox"/> 8270LL <input checked="" type="checkbox"/> <u>LEVEL</u>			
<u>1476</u>		<u>1321</u>		<u>2</u>	Volatile Organics <u>LOW</u> 624 <input type="checkbox"/> 8260 <input type="checkbox"/> 8021 <input type="checkbox"/> BTEX <input type="checkbox"/>			
<u>1477</u>		<u>1332</u>		<u>2</u>	Hydrocarbons (*see below) <input type="checkbox"/> Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Oil <input type="checkbox"/>			
<u>1478</u>		<u>1310</u>		<u>2</u>	<input type="checkbox"/> Fuel Fingerprint (FIQ) <input type="checkbox"/> NW-HCID Screen			
<u>1479</u>		<u>1144</u>		<u>2</u>	<input type="checkbox"/> Oil & Grease/TRPH 1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/>			
<u>1480</u>		<u>1120</u>		<u>2</u>	PCB's <input type="checkbox"/> Congeners <input type="checkbox"/>			
<u>1481</u>		<u>1344</u>		<u>2</u>	Aroclors <input type="checkbox"/> Pesticides/Herbicides <u>LOW LEVEL</u> 608 <input type="checkbox"/> 8081A <input checked="" type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>			
<u>1482</u>		<u>—</u>		<u>2</u>	Chlorophenolics - 8151M <input type="checkbox"/> Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PCP <input type="checkbox"/>			
					PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/>			
					Metals, Total or Dissolved (See list below)			
					Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/>			
					pH, Cond., Cl, SO ₄ , PO ₄ , F, NO ₂ , NO ₃ , BOD, TSS, TDS (circle)			
					NH ₃ -N, COD, Total-P, TKN, TOC, DOC (circle) NO ₂ +NO ₃			
					TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>			

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 _____

RELINQUISHED BY:

Signature [Signature] Date/Time 12/12/08 9:15
Printed Name K. Shackelford Firm WPCL

RECEIVED BY:

Signature [Signature] Date/Time 12/12/08 9:15
Printed Name [Signature] Firm _____

RELINQUISHED BY:

Signature [Signature] Date/Time 12/16/08 2:40
Printed Name [Signature] Firm _____

RECEIVED BY:

Signature [Signature] Date/Time 12/16/08 1:40
Printed Name [Signature] Firm _____

Circle which metals are to be analyzed:
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Please run Low level Semi-vols 8270 + Low level pesticides 8081. Thanks.

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC DS

Client / Project: City of Portland Service Request K08 12/90
Received: 12-16-08 Opened: 12-16-08 By: SW

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): 6.3 _____

Temperature Blank (°C): 4.9 _____

6. If applicable, list Chain of Custody Numbers: _____

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____

8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N

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.)? NA Y N

11. Did all sample labels and tags agree with custody papers? *Indicate in the table below* NA Y N

12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N

13. Were the pH-preserved bottles tested* received at the appropriate pH? *Indicate in the table below* NA Y N

14. Were VOA vials and 1631 Mercury bottles received without headspace? *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

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: _____

Organochlorine Pesticides

EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081475
Lab Code: K0812190-001
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.52	0.22	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	Ui	1.2	1.2	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.52	0.49	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	1.2	1.2	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	3.1	3.1	1	12/17/08	01/04/09	KWG0813446	
Aldrin	ND	Ui	2.0	2.0	1	12/17/08	01/04/09	KWG0813446	
Heptachlor Epoxide	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.92	0.92	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.52	0.26	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	Ui	0.52	0.37	1	12/17/08	01/11/09	KWG0813446	
Dieldrin	ND	U	0.52	0.38	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.52	0.51	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	Ui	0.57	0.57	1	12/17/08	01/11/09	KWG0813446	
4,4'-DDD	ND	Ui	0.90	0.90	1	12/17/08	01/11/09	KWG0813446	
Endrin Aldehyde	ND	U	0.52	0.22	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.52	0.29	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	Ui	3.1	3.1	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	Ui	0.62	0.62	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.52	0.29	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	86	86	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	46	10-121	01/04/09	Acceptable
Decachlorobiphenyl	64	17-150	01/04/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081476
Lab Code: K0812190-002
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	0.50	0.50	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	U	0.50	0.41	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	0.50	0.50	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	U	0.50	0.18	1	12/17/08	01/04/09	KWG0813446	
Aldrin	ND	Ui	1.4	1.4	1	12/17/08	01/04/09	KWG0813446	
Heptachlor Epoxide	ND	U	0.50	0.21	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.80	0.80	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	Ui	0.50	0.50	1	12/17/08	01/11/09	KWG0813446	
alpha-Chlordane	ND	U	0.50	0.27	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.50	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.50	0.49	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.50	0.35	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	U	0.50	0.21	1	12/17/08	01/04/09	KWG0813446	
Endrin Aldehyde	ND	Ui	1.0	1.0	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.50	0.28	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	Ui	5.3	5.3	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	3.2		0.50	0.32	1	12/17/08	01/11/09	KWG0813446	
Methoxychlor	ND	U	0.50	0.28	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	150	150	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	48	10-121	01/04/09	Acceptable
Decachlorobiphenyl	67	17-150	01/04/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081477
Lab Code: K0812190-003
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	U	0.49	0.41	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	15	15	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	6.1	6.1	1	12/17/08	01/04/09	KWG0813446	
Aldrin	5.5	P	0.49	0.11	1	12/17/08	01/11/09	KWG0813446	
Heptachlor Epoxide	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.96	0.96	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	Ui	0.58	0.58	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.49	0.27	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	5.0	P	0.49	0.37	1	12/17/08	01/11/09	KWG0813446	
4,4'-DDE	ND	Ui	1.4	1.4	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	Ui	0.74	0.74	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.49	0.35	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	Ui	0.50	0.50	1	12/17/08	01/04/09	KWG0813446	
Endrin Aldehyde	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	U	0.49	0.17	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	U	0.49	0.32	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	Ui	0.78	0.78	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	140	140	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	39	10-121	01/04/09	Acceptable
Decachlorobiphenyl	42	17-150	01/04/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081478
Lab Code: K0812190-004
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	2.2	2.2	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	U	0.50	0.41	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	5.2	5.2	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	1.1	1.1	1	12/17/08	01/11/09	KWG0813446	
Aldrin	ND	Ui	4.8	4.8	1	12/17/08	01/04/09	KWG0813446	
Heptachlor Epoxide	ND	Ui	0.62	0.62	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	Ui	5.5	5.5	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.50	0.25	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.50	0.27	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.50	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	Ui	1.6	1.6	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.50	0.49	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.50	0.35	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	Ui	0.88	0.88	1	12/17/08	01/04/09	KWG0813446	
Endrin Aldehyde	ND	Ui	6.7	6.7	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.50	0.28	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	Ui	0.88	0.88	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	6.3	P	0.50	0.32	1	12/17/08	01/11/09	KWG0813446	
Methoxychlor	ND	U	0.50	0.28	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	950	950	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	48	10-121	01/04/09	Acceptable
Decachlorobiphenyl	53	17-150	01/04/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0813446-3
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	U	0.49	0.41	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	U	0.49	0.14	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	U	0.49	0.18	1	12/17/08	01/04/09	KWG0813446	
Aldrin	ND	U	0.49	0.11	1	12/17/08	01/04/09	KWG0813446	
Heptachlor Epoxide	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	U	0.49	0.31	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.49	0.25	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.49	0.27	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.49	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	U	0.49	0.19	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.49	0.49	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.49	0.35	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endrin Aldehyde	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	U	0.49	0.17	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	U	0.49	0.32	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	U	25	9.0	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	10-121	01/04/09	Acceptable
Decachlorobiphenyl	79	17-150	01/04/09	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.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 081475	K0812190-001	46	64
FO 081476	K0812190-002	48	67
FO 081477	K0812190-003	39	42
FO 081478	K0812190-004	48	53
FO 081479	K0812190-005	44	58
FO 081480	K0812190-006	41	57
FO 081481	K0812190-007	50	54
FO 081482	K0812190-008	43	56
Method Blank	KWG0813446-3	50	79
Lab Control Sample	KWG0813446-1	48	83
Duplicate Lab Control Sample	KWG0813446-2	51	85

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	10-121
Sur2 = Decachlorobiphenyl	17-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Extracted: 12/17/2008
Date Analyzed: 01/04/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG0813446

Analyte Name	Lab Control Sample KWG0813446-1 Lab Control Spike			Duplicate Lab Control Sample KWG0813446-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	6.73	10.0	67	6.37	10.0	64	43-127	6	30
beta-BHC	7.27	10.0	73	6.83	10.0	68	41-129	6	30
gamma-BHC (Lindane)	7.17	10.0	72	6.71	10.0	67	42-128	7	30
delta-BHC	7.58	10.0	76	7.06	10.0	71	47-141	7	30
Heptachlor	7.23	10.0	72	6.51	10.0	65	34-126	10	30
Aldrin	6.45	10.0	65	5.85	10.0	59	10-125	10	30
Heptachlor Epoxide	7.44	10.0	74	6.98	10.0	70	45-124	6	30
gamma-Chlordane	7.18	10.0	72	6.66	10.0	67	48-119	7	30
Endosulfan I	7.57	10.0	76	7.09	10.0	71	30-115	7	30
alpha-Chlordane	7.36	10.0	74	6.70	10.0	67	48-119	9	30
Dieldrin	7.82	10.0	78	7.26	10.0	73	50-120	7	30
4,4'-DDE	8.79	10.0	88	8.55	10.0	86	36-137	3	30
Endrin	8.10	10.0	81	7.09	10.0	71	53-132	13	30
Endosulfan II	7.85	10.0	78	7.39	10.0	74	32-123	6	30
4,4'-DDD	8.69	10.0	87	7.90	10.0	79	38-140	10	30
Endrin Aldehyde	5.51	10.0	55	5.29	10.0	53	30-114	4	30
Endosulfan Sulfate	7.18	10.0	72	6.89	10.0	69	46-120	4	30
4,4'-DDT	8.17	10.0	82	7.93	10.0	79	45-146	3	30
Endrin Ketone	7.51	10.0	75	7.28	10.0	73	45-127	3	30
Methoxychlor	7.83	10.0	78	7.50	10.0	75	48-140	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Semi-Volatile Organic Compounds

EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081475
Lab Code: K0812190-001
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.036	1	12/18/08	12/30/08	KWG0813479	
Phenol	0.48	J	0.51	0.064	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.51	0.055	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.21	0.030	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	1.1		0.51	0.074	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	0.23	J	0.51	0.12	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.038	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	0.26	J	0.51	0.13	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	0.21	0.017	1	12/18/08	12/30/08	KWG0813479	
2-Nitrophenol	ND	U	0.51	0.064	1	12/18/08	12/30/08	KWG0813479	
2,4-Dimethylphenol	ND	U	4.1	2.3	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
2,4-Dichlorophenol	ND	U	0.51	0.048	1	12/18/08	12/30/08	KWG0813479	
Benzoic Acid	1.9	J	5.1	1.2	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	12/18/08	12/30/08	KWG0813479	
Naphthalene	0.062	J	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
4-Chloroaniline	ND	U	0.21	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobutadiene	ND	U	0.21	0.028	1	12/18/08	12/30/08	KWG0813479	
4-Chloro-3-methylphenol	ND	U	0.51	0.038	1	12/18/08	12/30/08	KWG0813479	
2-Methylnaphthalene	ND	U	0.21	0.027	1	12/18/08	12/30/08	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.1	0.96	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.076	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081475
Lab Code: K0812190-001
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.1	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.86	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.061	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.1	0.096	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.027	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobenzene	ND	U	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
Pentachlorophenol	0.37	J	1.1	0.35	1	12/18/08	12/30/08	KWG0813479	
Phenanthrene	0.073	J	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
Anthracene	0.048	J	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
Di-n-butyl Phthalate	0.26		0.21	0.024	1	12/18/08	12/30/08	KWG0813479	
Fluoranthene	0.15	J	0.21	0.021	1	12/18/08	12/30/08	KWG0813479	
Pyrene	0.19	J	0.21	0.020	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	ND	U	0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	2.1	0.44	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	0.054	J	0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
Chrysene	0.10	J	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	3.1		1.1	0.14	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	12/18/08	12/30/08	KWG0813479	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
Benzo(a)pyrene	ND	U	0.21	0.032	1	12/18/08	12/30/08	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	12/18/08	12/30/08	KWG0813479	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	12/18/08	12/30/08	KWG0813479	
Benzo(g,h,i)perylene	0.062	J	0.21	0.020	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081475
Lab Code: K0812190-001

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	12/30/08	Acceptable
Phenol-d6	71	31-121	12/30/08	Acceptable
Nitrobenzene-d5	77	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	62	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	86	30-131	12/30/08	Acceptable
Terphenyl-d14	81	20-140	12/30/08	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 Stormwater Samp
 Sample Matrix: Water

Service Request: K0812190
 Date Collected: 12/12/2008
 Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081476
 Lab Code: K0812190-002
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.037	1	12/18/08	12/30/08	KWG0813479	
Phenol	0.38	J	0.52	0.065	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.52	0.056	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.21	0.030	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	0.88		0.52	0.076	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	0.22	J	0.52	0.12	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.039	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	0.21	J	0.52	0.13	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	1.1	0.083	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.6	0.33	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	21	12	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.6	0.25	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	5.8	JD	26	5.7	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	1.1	0.083	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.25	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.6	0.20	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.2	0.98	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.22	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.078	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.18	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081476
Lab Code: K0812190-002
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.2	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.88	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.062	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.2	0.098	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.2	1.8	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	0.17	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.16	JD	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.21	JD	1.1	0.098	5	12/18/08	01/02/09	KWG0813479	
Butyl Benzyl Phthalate	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	11	2.3	5	12/18/08	01/02/09	KWG0813479	
Benz(a)anthracene	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
Chrysene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Bis(2-ethylhexyl) Phthalate	3.8	JD	5.2	0.68	5	12/18/08	01/02/09	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.1	0.088	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.1	0.088	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.1	0.098	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081476
Lab Code: K0812190-002

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	65	21-119	12/30/08	Acceptable
Phenol-d6	72	31-121	12/30/08	Acceptable
Nitrobenzene-d5	77	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	57	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	71	30-131	01/02/09	Acceptable
Terphenyl-d14	62	20-140	01/02/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081477
Lab Code: K0812190-003
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.98	0.18	5	12/18/08	01/02/09	KWG0813479	
Phenol	ND	U	2.5	0.32	5	12/18/08	01/02/09	KWG0813479	
2-Chlorophenol	ND	U	2.5	0.27	5	12/18/08	01/02/09	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.98	0.15	5	12/18/08	01/02/09	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
Benzyl Alcohol	ND	U	2.5	0.37	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.98	0.13	5	12/18/08	01/02/09	KWG0813479	
2-Methylphenol	ND	U	2.5	0.55	5	12/18/08	01/02/09	KWG0813479	
Hexachloroethane	ND	U	0.98	0.12	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.98	0.19	5	12/18/08	01/02/09	KWG0813479	
4-Methylphenol†	ND	U	2.5	0.60	5	12/18/08	01/02/09	KWG0813479	
Nitrobenzene	ND	U	0.98	0.14	5	12/18/08	01/02/09	KWG0813479	
Isophorone	ND	U	0.98	0.080	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.5	0.32	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	20	11	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.98	0.12	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.5	0.24	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	ND	U	25	5.5	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.98	0.080	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	0.98	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	0.98	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.5	0.19	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	0.98	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	4.9	0.95	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.5	0.29	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.5	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	0.98	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	0.98	0.12	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	0.98	0.075	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	0.98	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081477
Lab Code: K0812190-003
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.98	0.13	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	4.9	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	20	0.85	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	0.98	0.090	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	9.8	1.4	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	0.98	0.090	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	0.98	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	0.98	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	0.98	0.060	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	4.9	0.095	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	9.8	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	0.98	0.24	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.98	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	4.9	1.7	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	0.98	0.12	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	ND	U	0.98	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.14	JD	0.98	0.10	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.15	JD	0.98	0.095	5	12/18/08	01/02/09	KWG0813479	
Butyl Benzyl Phthalate	ND	U	0.98	0.090	5	12/18/08	01/02/09	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	9.8	2.2	5	12/18/08	01/02/09	KWG0813479	
Benz(a)anthracene	ND	U	0.98	0.090	5	12/18/08	01/02/09	KWG0813479	
Chrysene	ND	U	0.98	0.14	5	12/18/08	01/02/09	KWG0813479	
Bis(2-ethylhexyl) Phthalate	ND	U	4.9	0.65	5	12/18/08	01/02/09	KWG0813479	
Di-n-octyl Phthalate	ND	U	0.98	0.090	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	0.98	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	0.98	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	0.98	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	0.98	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	0.98	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	0.98	0.095	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081477
Lab Code: K0812190-003

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	69	21-119	01/02/09	Acceptable
Phenol-d6	67	31-121	01/02/09	Acceptable
Nitrobenzene-d5	69	29-121	01/02/09	Acceptable
2-Fluorobiphenyl	59	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	82	30-131	01/02/09	Acceptable
Terphenyl-d14	44	20-140	01/02/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081478
Lab Code: K0812190-004
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.19	5	12/18/08	01/02/09	KWG0813479	
Phenol	0.39	JD	2.6	0.33	5	12/18/08	01/02/09	KWG0813479	
2-Chlorophenol	ND	U	2.6	0.28	5	12/18/08	01/02/09	KWG0813479	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
1,4-Dichlorobenzene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzyl Alcohol	1.0	JD	2.6	0.38	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
2-Methylphenol	ND	U	2.6	0.57	5	12/18/08	01/02/09	KWG0813479	
Hexachloroethane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.20	5	12/18/08	01/02/09	KWG0813479	
4-Methylphenol†	ND	U	2.6	0.62	5	12/18/08	01/02/09	KWG0813479	
Nitrobenzene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Isophorone	ND	U	1.1	0.083	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.6	0.33	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	21	12	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.6	0.25	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	5.9	JD	26	5.7	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	1.1	0.083	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.86	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.6	0.20	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.2	0.98	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.22	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.078	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.18	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081478
Lab Code: K0812190-004
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.2	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.88	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.062	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.2	0.098	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.2	1.8	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.18	JD	1.1	0.098	5	12/18/08	01/02/09	KWG0813479	
Butyl Benzyl Phthalate	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	11	2.3	5	12/18/08	01/02/09	KWG0813479	
Benz(a)anthracene	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
Chrysene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Bis(2-ethylhexyl) Phthalate	6.7	D	5.2	0.68	5	12/18/08	01/02/09	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.1	0.093	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.1	0.088	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.1	0.088	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.1	0.098	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081478
Lab Code: K0812190-004

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	51	21-119	01/02/09	Acceptable
Phenol-d6	53	31-121	01/02/09	Acceptable
Nitrobenzene-d5	57	29-121	01/02/09	Acceptable
2-Fluorobiphenyl	58	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	68	30-131	01/02/09	Acceptable
Terphenyl-d14	55	20-140	01/02/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081479
Lab Code: K0812190-005
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.99	0.18	5	12/18/08	01/02/09	KWG0813479	
Phenol	0.70	JD	2.5	0.32	5	12/18/08	01/02/09	KWG0813479	
2-Chlorophenol	ND	U	2.5	0.27	5	12/18/08	01/02/09	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.99	0.15	5	12/18/08	01/02/09	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
Benzyl Alcohol	0.81	JD	2.5	0.37	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.99	0.13	5	12/18/08	01/02/09	KWG0813479	
2-Methylphenol	ND	U	2.5	0.55	5	12/18/08	01/02/09	KWG0813479	
Hexachloroethane	ND	U	0.99	0.12	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.99	0.19	5	12/18/08	01/02/09	KWG0813479	
4-Methylphenol†	ND	U	2.5	0.60	5	12/18/08	01/02/09	KWG0813479	
Nitrobenzene	ND	U	0.99	0.14	5	12/18/08	01/02/09	KWG0813479	
Isophorone	ND	U	0.99	0.080	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.5	0.32	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	20	11	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.99	0.12	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.5	0.24	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	16	JD	25	5.5	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.99	0.080	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.25	JD	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	0.99	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	0.99	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.5	0.19	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	0.22	JD	0.99	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.0	0.95	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.5	0.29	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.5	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	0.99	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	0.99	0.12	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	0.99	0.075	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	0.99	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081479
Lab Code: K0812190-005
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.99	0.13	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.0	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	20	0.85	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	0.99	0.090	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	9.9	1.4	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	0.99	0.090	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	0.99	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	0.99	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	0.99	0.060	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.0	0.095	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	9.9	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	0.99	0.24	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.99	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.0	1.7	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	0.13	JD	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	0.99	0.12	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	0.31	JD	0.99	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.14	JD	0.99	0.10	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.19	JD	0.99	0.095	5	12/18/08	01/02/09	KWG0813479	
Butyl Benzyl Phthalate	ND	U	0.99	0.090	5	12/18/08	01/02/09	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	9.9	2.2	5	12/18/08	01/02/09	KWG0813479	
Benz(a)anthracene	ND	U	0.99	0.090	5	12/18/08	01/02/09	KWG0813479	
Chrysene	ND	U	0.99	0.14	5	12/18/08	01/02/09	KWG0813479	
Bis(2-ethylhexyl) Phthalate	1.6	JD	5.0	0.65	5	12/18/08	01/02/09	KWG0813479	
Di-n-octyl Phthalate	ND	U	0.99	0.090	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	0.99	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	0.99	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	0.99	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	0.99	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	0.99	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	0.99	0.095	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081479
Lab Code: K0812190-005

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	55	21-119	01/02/09	Acceptable
Phenol-d6	59	31-121	01/02/09	Acceptable
Nitrobenzene-d5	63	29-121	01/02/09	Acceptable
2-Fluorobiphenyl	58	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	69	30-131	01/02/09	Acceptable
Terphenyl-d14	53	20-140	01/02/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081480
Lab Code: K0812190-006

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.18	5	12/18/08	01/02/09	KWG0813479	
Phenol	0.56	JD	2.6	0.32	5	12/18/08	01/02/09	KWG0813479	
2-Chlorophenol	ND	U	2.6	0.28	5	12/18/08	01/02/09	KWG0813479	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
1,4-Dichlorobenzene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzyl Alcohol	0.80	JD	2.6	0.37	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
2-Methylphenol	ND	U	2.6	0.56	5	12/18/08	01/02/09	KWG0813479	
Hexachloroethane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.19	5	12/18/08	01/02/09	KWG0813479	
4-Methylphenol†	0.70	JD	2.6	0.61	5	12/18/08	01/02/09	KWG0813479	
Nitrobenzene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Isophorone	ND	U	1.1	0.081	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.6	0.32	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	21	12	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.6	0.24	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	6.1	JD	26	5.6	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	1.1	0.081	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.54	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.6	0.19	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.1	0.96	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.076	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081480
Lab Code: K0812190-006
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.1	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.86	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.061	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.1	0.096	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.1	1.8	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	0.19	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	0.31	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.22	JD	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.28	JD	1.1	0.096	5	12/18/08	01/02/09	KWG0813479	
Butyl Benzyl Phthalate	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	11	2.2	5	12/18/08	01/02/09	KWG0813479	
Benz(a)anthracene	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Chrysene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Bis(2-ethylhexyl) Phthalate	3.6	JD	5.1	0.66	5	12/18/08	01/02/09	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.1	0.086	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.1	0.086	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.1	0.096	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081480
Lab Code: K0812190-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	62	21-119	01/02/09	Acceptable
Phenol-d6	61	31-121	01/02/09	Acceptable
Nitrobenzene-d5	68	29-121	01/02/09	Acceptable
2-Fluorobiphenyl	60	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	74	30-131	01/02/09	Acceptable
Terphenyl-d14	55	20-140	01/02/09	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081481
Lab Code: K0812190-007
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	12/18/08	12/30/08	KWG0813479	
Phenol	ND	U	0.50	0.063	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.50	0.054	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	ND	U	0.50	0.073	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	ND	U	0.50	0.11	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	ND	U	0.50	0.12	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.20	0.028	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	0.20	0.016	1	12/18/08	12/30/08	KWG0813479	
2-Nitrophenol	ND	U	0.50	0.063	1	12/18/08	12/30/08	KWG0813479	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	12/18/08	12/30/08	KWG0813479	
Benzoic Acid	ND	U	5.0	1.1	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	12/18/08	12/30/08	KWG0813479	
Naphthalene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
4-Chloroaniline	ND	U	0.20	0.025	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobutadiene	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	12/18/08	12/30/08	KWG0813479	
2-Methylnaphthalene	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	12/18/08	12/30/08	KWG0813479	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	12/18/08	12/30/08	KWG0813479	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	12/18/08	12/30/08	KWG0813479	
2-Chloronaphthalene	ND	U	0.20	0.041	1	12/18/08	12/30/08	KWG0813479	
2-Nitroaniline	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
Acenaphthylene	ND	U	0.20	0.015	1	12/18/08	12/30/08	KWG0813479	
Dimethyl Phthalate	ND	U	0.20	0.021	1	12/18/08	12/30/08	KWG0813479	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081481
Lab Code: K0812190-007

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
3-Nitroaniline	ND	U	1.0	0.029	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	12/18/08	12/30/08	KWG0813479	
Dibenzofuran	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
4-Nitrophenol	ND	U	2.0	0.28	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
Fluorene	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813479	
Diethyl Phthalate	0.035	J	0.20	0.012	1	12/18/08	12/30/08	KWG0813479	
4-Nitroaniline	ND	U	1.0	0.019	1	12/18/08	12/30/08	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	12/18/08	12/30/08	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
Pentachlorophenol	ND	U	1.0	0.34	1	12/18/08	12/30/08	KWG0813479	
Phenanthrene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
Anthracene	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
Di-n-butyl Phthalate	0.13	J	0.20	0.023	1	12/18/08	12/30/08	KWG0813479	
Fluoranthene	ND	U	0.20	0.020	1	12/18/08	12/30/08	KWG0813479	
Pyrene	ND	U	0.20	0.019	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
Chrysene	ND	U	0.20	0.028	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	0.33	J	1.0	0.13	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.0	0.090	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.0	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.0	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.0	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.0	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.0	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.0	0.095	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081481
Lab Code: K0812190-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	21-119	12/30/08	Acceptable
Phenol-d6	82	31-121	12/30/08	Acceptable
Nitrobenzene-d5	80	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	76	25-109	12/30/08	Acceptable
2,4,6-Tribromophenol	58	30-131	12/30/08	Acceptable
Terphenyl-d14	96	20-140	12/30/08	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081482
Lab Code: K0812190-008

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.036	1	12/18/08	12/30/08	KWG0813479	
Phenol	0.38	J	0.52	0.065	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.52	0.056	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.21	0.030	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	0.97		0.52	0.075	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	0.47	J	0.52	0.12	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.038	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	0.69		0.52	0.13	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	1.1	0.082	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.6	0.33	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	21	12	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.6	0.24	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	5.9	JD	26	5.7	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	1.1	0.082	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.93	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.6	0.19	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.2	0.97	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.077	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081482
Lab Code: K0812190-008
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.2	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.87	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.092	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.092	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.062	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.2	0.097	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.2	1.8	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	0.24	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	0.32	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.20	JD	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.24		0.21	0.020	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	0.43		0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	2.1	0.44	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	0.057	J	0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
Chrysene	0.15	J	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	3.9		1.1	0.14	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.1	0.092	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.1	0.087	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.1	0.087	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.1	0.097	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081482
Lab Code: K0812190-008

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	72	21-119	12/30/08	Acceptable
Phenol-d6	78	31-121	12/30/08	Acceptable
Nitrobenzene-d5	79	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	58	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	69	30-131	01/02/09	Acceptable
Terphenyl-d14	65	20-140	12/30/08	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 Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0813479-3

Units: ug/L

Basis: NA

Extraction Method: EPA 3520C

Level: Low

Analysis Method: 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.19	0.035	1	12/18/08	12/30/08	KWG0813479	
Phenol	0.25	J	0.48	0.063	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.48	0.054	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.19	0.021	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.19	0.029	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	ND	U	0.48	0.073	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	ND	U	0.48	0.11	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.19	0.037	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	ND	U	0.48	0.12	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.19	0.028	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	0.19	0.016	1	12/18/08	12/30/08	KWG0813479	
2-Nitrophenol	ND	U	0.48	0.063	1	12/18/08	12/30/08	KWG0813479	
2,4-Dimethylphenol	ND	U	3.8	2.2	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
2,4-Dichlorophenol	ND	U	0.48	0.047	1	12/18/08	12/30/08	KWG0813479	
Benzoic Acid	ND	U	4.8	1.1	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.19	0.016	1	12/18/08	12/30/08	KWG0813479	
Naphthalene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
4-Chloroaniline	ND	U	0.19	0.025	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobutadiene	ND	U	0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chloro-3-methylphenol	ND	U	0.48	0.037	1	12/18/08	12/30/08	KWG0813479	
2-Methylnaphthalene	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorocyclopentadiene	ND	U	0.95	0.19	1	12/18/08	12/30/08	KWG0813479	
2,4,6-Trichlorophenol	ND	U	0.48	0.058	1	12/18/08	12/30/08	KWG0813479	
2,4,5-Trichlorophenol	ND	U	0.48	0.031	1	12/18/08	12/30/08	KWG0813479	
2-Chloronaphthalene	ND	U	0.19	0.041	1	12/18/08	12/30/08	KWG0813479	
2-Nitroaniline	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Acenaphthylene	ND	U	0.19	0.015	1	12/18/08	12/30/08	KWG0813479	
Dimethyl Phthalate	ND	U	0.19	0.021	1	12/18/08	12/30/08	KWG0813479	
2,6-Dinitrotoluene	ND	U	0.19	0.033	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0813479-3
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
3-Nitroaniline	ND	U	0.95	0.029	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrophenol	ND	U	3.8	0.17	1	12/18/08	12/30/08	KWG0813479	
Dibenzofuran	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
4-Nitrophenol	ND	U	1.9	0.28	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrotoluene	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
Fluorene	ND	U	0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
Diethyl Phthalate	0.024	J	0.19	0.012	1	12/18/08	12/30/08	KWG0813479	
4-Nitroaniline	ND	U	0.95	0.019	1	12/18/08	12/30/08	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	1.9	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodiphenylamine	ND	U	0.19	0.048	1	12/18/08	12/30/08	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobenzene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
Pentachlorophenol	ND	U	0.95	0.34	1	12/18/08	12/30/08	KWG0813479	
Phenanthrene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
Anthracene	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Di-n-butyl Phthalate	0.15	J	0.19	0.023	1	12/18/08	12/30/08	KWG0813479	
Fluoranthene	ND	U	0.19	0.020	1	12/18/08	12/30/08	KWG0813479	
Pyrene	ND	U	0.19	0.019	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	0.066	J	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	1.9	0.43	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
Chrysene	ND	U	0.19	0.028	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	12/18/08	12/30/08	KWG0813479	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Benzo(a)pyrene	ND	U	0.19	0.031	1	12/18/08	12/30/08	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	12/18/08	12/30/08	KWG0813479	
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	12/18/08	12/30/08	KWG0813479	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0813479-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	71	21-119	12/30/08	Acceptable
Phenol-d6	73	31-121	12/30/08	Acceptable
Nitrobenzene-d5	85	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	77	25-109	12/30/08	Acceptable
2,4,6-Tribromophenol	85	30-131	12/30/08	Acceptable
Terphenyl-d14	101	20-140	12/30/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor Stormwater Samp
 Sample Matrix: Water

Service Request: K0812190

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: PERCENT
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 081475	K0812190-001	68	71	77	62 D	86	81
FO 081476	K0812190-002	65	72	77	57 D	71 D	62 D
FO 081477	K0812190-003	69 D	67 D	69 D	59 D	82 D	44 D
FO 081478	K0812190-004	51 D	53 D	57 D	58 D	68 D	55 D
FO 081479	K0812190-005	55 D	59 D	63 D	58 D	69 D	53 D
FO 081480	K0812190-006	62 D	61 D	68 D	60 D	74 D	55 D
FO 081481	K0812190-007	79	82	80	76	58	96
FO 081482	K0812190-008	72	78	79	58 D	69 D	65
Method Blank	KWG0813479-3	71	73	85	77	85	101
Lab Control Sample	KWG0813479-1	69	68	79	72	89	94
Duplicate Lab Control Sample	KWG0813479-2	67	70	79	74	87	98

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Extracted: 12/18/2008
Date Analyzed: 12/30/2008

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0813479

Analyte Name	Lab Control Sample KWG0813479-1 Lab Control Spike			Duplicate Lab Control Sample KWG0813479-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	3.49	5.00	70	3.64	5.00	73	39-115	4	30
Phenol	3.35	5.00	67	3.69	5.00	74	39-117	10	30
2-Chlorophenol	3.63	5.00	73	3.78	5.00	76	40-113	4	30
1,3-Dichlorobenzene	2.05	5.00	41	2.07	5.00	41	18-71	1	30
1,4-Dichlorobenzene	2.13	5.00	43	2.23	5.00	45	19-73	4	30
1,2-Dichlorobenzene	2.42	5.00	48	2.37	5.00	47	22-78	2	30
Benzyl Alcohol	3.56	5.00	71	3.82	5.00	76	37-119	7	30
Bis(2-chloroisopropyl) Ether	3.58	5.00	72	3.60	5.00	72	35-113	1	30
2-Methylphenol	3.62	5.00	72	3.59	5.00	72	26-113	1	30
Hexachloroethane	1.74	5.00	35	1.64	5.00	33	11-62	6	30
N-Nitrosodi-n-propylamine	3.72	5.00	74	3.74	5.00	75	32-117	1	30
4-Methylphenol	3.46	5.00	69	3.76	5.00	75	25-118	8	30
Nitrobenzene	3.97	5.00	79	3.97	5.00	79	37-116	0	30
Isophorone	3.96	5.00	79	4.19	5.00	84	39-112	5	30
2-Nitrophenol	3.83	5.00	77	4.16	5.00	83	42-116	8	30
2,4-Dimethylphenol	3.43	5.00	69	3.78	5.00	76	10-113	10	30
Bis(2-chloroethoxy)methane	3.76	5.00	75	3.95	5.00	79	40-113	5	30
2,4-Dichlorophenol	3.90	5.00	78	4.16	5.00	83	39-115	6	30
Benzoic Acid	ND	15.0	0 *	ND	15.0	0 *	10-102		30
1,2,4-Trichlorobenzene	2.46	5.00	49	2.56	5.00	51	21-78	4	30
Naphthalene	2.90	5.00	58	3.30	5.00	66	33-98	13	30
4-Chloroaniline	1.48	5.00	30	2.57	5.00	51	10-119	54 *	30
Hexachlorobutadiene	1.63	5.00	33	1.77	5.00	35	10-61	8	30
4-Chloro-3-methylphenol	3.96	5.00	79	4.39	5.00	88	37-119	10	30
2-Methylnaphthalene	2.86	5.00	57	3.38	5.00	68	32-95	17	30
Hexachlorocyclopentadiene	0.739	5.00	15	0.932	5.00	19	10-39	23	30
2,4,6-Trichlorophenol	3.82	5.00	76	4.41	5.00	88	40-117	14	30
2,4,5-Trichlorophenol	3.92	5.00	78	4.18	5.00	84	44-116	6	30
2-Chloronaphthalene	3.06	5.00	61	3.42	5.00	68	21-115	11	30
2-Nitroaniline	4.18	5.00	84	4.47	5.00	89	43-124	7	30
Acenaphthylene	3.42	5.00	68	3.99	5.00	80	41-114	15	30
Dimethyl Phthalate	4.08	5.00	82	4.36	5.00	87	47-117	7	30
2,6-Dinitrotoluene	4.09	5.00	82	4.50	5.00	90	45-120	9	30
Acenaphthene	3.23	5.00	65	3.67	5.00	73	38-106	13	30
3-Nitroaniline	3.65	5.00	73	4.60	5.00	92	31-125	23	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Portland, City of
 Project: Portland Harbor Stormwater Samp
 Sample Matrix: Water

Service Request: K0812190
 Date Extracted: 12/18/2008
 Date Analyzed: 12/30/2008

Lab Control Spike/Duplicate Lab Control Spike Summary
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0813479

Analyte Name	Lab Control Sample KWG0813479-1 Lab Control Spike			Duplicate Lab Control Sample KWG0813479-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	0.131	5.00	3 *	0.254	5.00	5 *	10-121	64 *	30
Dibenzofuran	3.37	5.00	67	3.84	5.00	77	40-107	13	30
4-Nitrophenol	3.33	5.00	67	4.21	5.00	84	43-133	23	30
2,4-Dinitrotoluene	4.29	5.00	86	4.50	5.00	90	47-125	5	30
Fluorene	3.44	5.00	69	4.00	5.00	80	40-112	15	30
4-Chlorophenyl Phenyl Ether	3.32	5.00	66	3.67	5.00	73	39-108	10	30
Diethyl Phthalate	4.15	5.00	83	4.51	5.00	90	47-120	9	30
4-Nitroaniline	4.07	5.00	81	4.33	5.00	87	36-128	6	30
2-Methyl-4,6-dinitrophenol	1.28	5.00	26	1.50	5.00	30	19-127	16	30
N-Nitrosodiphenylamine	4.06	5.00	81	4.45	5.00	89	36-114	9	30
4-Bromophenyl Phenyl Ether	3.55	5.00	71	4.17	5.00	83	43-110	16	30
Hexachlorobenzene	3.34	5.00	67	3.80	5.00	76	42-107	13	30
Pentachlorophenol	1.08	5.00	22 *	1.39	5.00	28	28-114	25	30
Phenanthrene	3.56	5.00	71	4.03	5.00	81	43-110	12	30
Anthracene	3.44	5.00	69	3.86	5.00	77	40-110	12	30
Di-n-butyl Phthalate	3.87	5.00	77	4.32	5.00	86	45-135	11	30
Fluoranthene	3.64	5.00	73	4.10	5.00	82	42-119	12	30
Pyrene	3.72	5.00	74	4.13	5.00	83	43-118	10	30
Butyl Benzyl Phthalate	3.82	5.00	76	4.33	5.00	87	48-124	12	30
3,3'-Dichlorobenzidine	3.48	5.00	70	3.66	5.00	73	15-108	5	30
Benz(a)anthracene	3.50	5.00	70	4.01	5.00	80	45-112	14	30
Chrysene	3.60	5.00	72	4.04	5.00	81	47-112	12	30
Bis(2-ethylhexyl) Phthalate	3.81	5.00	76	4.19	5.00	84	32-149	9	30
Di-n-octyl Phthalate	3.54	5.00	71	4.06	5.00	81	49-127	14	30
Benzo(b)fluoranthene	3.50	5.00	70	4.02	5.00	80	45-115	14	30
Benzo(k)fluoranthene	3.53	5.00	71	4.05	5.00	81	46-115	14	30
Benzo(a)pyrene	3.36	5.00	67	3.86	5.00	77	40-117	14	30
Indeno(1,2,3-cd)pyrene	3.49	5.00	70	3.98	5.00	80	44-119	13	30
Dibenz(a,h)anthracene	3.40	5.00	68	3.94	5.00	79	45-118	15	30
Benzo(g,h,i)perylene	3.44	5.00	69	3.90	5.00	78	45-116	13	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

January 21, 2009

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 12/16/08 16:50.
The following list is a summary of the Work Orders contained in this report, generated on 01/21/09 13:37.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PRL0548	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

01/21/09 13:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO081475	PRL0548-01	Water	12/12/08 11:57	12/16/08 16:50
FO081476	PRL0548-02	Water	12/12/08 13:21	12/16/08 16:50
FO081477	PRL0548-03	Water	12/12/08 13:32	12/16/08 16:50
FO081478	PRL0548-04	Water	12/12/08 13:10	12/16/08 16:50
FO081479	PRL0548-05	Water	12/12/08 11:44	12/16/08 16:50
FO081480	PRL0548-06	Water	12/12/08 11:20	12/16/08 16:50
FO081481	PRL0548-07	Water	12/12/08 13:44	12/16/08 16:50
FO081482	PRL0548-08	Water	12/12/08 00:00	12/16/08 16:50

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-01 (FO081475)				Water				Sampled: 12/12/08 11:57		
Bis(2-ethylhexyl)phthalate	EPA 8270m	0.924	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 16:31	J
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 21:25	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0169	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0156	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0224	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0232	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0136	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0364	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0544	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0127	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.0898	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.0793	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0549	0.0194	0.0194	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10				95.3%		25 - 125 %	"			"
Pyrene-d10				45.4%		23 - 150 %	"			"
Benzo (a) pyrene-d12				55.5%		10 - 125 %	"			"

PRL0548-02 (FO081476)

Water

Sampled: 12/12/08 13:21

Bis(2-ethylhexyl)phthalate	EPA 8270m	1.46	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 17:03	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 21:55	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-02 (FO081476)		Water				Sampled: 12/12/08 13:21				
Benzo (a) anthracene	EPA 8270m	0.0213	0.00971	0.00971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 21:55	
Benzo (a) pyrene	"	0.0212	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0267	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0240	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0222	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0439	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0710	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0147	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.242	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.0803	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0560	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10				91.3%		25 - 125 %	"			"
Pyrene-d10				43.2%		23 - 150 %	"			"
Benzo (a) pyrene-d12				47.3%		10 - 125 %	"			"
PRL0548-03 (FO081477)		Water				Sampled: 12/12/08 13:32				
Bis(2-ethylhexyl)phthalate	EPA 8270m	0.519	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 17:34	J
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 22:25	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0165	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0184	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0181	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0239	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0136	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0323	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0715	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-03 (FO081477)		Water				Sampled: 12/12/08 13:32				
Indeno (1,2,3-cd) pyrene	EPA 8270m	0.0145	0.00971	0.00971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 22:25	
Naphthalene	"	ND	0.0291	0.0291	"	"	"	"	"	RL1
Phenanthrene	"	0.0540	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0651	0.0194	0.0194	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				91.1%		25 - 125 %	"			"
<i>Pyrene-d10</i>				42.9%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				62.9%		10 - 125 %	"			"
PRL0548-04 (FO081478)		Water				Sampled: 12/12/08 13:10				
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.34	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 18:05	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 22:55	
Acenaphthylene	"	0.0194	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0149	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0162	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0293	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0302	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0192	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0510	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.107	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0152	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	1.70	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.107	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0637	0.0194	0.0194	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				91.1%		25 - 125 %	"			"
<i>Pyrene-d10</i>				40.8%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				53.1%		10 - 125 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8120560

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8120560-BLK1)										Extracted: 12/17/08 10:20				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	12/29/08 14:59	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	12/30/08 01:25	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	92.2%	Limits: 25-125%		"		12/30/08 01:25						
Pyrene-d10			54.5%	23-150%		"		"						
Benzo (a) pyrene-d12			81.5%	10-125%		"		"						

LCS (8120560-BS1)

Extracted: 12/17/08 10:20

Bis(2-ethylhexyl)phthalate	EPA 8270m	2.39	0.526	1.00	ug/l	1x	--	4.00	59.8%	(20-150)	--	--	12/29/08 15:30	
Butyl benzyl phthalate	"	2.25	0.526	1.00	"	"	--	"	56.3%	"	--	--	"	
Di-n-butyl phthalate	"	3.60	0.526	1.00	"	"	--	"	89.9%	"	--	--	"	
Di-n-octyl phthalate	"	2.20	0.526	1.00	"	"	--	"	55.0%	"	--	--	"	
Diethyl phthalate	"	3.48	0.526	1.00	"	"	--	"	86.9%	"	--	--	"	
Dimethyl phthalate	"	3.16	0.526	1.00	"	"	--	"	78.9%	"	--	--	"	
Acenaphthene	"	2.60	0.0200	0.0200	"	"	--	2.50	104%	(35-120)	--	--	12/29/08 17:21	
Acenaphthylene	"	2.53	0.0200	0.0200	"	"	--	"	101%	(34-116)	--	--	"	
Anthracene	"	2.57	0.0200	0.0200	"	"	--	"	103%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.12	0.0100	0.0100	"	"	--	"	84.9%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.23	0.0100	0.0100	"	"	--	"	89.2%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.10	0.0100	0.0100	"	"	--	"	83.9%	(37-131)	--	--	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8120560

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (8120560-BS1)										Extracted: 12/17/08 10:20				
Benzo (ghi) perylene	EPA 8270m	2.26	0.0200	0.0200	ug/l	1x	--	2.50	90.4%	(26-126)	--	--	12/29/08 17:21	
Benzo (k) fluoranthene	"	2.32	0.0100	0.0100	"	"	--	"	92.8%	(18-145)	--	--	"	
Chrysene	"	2.20	0.0100	0.0100	"	"	--	"	88.1%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.28	0.0100	0.0100	"	"	--	"	91.2%	(20-141)	--	--	"	
Fluoranthene	"	2.69	0.0200	0.0200	"	"	--	"	108%	(31-125)	--	--	"	
Fluorene	"	2.56	0.0200	0.0200	"	"	--	"	102%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.29	0.0100	0.0100	"	"	--	"	91.4%	(30-135)	--	--	"	
Naphthalene	"	2.44	0.0200	0.0200	"	"	--	"	97.7%	(30-113)	--	--	"	
Phenanthrene	"	2.55	0.0200	0.0200	"	"	--	"	102%	(34-126)	--	--	"	
Pyrene	"	2.16	0.0200	0.0200	"	"	--	"	86.6%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		Recovery:	96.5%	Limits:	25-125%	"							12/29/08 17:21	
Pyrene-d10			84.6%		23-150%	"							"	
Benzo (a) pyrene-d12			88.4%		10-125%	"							"	

LCS Dup (8120560-BSD1)

Extracted: 12/17/08 10:20

Bis(2-ethylhexyl)phthalate	EPA 8270m	1.68	0.526	1.00	ug/l	1x	--	4.00	42.0%	(20-150)	34.8%	(50)	12/29/08 16:00	
Butyl benzyl phthalate	"	2.37	0.526	1.00	"	"	--	"	59.3%	"	5.12%	"	"	
Di-n-butyl phthalate	"	3.75	0.526	1.00	"	"	--	"	93.8%	"	4.29%	"	"	
Di-n-octyl phthalate	"	1.49	0.526	1.00	"	"	--	"	37.3%	"	38.4%	"	"	
Diethyl phthalate	"	3.77	0.526	1.00	"	"	--	"	94.2%	"	8.04%	"	"	
Dimethyl phthalate	"	3.36	0.526	1.00	"	"	--	"	84.1%	"	6.35%	"	"	
Acenaphthene	"	2.73	0.0200	0.0200	"	"	--	2.50	109%	(35-120)	5.05%	(35)	12/29/08 17:53	
Acenaphthylene	"	2.64	0.0200	0.0200	"	"	--	"	106%	(34-116)	4.33%	"	"	
Anthracene	"	2.73	0.0200	0.0200	"	"	--	"	109%	(24-119)	6.22%	"	"	
Benzo (a) anthracene	"	2.14	0.0100	0.0100	"	"	--	"	85.8%	(36-128)	1.07%	"	"	
Benzo (a) pyrene	"	2.34	0.0100	0.0100	"	"	--	"	93.8%	(17-128)	5.06%	"	"	
Benzo (b) fluoranthene	"	2.60	0.0100	0.0100	"	"	--	"	104%	(37-131)	21.2%	"	"	
Benzo (ghi) perylene	"	2.31	0.0200	0.0200	"	"	--	"	92.3%	(26-126)	2.03%	"	"	
Benzo (k) fluoranthene	"	2.13	0.0100	0.0100	"	"	--	"	85.1%	(18-145)	8.72%	"	"	
Chrysene	"	2.32	0.0100	0.0100	"	"	--	"	93.0%	(16-137)	5.34%	"	"	
Dibenzo (a,h) anthracene	"	2.32	0.0100	0.0100	"	"	--	"	92.6%	(20-141)	1.56%	"	"	
Fluoranthene	"	2.89	0.0200	0.0200	"	"	--	"	116%	(31-125)	7.07%	"	"	
Fluorene	"	2.69	0.0200	0.0200	"	"	--	"	108%	(27-124)	5.24%	"	"	
Indeno (1,2,3-cd) pyrene	"	2.32	0.0100	0.0100	"	"	--	"	92.9%	(30-135)	1.59%	"	"	
Naphthalene	"	2.54	0.0200	0.0200	"	"	--	"	102%	(30-113)	4.03%	"	"	
Phenanthrene	"	2.71	0.0200	0.0200	"	"	--	"	108%	(34-126)	5.96%	"	"	
Pyrene	"	2.05	0.0200	0.0200	"	"	--	"	82.2%	(21-141)	5.20%	"	"	
Surrogate(s): Fluorene-d10		Recovery:	99.3%	Limits:	25-125%	"							12/29/08 17:53	
Pyrene-d10			79.1%		23-150%	"							"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8120560

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

LCS Dup (8120560-BSD1)

Extracted: 12/17/08 10:20

Surrogate(s): Benzo (a) pyrene-d12

Recovery: 91.8%

Limits: 10-125% 1x

12/29/08 17:53

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- RL1 - Reporting limit raised due to sample matrix effects.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

Work Order #: PR10548

[illegible]

TestAmerica Sample Receipt Checklist

Received by:

Unpacked by:

Logged-in by:

Work Order No.

PR10548

Cooler ID(s):

(section A)

(section B)

Date: 12/16/08

Date: 12/16/08

Date: 12/16/08

Time: 1:52

Initials: JV

Initials: JM

Initials: JM

Client: C&F

Project: Portland Harbor

Temperature out of range:

***ESI Clients (see Section C)

Cooler Temperature (IR): 132.7 °C plastic glass NA (oil/air samples, ESI client)

Digi #1

Digi #2

Temperature Blank: °C

Not enough Ice

No Ice

Ice Melted

W/in 4 Hours

Other:

A

Custody Seals: (#)

Signature: Y N Dated:

None

Container Type:

2 #Cooler(s)

#Box(s)

None (#Other:)

Coolant Type:

✓ Gel Ice

✓ Loose Ice

None

Packing Material:

Bubble Bags

Styrofoam Cubbies

Peanuts

✓ None (#Other:)

Received from:

✓ TA Courier

Senvoy

UPS

Fed Ex

Client

TDP

DHL

SDS

Mid-Valley

GS/TA

GS/Senvoy

Other:

B

Sample Status:

(If N circled, see NOD)

General:

Intact?

Y

N

Containers Match COC?

Y

N

none given

IDs Match COC?

Y

N

For Analyses Requested:

Cyanide Checked?

Y

N

NA

Correct Type & Preservation?

Y

N

Adequate Volume?

Y

N

Within Hold Time?

Y

N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace? Y

N

NA

TB on COC? not provided Y

N

NA

Metals:

HNO3 Preserved?

Y

N

NA

Dissolved Metals Filtered?

Y

N

NA

C

***ESI Clients Only:

Temperature Blank: °C

not provided

Digi: #1 #2

All preserved bottles checked Y N

NA (voas/soils/all unp.)

All preserved accordingly? Y N (see NOD)

NA (voas/soils/all unp.)

FED EX/ UPS:

Was the tracking paper keepable?

YES

NO

If circled NO, what is the Tracking number?

FED EX

Goldstreak

UPS

DHL

Other:

Project Managers:

Comments:

PM Reviewed:

(Initial/Date)

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

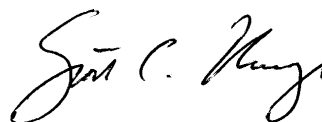
Pace Project #: 1086550
Sample Receipt Date: 12/18/2008
Client Project #: PRL0548
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:

January 20, 2009



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.5 parts-per-trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 46-235%. With fourteen exceptions, the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the analytical process did not introduce significant levels of PCB congeners to the sample extracts.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds in the lab spikes were recovered at 87-116% with relative percent differences of 11.9-18.8%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

1054 SUBCONTRACT ORDER

TestAmerica Portland

PRL0548

1086550


SENDING LABORATORY:

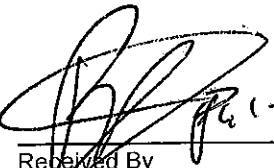
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone: (612) 607-1700
Fax: (612) 607-6444
Project Location:
Receipt Temperature: °C Ice: Y / N

Analysis	Units	Due	Expires	Comments
Sample ID: PRL0548-01	Water		Sampled: 12/12/08 11:57	1086550001 FO 081475
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 11:57	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-02	Water		Sampled: 12/12/08 13:21	FO 081476 002
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:21	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-03	Water		Sampled: 12/12/08 13:32	FO 081477 003
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:32	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-04	Water		Sampled: 12/12/08 13:10	FO 081478 004
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:10	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-05	Water		Sampled: 12/12/08 11:44	FO 081479 005
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 11:44	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-06	Water		Sampled: 12/12/08 11:20	FO 081480 006
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 11:20	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				

Released By  Date/Time 12/17/08 CRSS

Received By  Date/Time 12/18/08 0937 T=1.4'

SUBCONTRACT ORDER

TestAmerica Portland

PRL0548

Analysis	Units	Due	Expires	Comments
Sample ID: PRL0548-07	Water		Sampled: 12/12/08 13:44	1086550007 FD 081481
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:44	***209 Congeners*** to Pace
Containers Supplied:				
1L Amber - Unpres. (B)				
Sample ID: PRL0548-08	Water		Sampled: 12/12/08 00:00	FD 081482 008
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				
1L Amber - Unpres. (B)				

Sample Condition Upon Receipt

Pace Analytical

Client Name:

Test America

Project #

1086550

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 971637118457

Optional:

Proj. Due Date:

Proj. Name:

Custody Seal on Cooler/Box Present: ☒ Yes ☐ No Seals intact: ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other Temp Blank: Yes ☒ No

Thermometer Used 80344042/179425

Type of Ice: ☒ Wet ☐ Blue ☐ None

☐ Samples on ice, cooling process has begun

Cooler Temperature

1.4°C

Biological Tissue is Frozen: Yes No

Date and initials of person examining contents:

12/18/08

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review:

Date: 12/19/08

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRL0548-01;FO081475		
Lab Sample ID	1086550001		
Filename	P90116C_10		
Injected By	BAL		
Total Amount Extracted	963 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90116C04	Received	12/18/2008
CCal Filename(s)	P90116C_03	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/17/2009 03:03

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	7.133	3.16	2.0	1.50	75	
13C-4-MoCB	3	10.177	3.07	2.0	1.53	77	
13C-2,2'-DiCB	4	10.512	1.57	2.0	1.73	86	
13C-4,4'-DiCB	15	18.432	1.57	2.0	1.60	80	
13C-2,2',6-TrCB	19	14.778	1.08	2.0	1.80	90	
13C-3,4,4'-TrCB	37	26.754	1.06	2.0	1.69	85	
13C-2,2',6,6'-TeCB	54	18.739	0.81	2.0	1.67	83	
13C-3,4,4',5-TeCB	81	34.116	0.77	2.0	1.51	75	
13C-3,3',4,4'-TeCB	77	34.703	0.78	2.0	1.59	80	
13C-2,2',4,6,6'-PeCB	104	25.329	1.60	2.0	1.86	93	
13C-2,3,3',4,4'-PeCB	105	38.359	1.57	2.0	1.32	66	
13C-2,3,4,4',5-PeCB	114	37.705	1.55	2.0	1.28	64	
13C-2,3',4,4',5-PeCB	118	37.168	1.54	2.0	1.34	67	
13C-2,3',4,4',5'-PeCB	123	36.816	1.54	2.0	1.33	66	
13C-3,3',4,4',5-PeCB	126	41.595	1.59	2.0	1.14	57	
13C-2,2',4,4',6,6'-HxCB	155	31.651	1.27	2.0	2.40	120	
13C-HxCB (156/157)	156/157	44.664	1.26	4.0	2.62	65	
13C-2,3',4,4',5,5'-HxCB	167	43.507	1.27	2.0	1.41	71	
13C-3,3',4,4',5,5'-HxCB	169	48.001	1.28	2.0	1.22	61	
13C-2,2',3,4',5,6,6'-HpCB	188	37.688	1.04	2.0	3.95	198	P
13C-2,3,3',4,4',5,5'-HpCB	189	50.530	1.06	2.0	2.01	100	
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.205	0.91	2.0	3.31	166	P
13C-2,3,3',4,4',5,5',6-OxCB	205	53.117	0.90	2.0	1.73	87	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.841	0.81	2.0	2.02	101	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.992	0.79	2.0	2.34	117	
13C--DeCB	209	56.436	0.71	2.0	2.15	107	
Cleanup Standards							
13C-2,4,4'-TrCB	28	22.143	1.06	2.0	1.64	82	
13C-2,3,3',5,5'-PeCB	111	34.804	1.60	2.0	1.65	82	
13C-2,2',3,3',5,5',6-HpCB	178	40.857	1.03	2.0	2.03	101	
Recovery Standards							
13C-2,5-DiCB	9	13.304	1.57	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	24.290	0.79	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	31.903	1.64	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	40.371	1.26	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.643	0.90	2.0	NA	NA	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-01;FO081475
Lab Sample ID 1086550001
Filename P90116C_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.519
2		---	---	ND	---	0.519
3		---	---	ND	---	0.519
4		---	---	ND	---	0.519
5		---	---	ND	---	0.519
6		---	---	ND	---	0.519
7		---	---	ND	---	0.519
8		---	---	ND	---	0.519
9		---	---	ND	---	0.519
10		---	---	ND	---	0.519
11		---	---	ND	---	0.623
12	12/13	---	---	ND	---	0.519
13	12/13	---	---	ND	---	0.519
14		---	---	ND	---	0.519
15		---	---	ND	---	0.519
16		---	---	ND	---	0.519
17		---	---	ND	---	0.519
18	18/30	---	---	ND	---	0.519
19		---	---	ND	---	0.519
20	20/28	---	---	ND	---	0.623
21	21/33	---	---	ND	---	0.519
22		---	---	ND	---	0.519
23		---	---	ND	---	0.519
24		---	---	ND	---	0.519
25		---	---	ND	---	0.519
26	26/29	---	---	ND	---	0.519
27		---	---	ND	---	0.519
28	20/28	---	---	ND	---	0.623
29	26/29	---	---	ND	---	0.519
30	18/30	---	---	ND	---	0.519
31		---	---	ND	---	0.519
32		---	---	ND	---	0.519
33	21/33	---	---	ND	---	0.519
34		---	---	ND	---	0.519
35		---	---	ND	---	0.519
36		---	---	ND	---	0.519
37		---	---	ND	---	0.519
38		---	---	ND	---	0.519
39		---	---	ND	---	0.519
40	40/41/71	---	---	ND	---	0.519
41	40/41/71	---	---	ND	---	0.519
42		---	---	ND	---	0.519
43		---	---	ND	---	0.519
44	44/47/65	---	---	ND	---	0.623
45	45/51	---	---	ND	---	0.519
46		---	---	ND	---	0.519
47	44/47/65	---	---	ND	---	0.623
48		---	---	ND	---	0.519

Conc = Concentration
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Nn = Value obtained from additional analyses

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-01;FO081475
Lab Sample ID 1086550001
Filename P90116C_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.519
50	50/53	---	---	ND	---	0.519
51	45/51	---	---	ND	---	0.519
52		---	---	ND	---	0.519
53	50/53	---	---	ND	---	0.519
54		---	---	ND	---	0.519
55		---	---	ND	---	0.519
56		---	---	ND	---	0.519
57		---	---	ND	---	0.519
58		---	---	ND	---	0.519
59	59/62/75	---	---	ND	---	0.519
60		---	---	ND	---	0.519
61	61/70/74/76	29.689	0.76	0.703	---	0.519
62	59/62/75	---	---	ND	---	0.519
63		---	---	ND	---	0.519
64		---	---	ND	---	0.519
65	44/47/65	---	---	ND	---	0.623
66		---	---	ND	---	0.519
67		---	---	ND	---	0.519
68		---	---	ND	---	0.519
69	49/69	---	---	ND	---	0.519
70	61/70/74/76	29.689	0.76	(0.703)	---	0.519
71	40/41/71	---	---	ND	---	0.519
72		---	---	ND	---	0.519
73		---	---	ND	---	0.519
74	61/70/74/76	29.689	0.76	(0.703)	---	0.519
75	59/62/75	---	---	ND	---	0.519
76	61/70/74/76	29.689	0.76	(0.703)	---	0.519
77		---	---	ND	---	0.519
78		---	---	ND	---	0.519
79		---	---	ND	---	0.519
80		---	---	ND	---	0.519
81		---	---	ND	---	0.519
82		---	---	ND	---	0.519
83		---	---	ND	---	0.519
84		---	---	ND	---	0.519
85	85/116/117	---	---	ND	---	0.623
86	86/87/97/108/119/125	33.110	1.56	1.16	---	1.04
87	86/87/97/108/119/125	33.110	1.56	(1.16)	---	1.04
88	88/91	---	---	ND	---	0.519
89		---	---	ND	---	0.519
90	90/101/113	31.936	1.58	1.25	---	0.519
91	88/91	---	---	ND	---	0.519
92		---	---	ND	---	0.519
93	93/98/100/102	---	---	ND	---	0.779
94		---	---	ND	---	0.519
95		28.683	1.53	0.711	---	0.519
96		---	---	ND	---	0.519

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-01;FO081475
Lab Sample ID 1086550001
Filename P90116C_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	33.110	1.56	(1.16)	---	1.04
98	93/98/100/102	---	---	ND	---	0.779
99		32.540	1.59	0.633	---	0.519
100	93/98/100/102	---	---	ND	---	0.779
101	90/101/113	31.936	1.58	(1.25)	---	0.519
102	93/98/100/102	---	---	ND	---	0.779
103		---	---	ND	---	0.519
104		---	---	ND	---	0.519
105		38.375	1.54	0.753	---	0.519
106		---	---	ND	---	0.519
107	107/124	---	---	ND	---	0.519
108	86/87/97/108/119/125	33.110	1.56	(1.16)	---	1.04
109		---	---	ND	---	0.519
110	110/115	33.999	1.57	2.19	---	0.519
111		---	---	ND	---	0.519
112		---	---	ND	---	0.519
113	90/101/113	31.936	1.58	(1.25)	---	0.519
114		---	---	ND	---	0.519
115	110/115	33.999	1.57	(2.19)	---	0.519
116	85/116/117	---	---	ND	---	0.623
117	85/116/117	---	---	ND	---	0.623
118		37.185	1.56	1.64	---	0.519
119	86/87/97/108/119/125	33.110	1.56	(1.16)	---	1.04
120		---	---	ND	---	0.519
121		---	---	ND	---	0.519
122		---	---	ND	---	0.519
123		---	---	ND	---	0.519
124	107/124	---	---	ND	---	0.519
125	86/87/97/108/119/125	33.110	1.56	(1.16)	---	1.04
126		---	---	ND	---	0.519
127		---	---	ND	---	0.519
128	128/166	---	---	ND	---	1.04
129	129/138/163	40.405	1.25	2.15	---	0.519
130		---	---	ND	---	0.519
131		---	---	ND	---	0.519
132		37.235	1.28	0.731	---	0.519
133		---	---	ND	---	0.519
134	134/143	---	---	ND	---	0.519
135	135/151	---	---	ND	---	0.530
136		---	---	ND	---	0.519
137		---	---	ND	---	0.519
138	129/138/163	40.405	1.25	(2.15)	---	0.519
139	139/140	---	---	ND	---	0.519
140	139/140	---	---	ND	---	0.519
141		---	---	ND	---	0.519
142		---	---	ND	---	0.519
143	134/143	---	---	ND	---	0.519
144		---	---	ND	---	0.519

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-01;FO081475
Lab Sample ID 1086550001
Filename P90116C_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.519
146		---	---	ND	---	0.519
147	147/149	35.961	1.25	1.30	---	0.519
148		---	---	ND	---	0.519
149	147/149	35.961	1.25	(1.30)	---	0.519
150		---	---	ND	---	0.519
151	135/151	---	---	ND	---	0.530
152		---	---	ND	---	0.519
153	153/168	39.147	1.24	1.36	---	0.623
154		---	---	ND	---	0.519
155		---	---	ND	---	0.519
156	156/157	---	---	ND	---	1.04
157	156/157	---	---	ND	---	1.04
158		---	---	ND	---	0.519
159		---	---	ND	---	0.519
160		---	---	ND	---	0.519
161		---	---	ND	---	0.519
162		---	---	ND	---	0.519
163	129/138/163	40.405	1.25	(2.15)	---	0.519
164		---	---	ND	---	0.519
165		---	---	ND	---	0.519
166	128/166	---	---	ND	---	1.04
167		---	---	ND	---	0.519
168	153/168	39.147	1.24	(1.36)	---	0.623
169		---	---	ND	---	0.519
170		---	---	ND	---	0.519
171	171/173	---	---	ND	---	0.519
172		---	---	ND	---	0.519
173	171/173	---	---	ND	---	0.519
174		---	---	ND	---	0.519
175		---	---	ND	---	0.519
176		---	---	ND	---	0.519
177		---	---	ND	---	0.519
178		---	---	ND	---	0.519
179		---	---	ND	---	0.519
180	180/193	46.106	1.04	0.603	---	0.519
181		---	---	ND	---	0.519
182		---	---	ND	---	0.519
183	183/185	---	---	ND	---	0.519
184		---	---	ND	---	0.519
185	183/185	---	---	ND	---	0.519
186		---	---	ND	---	0.519
187		---	---	ND	---	0.519
188		---	---	ND	---	0.519
189		---	---	ND	---	0.519
190		---	---	ND	---	0.519
191		---	---	ND	---	0.519
192		---	---	ND	---	0.519

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-01;FO081475
Lab Sample ID 1086550001
Filename P90116C_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.106	1.04	(0.603)	---	0.519
194		---	---	ND	---	0.519
195		---	---	ND	---	0.519
196		---	---	ND	---	0.727
197	197/200	---	---	ND	---	2.60
198	198/199	---	---	ND	---	0.519
199	198/199	---	---	ND	---	0.519
200	197/200	---	---	ND	---	2.60
201		---	---	ND	---	0.519
202		---	---	ND	---	0.519
203		---	---	ND	---	0.519
204		---	---	ND	---	0.519
205		---	---	ND	---	0.519
206		---	---	ND	---	0.519
207		---	---	ND	---	0.519
208		---	---	ND	---	0.519
209		---	---	ND	---	0.519

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-01;FO081475
Lab Sample ID 1086550001
Filename P90116C_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	0.703
Total Pentachloro Biphenyls	8.34
Total Hexachloro Biphenyls	5.55
Total Heptachloro Biphenyls	0.603
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	15.2

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRL0548-02;FO081476		
Lab Sample ID	1086550002		
Filename	P90116C_11		
Injected By	BAL		
Total Amount Extracted	1000 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90116C04	Received	12/18/2008
CCal Filename(s)	P90116C_03	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/17/2009 04:04

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	7.133	3.01	2.0	1.51	75	
13C-4-MoCB	3	10.189	3.13	2.0	1.54	77	
13C-2,2'-DiCB	4	10.512	1.62	2.0	1.68	84	
13C-4,4'-DiCB	15	18.444	1.56	2.0	1.53	77	
13C-2,2',6-TrCB	19	14.790	1.06	2.0	1.72	86	
13C-3,4,4'-TrCB	37	26.755	1.06	2.0	1.66	83	
13C-2,2',6,6'-TeCB	54	18.739	0.79	2.0	1.65	82	
13C-3,4,4',5-TeCB	81	34.117	0.79	2.0	1.53	77	
13C-3,3',4,4'-TeCB	77	34.703	0.79	2.0	1.62	81	
13C-2,2',4,6,6'-PeCB	104	25.329	1.59	2.0	1.79	90	
13C-2,3,3',4,4'-PeCB	105	38.359	1.56	2.0	1.36	68	
13C-2,3,4,4',5-PeCB	114	37.705	1.52	2.0	1.30	65	
13C-2,3',4,4',5-PeCB	118	37.169	1.59	2.0	1.38	69	
13C-2,3',4,4',5'-PeCB	123	36.816	1.57	2.0	1.37	68	
13C-3,3',4,4',5-PeCB	126	41.579	1.53	2.0	1.19	60	
13C-2,2',4,4',6,6'-HxCB	155	31.651	1.27	2.0	2.31	116	
13C-HxCB (156/157)	156/157	44.664	1.24	4.0	2.60	65	
13C-2,3',4,4',5,5'-HxCB	167	43.507	1.26	2.0	1.44	72	
13C-3,3',4,4',5,5'-HxCB	169	47.984	1.26	2.0	1.22	61	
13C-2,2',3,4',5,6,6'-HpCB	188	37.688	1.08	2.0	3.74	187	P
13C-2,3,3',4,4',5,5'-HpCB	189	50.531	1.06	2.0	1.96	98	
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.205	0.92	2.0	3.17	159	P
13C-2,3,3',4,4',5,5',6-OxCB	205	53.117	0.91	2.0	1.61	81	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.841	0.76	2.0	1.84	92	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.992	0.79	2.0	2.22	111	
13C--DeCB	209	56.415	0.72	2.0	1.89	94	
Cleanup Standards							
13C-2,4,4'-TrCB	28	22.143	1.03	2.0	1.67	84	
13C-2,3,3',5,5'-PeCB	111	34.804	1.60	2.0	1.68	84	
13C-2,2',3,3',5,5',6-HpCB	178	40.858	1.07	2.0	2.05	102	
Recovery Standards							
13C-2,5-DiCB	9	13.316	1.57	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	24.290	0.80	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	31.903	1.59	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	40.371	1.24	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.621	0.91	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-02;FO081476
Lab Sample ID 1086550002
Filename P90116C_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.499
2		---	---	ND	---	0.499
3		---	---	ND	---	0.499
4		---	---	ND	---	0.499
5		---	---	ND	---	0.499
6		---	---	ND	---	0.499
7		---	---	ND	---	0.499
8		---	---	ND	---	0.499
9		---	---	ND	---	0.499
10		---	---	ND	---	0.499
11		---	---	ND	---	0.599
12	12/13	---	---	ND	---	0.499
13	12/13	---	---	ND	---	0.499
14		---	---	ND	---	0.499
15		---	---	ND	---	0.499
16		---	---	ND	---	0.499
17		---	---	ND	---	0.499
18	18/30	---	---	ND	---	0.499
19		---	---	ND	---	0.499
20	20/28	---	---	ND	---	0.599
21	21/33	---	---	ND	---	0.499
22		---	---	ND	---	0.499
23		---	---	ND	---	0.499
24		---	---	ND	---	0.499
25		---	---	ND	---	0.499
26	26/29	---	---	ND	---	0.499
27		---	---	ND	---	0.499
28	20/28	---	---	ND	---	0.599
29	26/29	---	---	ND	---	0.499
30	18/30	---	---	ND	---	0.499
31		---	---	ND	---	0.499
32		---	---	ND	---	0.499
33	21/33	---	---	ND	---	0.499
34		---	---	ND	---	0.499
35		---	---	ND	---	0.499
36		---	---	ND	---	0.499
37		---	---	ND	---	0.499
38		---	---	ND	---	0.499
39		---	---	ND	---	0.499
40	40/41/71	---	---	ND	---	0.499
41	40/41/71	---	---	ND	---	0.499
42		---	---	ND	---	0.499
43		---	---	ND	---	0.499
44	44/47/65	---	---	ND	---	0.599
45	45/51	---	---	ND	---	0.499
46		---	---	ND	---	0.499
47	44/47/65	---	---	ND	---	0.599
48		---	---	ND	---	0.499

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
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! = Outside QC Limits
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-02;FO081476
Lab Sample ID 1086550002
Filename P90116C_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.499
50	50/53	---	---	ND	---	0.499
51	45/51	---	---	ND	---	0.499
52		---	---	ND	---	0.499
53	50/53	---	---	ND	---	0.499
54		---	---	ND	---	0.499
55		---	---	ND	---	0.499
56		---	---	ND	---	0.499
57		---	---	ND	---	0.499
58		---	---	ND	---	0.499
59	59/62/75	---	---	ND	---	0.499
60		---	---	ND	---	0.499
61	61/70/74/76	29.689	0.76	0.574	---	0.499
62	59/62/75	---	---	ND	---	0.499
63		---	---	ND	---	0.499
64		---	---	ND	---	0.499
65	44/47/65	---	---	ND	---	0.599
66		---	---	ND	---	0.499
67		---	---	ND	---	0.499
68		---	---	ND	---	0.499
69	49/69	---	---	ND	---	0.499
70	61/70/74/76	29.689	0.76	(0.574)	---	0.499
71	40/41/71	---	---	ND	---	0.499
72		---	---	ND	---	0.499
73		---	---	ND	---	0.499
74	61/70/74/76	29.689	0.76	(0.574)	---	0.499
75	59/62/75	---	---	ND	---	0.499
76	61/70/74/76	29.689	0.76	(0.574)	---	0.499
77		---	---	ND	---	0.499
78		---	---	ND	---	0.499
79		---	---	ND	---	0.499
80		---	---	ND	---	0.499
81		---	---	ND	---	0.499
82		---	---	ND	---	0.499
83		---	---	ND	---	0.499
84		---	---	ND	---	0.499
85	85/116/117	---	---	ND	---	0.599
86	86/87/97/108/119/125	---	---	ND	---	0.998
87	86/87/97/108/119/125	---	---	ND	---	0.998
88	88/91	---	---	ND	---	0.499
89		---	---	ND	---	0.499
90	90/101/113	31.937	1.59	1.63	---	0.499
91	88/91	---	---	ND	---	0.499
92		---	---	ND	---	0.499
93	93/98/100/102	---	---	ND	---	0.749
94		---	---	ND	---	0.499
95		28.683	1.56	1.14	---	0.499
96		---	---	ND	---	0.499

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-02;FO081476
Lab Sample ID 1086550002
Filename P90116C_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	0.998
98	93/98/100/102	---	---	ND	---	0.749
99		---	---	ND	---	0.499
100	93/98/100/102	---	---	ND	---	0.749
101	90/101/113	31.937	1.59	(1.63)	---	0.499
102	93/98/100/102	---	---	ND	---	0.749
103		---	---	ND	---	0.499
104		---	---	ND	---	0.499
105		---	---	ND	---	0.499
106		---	---	ND	---	0.499
107	107/124	---	---	ND	---	0.499
108	86/87/97/108/119/125	---	---	ND	---	0.998
109		---	---	ND	---	0.499
110	110/115	33.999	1.59	1.90	---	0.499
111		---	---	ND	---	0.499
112		---	---	ND	---	0.499
113	90/101/113	31.937	1.59	(1.63)	---	0.499
114		---	---	ND	---	0.499
115	110/115	33.999	1.59	(1.90)	---	0.499
116	85/116/117	---	---	ND	---	0.599
117	85/116/117	---	---	ND	---	0.599
118		37.202	1.54	1.17	---	0.499
119	86/87/97/108/119/125	---	---	ND	---	0.998
120		---	---	ND	---	0.499
121		---	---	ND	---	0.499
122		---	---	ND	---	0.499
123		---	---	ND	---	0.499
124	107/124	---	---	ND	---	0.499
125	86/87/97/108/119/125	---	---	ND	---	0.998
126		---	---	ND	---	0.499
127		---	---	ND	---	0.499
128	128/166	---	---	ND	---	0.998
129	129/138/163	40.405	1.24	5.22	---	0.499
130		---	---	ND	---	0.499
131		---	---	ND	---	0.499
132		37.236	1.24	1.68	---	0.499
133		---	---	ND	---	0.499
134	134/143	---	---	ND	---	0.499
135	135/151	34.989	1.25	2.42	---	0.509
136		32.373	1.23	0.702	---	0.499
137		---	---	ND	---	0.499
138	129/138/163	40.405	1.24	(5.22)	---	0.499
139	139/140	---	---	ND	---	0.499
140	139/140	---	---	ND	---	0.499
141		39.332	1.24	1.13	---	0.499
142		---	---	ND	---	0.499
143	134/143	---	---	ND	---	0.499
144		---	---	ND	---	0.499

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-02;FO081476
Lab Sample ID 1086550002
Filename P90116C_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.499
146		38.510	1.24	0.784	---	0.499
147	147/149	35.961	1.25	5.30	---	0.499
148		---	---	ND	---	0.499
149	147/149	35.961	1.25	(5.30)	---	0.499
150		---	---	ND	---	0.499
151	135/151	34.989	1.25	(2.42)	---	0.509
152		---	---	ND	---	0.499
153	153/168	39.147	1.24	5.40	---	0.599
154		---	---	ND	---	0.499
155		---	---	ND	---	0.499
156	156/157	---	---	ND	---	0.998
157	156/157	---	---	ND	---	0.998
158		---	---	ND	---	0.499
159		---	---	ND	---	0.499
160		---	---	ND	---	0.499
161		---	---	ND	---	0.499
162		---	---	ND	---	0.499
163	129/138/163	40.405	1.24	(5.22)	---	0.499
164		---	---	ND	---	0.499
165		---	---	ND	---	0.499
166	128/166	---	---	ND	---	0.998
167		---	---	ND	---	0.499
168	153/168	39.147	1.24	(5.40)	---	0.599
169		---	---	ND	---	0.499
170		47.347	1.04	1.71	---	0.499
171	171/173	43.742	1.00	0.597	---	0.499
172		---	---	ND	---	0.499
173	171/173	43.742	1.00	(0.597)	---	0.499
174		42.652	1.03	2.47	---	0.499
175		---	---	ND	---	0.499
176		---	---	ND	---	0.499
177		43.105	1.06	1.33	---	0.499
178		40.874	1.04	0.518	---	0.499
179		38.024	1.03	1.10	---	0.499
180	180/193	46.106	1.02	4.49	---	0.499
181		---	---	ND	---	0.499
182		---	---	ND	---	0.499
183	183/185	42.451	1.02	1.72	---	0.499
184		---	---	ND	---	0.499
185	183/185	42.451	1.02	(1.72)	---	0.499
186		---	---	ND	---	0.499
187		41.813	1.05	3.16	---	0.499
188		---	---	ND	---	0.499
189		---	---	ND	---	0.499
190		---	---	ND	---	0.499
191		---	---	ND	---	0.499
192		---	---	ND	---	0.499

Conc = Concentration
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P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-02;FO081476
Lab Sample ID 1086550002
Filename P90116C_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.106	1.02	(4.49)	---	0.499
194		52.664	0.91	0.744	---	0.499
195		---	---	ND	---	0.499
196		---	---	ND	---	0.699
197	197/200	---	---	ND	---	2.50
198	198/199	48.085	0.91	1.14	---	0.499
199	198/199	48.085	0.91	(1.14)	---	0.499
200	197/200	---	---	ND	---	2.50
201		---	---	ND	---	0.499
202		---	---	ND	---	0.499
203		48.940	0.89	0.645	---	0.499
204		---	---	ND	---	0.499
205		---	---	ND	---	0.499
206		---	---	ND	---	0.499
207		---	---	ND	---	0.499
208		---	---	ND	---	0.499
209		---	---	ND	---	0.499

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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NA = Not Applicable
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-02;FO081476
Lab Sample ID 1086550002
Filename P90116C_11

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	0.574
Total Pentachloro Biphenyls	5.84
Total Hexachloro Biphenyls	22.6
Total Heptachloro Biphenyls	17.1
Total Octachloro Biphenyls	2.53
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	48.7

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRL0548-03;FO081477		
Lab Sample ID	1086550003		
Filename	P90116C_12		
Injected By	BAL		
Total Amount Extracted	1010 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90116C04	Received	12/18/2008
CCal Filename(s)	P90116C_03	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/17/2009 05:06

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.157	3.05	2.0	1.37	68
13C-4-MoCB	3	10.213	3.18	2.0	1.41	71
13C-2,2'-DiCB	4	10.536	1.59	2.0	1.55	78
13C-4,4'-DiCB	15	18.457	1.55	2.0	1.09	54
13C-2,2',6-TrCB	19	14.814	1.05	2.0	1.63	82
13C-3,4,4'-TrCB	37	26.788	1.08	2.0	1.55	78
13C-2,2',6,6'-TeCB	54	18.773	0.78	2.0	1.62	81
13C-3,4,4',5-TeCB	81	34.167	0.77	2.0	1.38	69
13C-3,3',4,4'-TeCB	77	34.753	0.79	2.0	1.47	74
13C-2,2',4,6,6'-PeCB	104	25.363	1.60	2.0	1.81	90
13C-2,3,3',4,4'-PeCB	105	38.409	1.56	2.0	1.27	64
13C-2,3,4,4',5-PeCB	114	37.755	1.60	2.0	1.23	61
13C-2,3',4,4',5-PeCB	118	37.219	1.56	2.0	1.30	65
13C-2,3',4,4',5'-PeCB	123	36.866	1.55	2.0	1.29	65
13C-3,3',4,4',5-PeCB	126	41.645	1.55	2.0	1.15	58
13C-2,2',4,4',6,6'-HxCB	155	31.685	1.29	2.0	2.24	112
13C-HxCB (156/157)	156/157	44.731	1.25	4.0	2.48	62
13C-2,3',4,4',5,5'-HxCB	167	43.574	1.26	2.0	1.31	65
13C-3,3',4,4',5,5'-HxCB	169	48.068	1.24	2.0	1.17	58
13C-2,2',3,4',5,6,6'-HpCB	188	37.722	1.05	2.0	3.58	179
13C-2,3,3',4,4',5,5'-HpCB	189	50.595	1.06	2.0	1.82	91
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.255	0.92	2.0	2.97	149
13C-2,3,3',4,4',5,5',6-OxCB	205	53.203	0.89	2.0	1.52	76
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.927	0.80	2.0	1.70	85
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.056	0.80	2.0	2.09	104
13C--DeCB	209	56.501	0.70	2.0	1.68	84
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.194	1.02	2.0	1.66	83
13C-2,3,3',5,5'-PeCB	111	34.837	1.61	2.0	1.73	86
13C-2,2',3,3',5,5',6-HpCB	178	40.908	1.03	2.0	2.03	102
Recovery Standards						
13C-2,5-DiCB	9	13.340	1.56	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.340	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.953	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.421	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.707	0.90	2.0	NA	NA

Conc = Concentration
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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-03;FO081477
Lab Sample ID 1086550003
Filename P90116C_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.494
2		---	---	ND	---	0.494
3		---	---	ND	---	0.494
4		---	---	ND	---	0.494
5		---	---	ND	---	0.494
6		---	---	ND	---	0.494
7		---	---	ND	---	0.494
8		---	---	ND	---	0.494
9		---	---	ND	---	0.494
10		---	---	ND	---	0.494
11		---	---	ND	---	0.593
12	12/13	---	---	ND	---	0.494
13	12/13	---	---	ND	---	0.494
14		---	---	ND	---	0.494
15		---	---	ND	---	0.494
16		---	---	ND	---	0.494
17		---	---	ND	---	0.494
18	18/30	---	---	ND	---	0.494
19		---	---	ND	---	0.494
20	20/28	---	---	ND	---	0.593
21	21/33	---	---	ND	---	0.494
22		---	---	ND	---	0.494
23		---	---	ND	---	0.494
24		---	---	ND	---	0.494
25		---	---	ND	---	0.494
26	26/29	---	---	ND	---	0.494
27		---	---	ND	---	0.494
28	20/28	---	---	ND	---	0.593
29	26/29	---	---	ND	---	0.494
30	18/30	---	---	ND	---	0.494
31		---	---	ND	---	0.494
32		---	---	ND	---	0.494
33	21/33	---	---	ND	---	0.494
34		---	---	ND	---	0.494
35		---	---	ND	---	0.494
36		---	---	ND	---	0.494
37		---	---	ND	---	0.494
38		---	---	ND	---	0.494
39		---	---	ND	---	0.494
40	40/41/71	---	---	ND	---	0.494
41	40/41/71	---	---	ND	---	0.494
42		---	---	ND	---	0.494
43		---	---	ND	---	0.494
44	44/47/65	---	---	ND	---	0.593
45	45/51	---	---	ND	---	0.494
46		---	---	ND	---	0.494
47	44/47/65	---	---	ND	---	0.593
48		---	---	ND	---	0.494

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1700 Elm Street - Suite 200
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-03;FO081477
Lab Sample ID 1086550003
Filename P90116C_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.494
50	50/53	---	---	ND	---	0.494
51	45/51	---	---	ND	---	0.494
52		24.357	0.79	0.678	---	0.494
53	50/53	---	---	ND	---	0.494
54		---	---	ND	---	0.494
55		---	---	ND	---	0.494
56		---	---	ND	---	0.494
57		---	---	ND	---	0.494
58		---	---	ND	---	0.494
59	59/62/75	---	---	ND	---	0.494
60		---	---	ND	---	0.494
61	61/70/74/76	29.723	0.76	0.729	---	0.494
62	59/62/75	---	---	ND	---	0.494
63		---	---	ND	---	0.494
64		---	---	ND	---	0.494
65	44/47/65	---	---	ND	---	0.593
66		---	---	ND	---	0.494
67		---	---	ND	---	0.494
68		---	---	ND	---	0.494
69	49/69	---	---	ND	---	0.494
70	61/70/74/76	29.723	0.76	(0.729)	---	0.494
71	40/41/71	---	---	ND	---	0.494
72		---	---	ND	---	0.494
73		---	---	ND	---	0.494
74	61/70/74/76	29.723	0.76	(0.729)	---	0.494
75	59/62/75	---	---	ND	---	0.494
76	61/70/74/76	29.723	0.76	(0.729)	---	0.494
77		---	---	ND	---	0.494
78		---	---	ND	---	0.494
79		---	---	ND	---	0.494
80		---	---	ND	---	0.494
81		---	---	ND	---	0.494
82		---	---	ND	---	0.494
83		---	---	ND	---	0.494
84		---	---	ND	---	0.494
85	85/116/117	---	---	ND	---	0.593
86	86/87/97/108/119/125	33.160	1.56	1.13	---	0.988
87	86/87/97/108/119/125	33.160	1.56	(1.13)	---	0.988
88	88/91	---	---	ND	---	0.494
89		---	---	ND	---	0.494
90	90/101/113	31.970	1.57	1.70	---	0.494
91	88/91	---	---	ND	---	0.494
92		---	---	ND	---	0.494
93	93/98/100/102	---	---	ND	---	0.741
94		---	---	ND	---	0.494
95		28.733	1.58	1.21	---	0.494
96		---	---	ND	---	0.494

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Tel: 612-607-1700
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-03;FO081477
Lab Sample ID 1086550003
Filename P90116C_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	33.160	1.56	(1.13)	---	0.988
98	93/98/100/102	---	---	ND	---	0.741
99		32.590	1.47	0.648	---	0.494
100	93/98/100/102	---	---	ND	---	0.741
101	90/101/113	31.970	1.57	(1.70)	---	0.494
102	93/98/100/102	---	---	ND	---	0.741
103		---	---	ND	---	0.494
104		---	---	ND	---	0.494
105		38.443	1.55	0.562	---	0.494
106		---	---	ND	---	0.494
107	107/124	---	---	ND	---	0.494
108	86/87/97/108/119/125	33.160	1.56	(1.13)	---	0.988
109		---	---	ND	---	0.494
110	110/115	34.049	1.56	2.08	---	0.494
111		---	---	ND	---	0.494
112		---	---	ND	---	0.494
113	90/101/113	31.970	1.57	(1.70)	---	0.494
114		---	---	ND	---	0.494
115	110/115	34.049	1.56	(2.08)	---	0.494
116	85/116/117	---	---	ND	---	0.593
117	85/116/117	---	---	ND	---	0.593
118		37.235	1.51	1.38	---	0.494
119	86/87/97/108/119/125	33.160	1.56	(1.13)	---	0.988
120		---	---	ND	---	0.494
121		---	---	ND	---	0.494
122		---	---	ND	---	0.494
123		---	---	ND	---	0.494
124	107/124	---	---	ND	---	0.494
125	86/87/97/108/119/125	33.160	1.56	(1.13)	---	0.988
126		---	---	ND	---	0.494
127		---	---	ND	---	0.494
128	128/166	---	---	ND	---	0.988
129	129/138/163	40.455	1.21	3.59	---	0.494
130		---	---	ND	---	0.494
131		---	---	ND	---	0.494
132		37.286	1.21	1.16	---	0.494
133		---	---	ND	---	0.494
134	134/143	---	---	ND	---	0.494
135	135/151	35.038	1.27	1.36	---	0.504
136		---	---	ND	---	0.494
137		---	---	ND	---	0.494
138	129/138/163	40.455	1.21	(3.59)	---	0.494
139	139/140	---	---	ND	---	0.494
140	139/140	---	---	ND	---	0.494
141		39.382	1.24	0.665	---	0.494
142		---	---	ND	---	0.494
143	134/143	---	---	ND	---	0.494
144		---	---	ND	---	0.494

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-03;FO081477
Lab Sample ID 1086550003
Filename P90116C_12

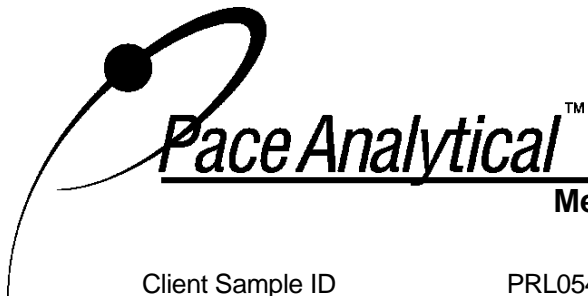
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.494
146		38.560	1.25	0.495	---	0.494
147	147/149	35.994	1.24	3.10	---	0.494
148		---	---	ND	---	0.494
149	147/149	35.994	1.24	(3.10)	---	0.494
150		---	---	ND	---	0.494
151	135/151	35.038	1.27	(1.36)	---	0.504
152		---	---	ND	---	0.494
153	153/168	39.197	1.24	3.34	---	0.593
154		---	---	ND	---	0.494
155		---	---	ND	---	0.494
156	156/157	---	---	ND	---	0.988
157	156/157	---	---	ND	---	0.988
158		---	---	ND	---	0.494
159		---	---	ND	---	0.494
160		---	---	ND	---	0.494
161		---	---	ND	---	0.494
162		---	---	ND	---	0.494
163	129/138/163	40.455	1.21	(3.59)	---	0.494
164		---	---	ND	---	0.494
165		---	---	ND	---	0.494
166	128/166	---	---	ND	---	0.988
167		---	---	ND	---	0.494
168	153/168	39.197	1.24	(3.34)	---	0.593
169		---	---	ND	---	0.494
170		47.414	1.03	1.01	---	0.494
171	171/173	---	---	ND	---	0.494
172		---	---	ND	---	0.494
173	171/173	---	---	ND	---	0.494
174		42.702	1.04	1.32	---	0.494
175		---	---	ND	---	0.494
176		---	---	ND	---	0.494
177		43.155	1.04	0.734	---	0.494
178		---	---	ND	---	0.494
179		38.074	1.05	0.548	---	0.494
180	180/193	46.173	1.03	2.45	---	0.494
181		---	---	ND	---	0.494
182		---	---	ND	---	0.494
183	183/185	42.501	1.05	0.874	---	0.494
184		---	---	ND	---	0.494
185	183/185	42.501	1.05	(0.874)	---	0.494
186		---	---	ND	---	0.494
187		41.863	1.04	1.63	---	0.494
188		---	---	ND	---	0.494
189		---	---	ND	---	0.494
190		---	---	ND	---	0.494
191		---	---	ND	---	0.494
192		---	---	ND	---	0.494

Conc = Concentration
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-03;FO081477
Lab Sample ID 1086550003
Filename P90116C_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.173	1.03	(2.45)	---	0.494
194		---	---	ND	---	0.494
195		---	---	ND	---	0.494
196		---	---	ND	---	0.691
197	197/200	---	---	ND	---	2.47
198	198/199	48.135	0.91	0.628	---	0.494
199	198/199	48.135	0.91	(0.628)	---	0.494
200	197/200	---	---	ND	---	2.47
201		---	---	ND	---	0.494
202		---	---	ND	---	0.494
203		---	---	ND	---	0.494
204		---	---	ND	---	0.494
205		---	---	ND	---	0.494
206		---	---	ND	---	0.494
207		---	---	ND	---	0.494
208		---	---	ND	---	0.494
209		---	---	ND	---	0.494

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-03;FO081477
Lab Sample ID 1086550003
Filename P90116C_12

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	1.41
Total Pentachloro Biphenyls	8.71
Total Hexachloro Biphenyls	13.7
Total Heptachloro Biphenyls	8.55
Total Octachloro Biphenyls	0.628
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 33.0

ND = Not Detected

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRL0548-04;FO081478		
Lab Sample ID	1086550004		
Filename	P90116C_13		
Injected By	BAL		
Total Amount Extracted	973 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90116C04	Received	12/18/2008
CCal Filename(s)	P90116C_03	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/17/2009 06:07

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	7.157	3.19	2.0	1.56	78	
13C-4-MoCB	3	10.213	3.16	2.0	1.57	79	
13C-2,2'-DiCB	4	10.536	1.57	2.0	1.79	89	
13C-4,4'-DiCB	15	18.468	1.56	2.0	0.919	46	
13C-2,2',6-TrCB	19	14.826	1.04	2.0	1.85	92	
13C-3,4,4'-TrCB	37	26.822	1.03	2.0	1.58	79	
13C-2,2',6,6'-TeCB	54	18.789	0.79	2.0	1.79	89	
13C-3,4,4',5-TeCB	81	34.200	0.77	2.0	1.28	64	
13C-3,3',4,4'-TeCB	77	34.804	0.80	2.0	1.36	68	
13C-2,2',4,6,6'-PeCB	104	25.396	1.57	2.0	2.02	101	
13C-2,3,3',4,4'-PeCB	105	38.460	1.57	2.0	1.21	60	
13C-2,3,4,4',5-PeCB	114	37.789	1.55	2.0	1.15	57	
13C-2,3',4,4',5-PeCB	118	37.252	1.60	2.0	1.23	62	
13C-2,3',4,4',5'-PeCB	123	36.917	1.55	2.0	1.23	61	
13C-3,3',4,4',5-PeCB	126	41.696	1.53	2.0	1.01	51	
13C-2,2',4,4',6,6'-HxCB	155	31.718	1.27	2.0	2.74	137	
13C-HxCB (156/157)	156/157	44.782	1.25	4.0	2.47	62	
13C-2,3',4,4',5,5'-HxCB	167	43.625	1.29	2.0	1.34	67	
13C-3,3',4,4',5,5'-HxCB	169	48.136	1.23	2.0	1.10	55	
13C-2,2',3,4',5,6,6'-HpCB	188	37.772	1.04	2.0	4.37	218	P
13C-2,3,3',4,4',5,5'-HpCB	189	50.682	1.01	2.0	1.91	96	
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.306	0.92	2.0	3.37	168	P
13C-2,3,3',4,4',5,5',6-OxCB	205	53.247	0.90	2.0	1.53	76	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.971	0.80	2.0	1.94	97	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.122	0.81	2.0	2.19	109	
13C--DeCB	209	56.545	0.71	2.0	1.92	96	
Cleanup Standards							
13C-2,4,4'-TrCB	28	22.210	1.04	2.0	1.69	84	
13C-2,3,3',5,5'-PeCB	111	34.888	1.59	2.0	1.64	82	
13C-2,2',3,3',5,5',6-HpCB	178	40.959	1.04	2.0	2.09	105	
Recovery Standards							
13C-2,5-DiCB	9	13.352	1.55	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	24.357	0.80	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	31.970	1.59	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	40.472	1.28	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.773	0.92	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-04;FO081478
Lab Sample ID 1086550004
Filename P90116C_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.514
2		---	---	ND	---	0.514
3		---	---	ND	---	0.514
4		---	---	ND	---	0.514
5		---	---	ND	---	0.514
6		---	---	ND	---	0.514
7		---	---	ND	---	0.514
8		---	---	ND	---	0.514
9		---	---	ND	---	0.514
10		---	---	ND	---	0.514
11		---	---	ND	---	0.617
12	12/13	---	---	ND	---	0.514
13	12/13	---	---	ND	---	0.514
14		---	---	ND	---	0.514
15		---	---	ND	---	0.514
16		---	---	ND	---	0.514
17		---	---	ND	---	0.514
18	18/30	---	---	ND	---	0.514
19		---	---	ND	---	0.514
20	20/28	---	---	ND	---	0.617
21	21/33	---	---	ND	---	0.514
22		---	---	ND	---	0.514
23		---	---	ND	---	0.514
24		---	---	ND	---	0.514
25		---	---	ND	---	0.514
26	26/29	---	---	ND	---	0.514
27		---	---	ND	---	0.514
28	20/28	---	---	ND	---	0.617
29	26/29	---	---	ND	---	0.514
30	18/30	---	---	ND	---	0.514
31		---	---	ND	---	0.514
32		---	---	ND	---	0.514
33	21/33	---	---	ND	---	0.514
34		---	---	ND	---	0.514
35		---	---	ND	---	0.514
36		---	---	ND	---	0.514
37		---	---	ND	---	0.514
38		---	---	ND	---	0.514
39		---	---	ND	---	0.514
40	40/41/71	---	---	ND	---	0.514
41	40/41/71	---	---	ND	---	0.514
42		---	---	ND	---	0.514
43		---	---	ND	---	0.514
44	44/47/65	---	---	ND	---	0.617
45	45/51	---	---	ND	---	0.514
46		---	---	ND	---	0.514
47	44/47/65	---	---	ND	---	0.617
48		---	---	ND	---	0.514

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-04;FO081478
Lab Sample ID 1086550004
Filename P90116C_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.514
50	50/53	---	---	ND	---	0.514
51	45/51	---	---	ND	---	0.514
52		---	---	ND	---	0.514
53	50/53	---	---	ND	---	0.514
54		---	---	ND	---	0.514
55		---	---	ND	---	0.514
56		---	---	ND	---	0.514
57		---	---	ND	---	0.514
58		---	---	ND	---	0.514
59	59/62/75	---	---	ND	---	0.514
60		---	---	ND	---	0.514
61	61/70/74/76	29.756	0.75	1.12	---	0.514
62	59/62/75	---	---	ND	---	0.514
63		---	---	ND	---	0.514
64		---	---	ND	---	0.514
65	44/47/65	---	---	ND	---	0.617
66		30.108	0.77	0.629	---	0.514
67		---	---	ND	---	0.514
68		---	---	ND	---	0.514
69	49/69	---	---	ND	---	0.514
70	61/70/74/76	29.756	0.75	(1.12)	---	0.514
71	40/41/71	---	---	ND	---	0.514
72		---	---	ND	---	0.514
73		---	---	ND	---	0.514
74	61/70/74/76	29.756	0.75	(1.12)	---	0.514
75	59/62/75	---	---	ND	---	0.514
76	61/70/74/76	29.756	0.75	(1.12)	---	0.514
77		---	---	ND	---	0.514
78		---	---	ND	---	0.514
79		---	---	ND	---	0.514
80		---	---	ND	---	0.514
81		---	---	ND	---	0.514
82		---	---	ND	---	0.514
83		---	---	ND	---	0.514
84		---	---	ND	---	0.514
85	85/116/117	---	---	ND	---	0.617
86	86/87/97/108/119/125	33.194	1.58	1.51	---	1.03
87	86/87/97/108/119/125	33.194	1.58	(1.51)	---	1.03
88	88/91	---	---	ND	---	0.514
89		---	---	ND	---	0.514
90	90/101/113	32.003	1.58	3.14	---	0.514
91	88/91	---	---	ND	---	0.514
92		---	---	ND	---	0.514
93	93/98/100/102	---	---	ND	---	0.771
94		---	---	ND	---	0.514
95		28.750	1.53	2.04	---	0.514
96		---	---	ND	---	0.514

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-04;FO081478
Lab Sample ID 1086550004
Filename P90116C_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	33.194	1.58	(1.51)	---	1.03
98	93/98/100/102	---	---	ND	---	0.771
99		32.624	1.61	0.792	---	0.514
100	93/98/100/102	---	---	ND	---	0.771
101	90/101/113	32.003	1.58	(3.14)	---	0.514
102	93/98/100/102	---	---	ND	---	0.771
103		---	---	ND	---	0.514
104		---	---	ND	---	0.514
105		38.477	1.50	0.915	---	0.514
106		---	---	ND	---	0.514
107	107/124	---	---	ND	---	0.514
108	86/87/97/108/119/125	33.194	1.58	(1.51)	---	1.03
109		---	---	ND	---	0.514
110	110/115	34.083	1.58	3.06	---	0.514
111		---	---	ND	---	0.514
112		---	---	ND	---	0.514
113	90/101/113	32.003	1.58	(3.14)	---	0.514
114		---	---	ND	---	0.514
115	110/115	34.083	1.58	(3.06)	---	0.514
116	85/116/117	---	---	ND	---	0.617
117	85/116/117	---	---	ND	---	0.617
118		37.286	1.52	2.22	---	0.514
119	86/87/97/108/119/125	33.194	1.58	(1.51)	---	1.03
120		---	---	ND	---	0.514
121		---	---	ND	---	0.514
122		---	---	ND	---	0.514
123		---	---	ND	---	0.514
124	107/124	---	---	ND	---	0.514
125	86/87/97/108/119/125	33.194	1.58	(1.51)	---	1.03
126		---	---	ND	---	0.514
127		---	---	ND	---	0.514
128	128/166	---	---	ND	---	1.03
129	129/138/163	40.506	1.25	12.8	---	0.514
130		39.835	1.26	0.660	---	0.514
131		---	---	ND	---	0.514
132		37.319	1.25	4.26	---	0.514
133		---	---	ND	---	0.514
134	134/143	---	---	ND	---	0.514
135	135/151	35.072	1.25	6.69	---	0.524
136		32.439	1.25	1.85	---	0.514
137		---	---	ND	---	0.514
138	129/138/163	40.506	1.25	(12.8)	---	0.514
139	139/140	---	---	ND	---	0.514
140	139/140	---	---	ND	---	0.514
141		39.432	1.24	2.89	---	0.514
142		---	---	ND	---	0.514
143	134/143	---	---	ND	---	0.514
144		35.598	1.23	0.791 N2	---	0.514

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-04;FO081478
Lab Sample ID 1086550004
Filename P90116C_13

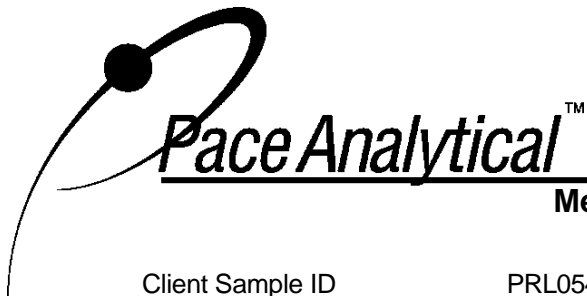
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.514
146		38.611	1.21	2.16	---	0.514
147	147/149	36.045	1.26	13.9	---	0.514
148		---	---	ND	---	0.514
149	147/149	36.045	1.26	(13.9)	---	0.514
150		---	---	ND	---	0.514
151	135/151	35.072	1.25	(6.69)	---	0.524
152		---	---	ND	---	0.514
153	153/168	39.248	1.25	14.5	---	0.617
154		---	---	ND	---	0.514
155		---	---	ND	---	0.514
156	156/157	---	---	ND	---	1.03
157	156/157	---	---	ND	---	1.03
158		40.925	1.23	1.05	---	0.514
159		---	---	ND	---	0.514
160		---	---	ND	---	0.514
161		---	---	ND	---	0.514
162		---	---	ND	---	0.514
163	129/138/163	40.506	1.25	(12.8)	---	0.514
164		40.187	1.23	0.803	---	0.514
165		---	---	ND	---	0.514
166	128/166	---	---	ND	---	1.03
167		---	---	ND	---	0.514
168	153/168	39.248	1.25	(14.5)	---	0.617
169		---	---	ND	---	0.514
170		47.482	1.02	4.34	---	0.514
171	171/173	43.843	1.03	1.62	---	0.514
172		45.553	1.03	0.901	---	0.514
173	171/173	43.843	1.03	(1.62)	---	0.514
174		42.753	1.04	6.22	---	0.514
175		---	---	ND	---	0.514
176		39.030	1.07	0.946	---	0.514
177		43.206	1.06	3.50	---	0.514
178		40.975	1.03	1.46	---	0.514
179		38.108	1.03	3.09	---	0.514
180	180/193	46.224	1.03	11.2	---	0.514
181		---	---	ND	---	0.514
182		---	---	ND	---	0.514
183	183/185	42.552	1.04	4.36	---	0.514
184		---	---	ND	---	0.514
185	183/185	42.552	1.04	(4.36)	---	0.514
186		---	---	ND	---	0.514
187		41.914	1.04	8.27	---	0.514
188		---	---	ND	---	0.514
189		---	---	ND	---	0.514
190		48.035	1.01	0.839	---	0.514
191		---	---	ND	---	0.514
192		---	---	ND	---	0.514

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRL0548-04;FO081478
Lab Sample ID 1086550004
Filename P90116C_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.224	1.03	(11.2)	---	0.514
194		52.794	0.86	1.86	---	0.514
195		50.380	0.89	0.782	---	0.514
196		48.857	0.88	1.34	---	0.719
197	197/200	---	---	ND	---	2.57
198	198/199	48.203	0.89	2.72	---	0.514
199	198/199	48.203	0.89	(2.72)	---	0.514
200	197/200	---	---	ND	---	2.57
201		---	---	ND	---	0.514
202		---	---	ND	---	0.514
203		49.075	0.90	1.46	---	0.514
204		---	---	ND	---	0.514
205		---	---	ND	---	0.514
206		---	---	ND	---	0.514
207		---	---	ND	---	0.514
208		---	---	ND	---	0.514
209		---	---	ND	---	0.514

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-04;FO081478
Lab Sample ID 1086550004
Filename P90116C_13

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	1.74
Total Pentachloro Biphenyls	13.7
Total Hexachloro Biphenyls	62.3
Total Heptachloro Biphenyls	46.8
Total Octachloro Biphenyls	8.16
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	133

ND = Not Detected

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-18669		
Filename	P90116C_08		
Injected By	BAL	Matrix	Water
Total Amount Extracted	960 mL	Extracted	01/05/2009
ICAL ID	P90116C04	Analyzed	01/17/2009 01:00
CCal Filename(s)	P90116C_03	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	7.109	3.03	2.0	1.22	61
13C-4-MoCB	3	10.141	3.20	2.0	1.22	61
13C-2,2'-DiCB	4	10.464	1.53	2.0	1.40	70
13C-4,4'-DiCB	15	18.384	1.57	2.0	1.15	58
13C-2,2',6-TrCB	19	14.730	1.08	2.0	1.37	69
13C-3,4,4'-TrCB	37	26.687	1.11	2.0	1.25	62
13C-2,2',6,6'-TeCB	54	18.688	0.81	2.0	1.26	63
13C-3,4,4',5-TeCB	81	34.032	0.78	2.0	1.21	60
13C-3,3',4,4'-TeCB	77	34.619	0.77	2.0	1.36	68
13C-2,2',4,6,6'-PeCB	104	25.262	1.59	2.0	1.45	72
13C-2,3,3',4,4'-PeCB	105	38.275	1.57	2.0	1.43	72
13C-2,3,4,4',5-PeCB	114	37.621	1.50	2.0	1.31	66
13C-2,3',4,4',5-PeCB	118	37.084	1.56	2.0	1.39	69
13C-2,3',4,4',5'-PeCB	123	36.732	1.57	2.0	1.30	65
13C-3,3',4,4',5-PeCB	126	41.495	1.52	2.0	1.40	70
13C-2,2',4,4',6,6'-HxCB	155	31.584	1.25	2.0	1.71	85
13C-HxCB (156/157)	156/157	44.564	1.26	4.0	3.29	82
13C-2,3',4,4',5,5'-HxCB	167	43.423	1.29	2.0	1.69	84
13C-3,3',4,4',5,5'-HxCB	169	47.884	1.28	2.0	1.71	85
13C-2,2',3,4',5,6,6'-HpCB	188	37.604	1.04	2.0	1.94	97
13C-2,3,3',4,4',5,5'-HpCB	189	50.423	1.05	2.0	1.85	93
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.121	0.93	2.0	2.05	102
13C-2,3,3',4,4',5,5',6-OxCB	205	53.010	0.86	2.0	1.61	80
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.734	0.83	2.0	1.79	90
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.906	0.82	2.0	1.86	93
13C--DeCB	209	56.329	0.72	2.0	1.83	92

Cleanup Standards

13C-2,4,4'-TrCB	28	22.092	1.06	2.0	1.27	64
13C-2,3,3',5,5'-PeCB	111	34.720	1.59	2.0	1.48	74
13C-2,2',3,3',5,5',6-HpCB	178	40.774	1.03	2.0	1.98	99

Recovery Standards

13C-2,5-DiCB	9	13.268	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.222	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.819	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.287	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.514	0.94	2.0	NA	NA

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.521
2		---	---	ND	---	0.521
3		---	---	ND	---	0.521
4		---	---	ND	---	0.521
5		---	---	ND	---	0.521
6		---	---	ND	---	0.521
7		---	---	ND	---	0.521
8		---	---	ND	---	0.521
9		---	---	ND	---	0.521
10		---	---	ND	---	0.521
11		---	---	ND	---	0.625
12	12/13	---	---	ND	---	0.521
13	12/13	---	---	ND	---	0.521
14		---	---	ND	---	0.521
15		---	---	ND	---	0.521
16		---	---	ND	---	0.521
17		---	---	ND	---	0.521
18	18/30	---	---	ND	---	0.521
19		---	---	ND	---	0.521
20	20/28	---	---	ND	---	0.625
21	21/33	---	---	ND	---	0.521
22		---	---	ND	---	0.521
23		---	---	ND	---	0.521
24		---	---	ND	---	0.521
25		---	---	ND	---	0.521
26	26/29	---	---	ND	---	0.521
27		---	---	ND	---	0.521
28	20/28	---	---	ND	---	0.625
29	26/29	---	---	ND	---	0.521
30	18/30	---	---	ND	---	0.521
31		---	---	ND	---	0.521
32		---	---	ND	---	0.521
33	21/33	---	---	ND	---	0.521
34		---	---	ND	---	0.521
35		---	---	ND	---	0.521
36		---	---	ND	---	0.521
37		---	---	ND	---	0.521
38		---	---	ND	---	0.521
39		---	---	ND	---	0.521
40	40/41/71	---	---	ND	---	0.521
41	40/41/71	---	---	ND	---	0.521
42		---	---	ND	---	0.521
43		---	---	ND	---	0.521
44	44/47/65	---	---	ND	---	0.625
45	45/51	---	---	ND	---	0.521

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.521
47	44/47/65	---	---	ND	---	0.625
48		---	---	ND	---	0.521
49	49/69	---	---	ND	---	0.521
50	50/53	---	---	ND	---	0.521
51	45/51	---	---	ND	---	0.521
52		---	---	ND	---	0.521
53	50/53	---	---	ND	---	0.521
54		---	---	ND	---	0.521
55		---	---	ND	---	0.521
56		---	---	ND	---	0.521
57		---	---	ND	---	0.521
58		---	---	ND	---	0.521
59	59/62/75	---	---	ND	---	0.521
60		---	---	ND	---	0.521
61	61/70/74/76	---	---	ND	---	0.521
62	59/62/75	---	---	ND	---	0.521
63		---	---	ND	---	0.521
64		---	---	ND	---	0.521
65	44/47/65	---	---	ND	---	0.625
66		---	---	ND	---	0.521
67		---	---	ND	---	0.521
68		---	---	ND	---	0.521
69	49/69	---	---	ND	---	0.521
70	61/70/74/76	---	---	ND	---	0.521
71	40/41/71	---	---	ND	---	0.521
72		---	---	ND	---	0.521
73		---	---	ND	---	0.521
74	61/70/74/76	---	---	ND	---	0.521
75	59/62/75	---	---	ND	---	0.521
76	61/70/74/76	---	---	ND	---	0.521
77		---	---	ND	---	0.521
78		---	---	ND	---	0.521
79		---	---	ND	---	0.521
80		---	---	ND	---	0.521
81		---	---	ND	---	0.521
82		---	---	ND	---	0.521
83		---	---	ND	---	0.521
84		---	---	ND	---	0.521
85	85/116/117	---	---	ND	---	0.625
86	86/87/97/108/119/125	---	---	ND	---	1.04
87	86/87/97/108/119/125	---	---	ND	---	1.04
88	88/91	---	---	ND	---	0.521
89		---	---	ND	---	0.521
90	90/101/113	---	---	ND	---	0.521

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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P = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.521
92		---	---	ND	---	0.521
93	93/98/100/102	---	---	ND	---	0.782
94		---	---	ND	---	0.521
95		---	---	ND	---	0.521
96		---	---	ND	---	0.521
97	86/87/97/108/119/125	---	---	ND	---	1.04
98	93/98/100/102	---	---	ND	---	0.782
99		---	---	ND	---	0.521
100	93/98/100/102	---	---	ND	---	0.782
101	90/101/113	---	---	ND	---	0.521
102	93/98/100/102	---	---	ND	---	0.782
103		---	---	ND	---	0.521
104		---	---	ND	---	0.521
105		---	---	ND	---	0.521
106		---	---	ND	---	0.521
107	107/124	---	---	ND	---	0.521
108	86/87/97/108/119/125	---	---	ND	---	1.04
109		---	---	ND	---	0.521
110	110/115	---	---	ND	---	0.521
111		---	---	ND	---	0.521
112		---	---	ND	---	0.521
113	90/101/113	---	---	ND	---	0.521
114		---	---	ND	---	0.521
115	110/115	---	---	ND	---	0.521
116	85/116/117	---	---	ND	---	0.625
117	85/116/117	---	---	ND	---	0.625
118		---	---	ND	---	0.521
119	86/87/97/108/119/125	---	---	ND	---	1.04
120		---	---	ND	---	0.521
121		---	---	ND	---	0.521
122		---	---	ND	---	0.521
123		---	---	ND	---	0.521
124	107/124	---	---	ND	---	0.521
125	86/87/97/108/119/125	---	---	ND	---	1.04
126		---	---	ND	---	0.521
127		---	---	ND	---	0.521
128	128/166	---	---	ND	---	1.04
129	129/138/163	---	---	ND	---	0.521
130		---	---	ND	---	0.521
131		---	---	ND	---	0.521
132		---	---	ND	---	0.521
133		---	---	ND	---	0.521
134	134/143	---	---	ND	---	0.521
135	135/151	---	---	ND	---	0.532

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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! = Outside QC Limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.521
137		---	---	ND	---	0.521
138	129/138/163	---	---	ND	---	0.521
139	139/140	---	---	ND	---	0.521
140	139/140	---	---	ND	---	0.521
141		---	---	ND	---	0.521
142		---	---	ND	---	0.521
143	134/143	---	---	ND	---	0.521
144		---	---	ND	---	0.521
145		---	---	ND	---	0.521
146		---	---	ND	---	0.521
147	147/149	---	---	ND	---	0.521
148		---	---	ND	---	0.521
149	147/149	---	---	ND	---	0.521
150		---	---	ND	---	0.521
151	135/151	---	---	ND	---	0.532
152		---	---	ND	---	0.521
153	153/168	---	---	ND	---	0.625
154		---	---	ND	---	0.521
155		---	---	ND	---	0.521
156	156/157	---	---	ND	---	1.04
157	156/157	---	---	ND	---	1.04
158		---	---	ND	---	0.521
159		---	---	ND	---	0.521
160		---	---	ND	---	0.521
161		---	---	ND	---	0.521
162		---	---	ND	---	0.521
163	129/138/163	---	---	ND	---	0.521
164		---	---	ND	---	0.521
165		---	---	ND	---	0.521
166	128/166	---	---	ND	---	1.04
167		---	---	ND	---	0.521
168	153/168	---	---	ND	---	0.625
169		---	---	ND	---	0.521
170		---	---	ND	---	0.521
171	171/173	---	---	ND	---	0.521
172		---	---	ND	---	0.521
173	171/173	---	---	ND	---	0.521
174		---	---	ND	---	0.521
175		---	---	ND	---	0.521
176		---	---	ND	---	0.521
177		---	---	ND	---	0.521
178		---	---	ND	---	0.521
179		---	---	ND	---	0.521
180	180/193	---	---	ND	---	0.521

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.521
182		---	---	ND	---	0.521
183	183/185	---	---	ND	---	0.521
184		---	---	ND	---	0.521
185	183/185	---	---	ND	---	0.521
186		---	---	ND	---	0.521
187		---	---	ND	---	0.521
188		---	---	ND	---	0.521
189		---	---	ND	---	0.521
190		---	---	ND	---	0.521
191		---	---	ND	---	0.521
192		---	---	ND	---	0.521
193	180/193	---	---	ND	---	0.521
194		---	---	ND	---	0.521
195		---	---	ND	---	0.521
196		---	---	ND	---	0.730
197	197/200	---	---	ND	---	2.61
198	198/199	---	---	ND	---	0.521
199	198/199	---	---	ND	---	0.521
200	197/200	---	---	ND	---	2.61
201		---	---	ND	---	0.521
202		---	---	ND	---	0.521
203		---	---	ND	---	0.521
204		---	---	ND	---	0.521
205		---	---	ND	---	0.521
206		---	---	ND	---	0.521
207		---	---	ND	---	0.521
208		---	---	ND	---	0.521
209		---	---	ND	---	0.521

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKEB
Lab Sample ID BLANK-18669
Filename P90116C_08

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	ND

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-18670	
Filename	P90116C_05	Matrix
Total Amount Extracted	903 mL	Water
ICAL ID	P90116C04	Dilution
CCal Filename(s)	P90116C_03	Extracted
Method Blank ID	BLANK-18669	Analyzed
		01/16/2009 21:56
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.09	109	2.0	1.55	77
3	1.0	1.15	115	2.0	1.55	78
4	1.0	1.07	107	2.0	1.74	87
15	1.0	1.16	116	2.0	1.54	77
19	1.0	1.05	105	2.0	1.64	82
37	1.0	1.15	115	2.0	1.56	78
54	1.0	1.02	102	2.0	1.64	82
81	1.0	1.10	110	2.0	1.44	72
77	1.0	1.05	105	2.0	1.60	80
104	1.0	1.05	105	2.0	1.82	91
105	1.0	1.11	111	2.0	1.50	75
114	1.0	1.14	114	2.0	1.41	70
118	1.0	1.12	112	2.0	1.54	77
123	1.0	1.13	113	2.0	1.42	71
126	1.0	1.07	107	2.0	1.49	75
155	1.0	1.07	107	2.0	1.95	97
156/157	2.0	2.22	111	4.0	3.34	83
167	1.0	1.10	110	2.0	1.74	87
169	1.0	1.14	114	2.0	1.75	88
188	1.0	1.05	105	2.0	2.11	106
189	1.0	1.13	113	2.0	1.99	99
202	1.0	1.06	106	2.0	2.12	106
205	1.0	1.09	109	2.0	1.71	86
206	1.0	1.03	103	2.0	1.87	94
208	1.0	1.07	107	2.0	1.96	98
209	1.0	1.04	104	2.0	1.92	96

P = Recovery outside of method 1668A control limits
 Nn = Result obtained from alternate analysis
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 ! = See Discussion
 ng = Nanograms
 I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-18671	
Filename	P90116C_06	Matrix
Total Amount Extracted	947 mL	Water
ICAL ID	P90116C04	Dilution
CCal Filename(s)	P90116C_03	Extracted
Method Blank ID	BLANK-18669	Analyzed
		01/16/2009 22:57
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.963	96	2.0	1.68	84
3	1.0	0.994	99	2.0	1.68	84
4	1.0	0.919	92	2.0	1.94	97
15	1.0	1.03	103	2.0	1.65	82
19	1.0	0.870	87	2.0	1.91	95
37	1.0	1.01	101	2.0	1.70	85
54	1.0	0.889	89	2.0	1.78	89
81	1.0	0.962	96	2.0	1.60	80
77	1.0	0.921	92	2.0	1.79	90
104	1.0	0.913	91	2.0	2.12	106
105	1.0	0.952	95	2.0	1.76	88
114	1.0	0.995	100	2.0	1.66	83
118	1.0	0.992	99	2.0	1.79	90
123	1.0	0.960	96	2.0	1.64	82
126	1.0	0.932	93	2.0	1.75	88
155	1.0	0.919	92	2.0	2.17	108
156/157	2.0	1.96	98	4.0	3.72	93
167	1.0	0.961	96	2.0	1.93	96
169	1.0	0.986	99	2.0	1.93	96
188	1.0	0.923	92	2.0	2.48	124
189	1.0	0.991	99	2.0	2.24	112
202	1.0	0.892	89	2.0	2.49	124
205	1.0	0.932	93	2.0	1.93	97
206	1.0	0.894	89	2.0	2.07	103
208	1.0	0.922	92	2.0	2.24	112
209	1.0	0.900	90	2.0	2.18	109

P = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
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I = Interference

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-18670
Spike 1 Filename P90116C_05

Spike 2 ID LCSD-18671
Spike 2 Filename P90116C_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	109	96	12.7
4-MoCB	3	115	99	15.0
2,2'-DiCB	4	107	92	15.1
4,4'-DiCB	15	116	103	11.9
2,2',6-TrCB	19	105	87	18.8
3,4,4'-TrCB	37	115	101	13.0
2,2',6,6'-TeCB	54	102	89	13.6
3,3,4,4'-TeCB	77	105	92	13.2
3,4,4',5-TeCB	81	110	96	13.6
2,2',4,6,6'-PeCB	104	105	91	14.3
2,3,3',4,4'-PeCB	105	111	95	15.5
2,3,4,4',5-PeCB	114	114	100	13.1
2,3',4,4',5-PeCB	118	112	99	12.3
2,3,4,4',5'-PeCB	123	113	96	16.3
3,3',4,4',5-PeCB	126	107	93	14.0
2,2',4,4',6,6'-HxCB	155	107	92	15.1
(156/157)	156/157	111	98	12.4
2,3',4,4',5,5'-HxCB	167	110	96	13.6
3,3',4,4',5,5'-HxCB	169	114	99	14.1
2,2',3,4',5,6,6'-HpCB	188	105	92	13.2
2,3,3',4,4',5,5'-HpCB	189	113	99	13.2
2,2',3,3',5,5',6,6'-OcCB	202	106	89	17.4
2,3,3',4,4',5,5',6-OcCB	205	109	93	15.8
2,2',3,3',4,4',5,5',6-NoCB	206	103	89	14.6
2,2',3,3',4,5,5',6,6'-NoCB	208	107	92	15.1
Decachlorobiphenyl	209	104	90	14.4

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

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Laboratory Data QA/QC Review Albina Riverlots Source Control Investigation First Quarter 2009 Stormwater Sampling – Event 4

To: File
From: Erin Carroll, GSI
Date: April 3, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on February 23, 2009. Six stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO095222) and field duplicate (FO095223) were also submitted for analysis.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
 - Total Metals – EPA 200.8
 - Total Mercury – WPCL SOP M-10.02
 - Total suspended solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Organochlorine Pesticides – EPA 8081
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The following QA/QC review is based on the available documentation supplied from each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample (LCS/DLCS) recoveries within laboratory control limits

The results of the QA/QC review of the subcontracted laboratory reports 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 throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of PAHs, phthalates, pesticides, SVOCs, and PCB congeners. There are no reported detections of PAHs, pesticides, and PCB congeners in the associated method blanks.

Four SVOCs including phenol, diethyl phthalate, di-n-butyl phthalate, and butyl benzyl phthalate, were detected in the method blank for the EPA 8270C analysis and in the field samples (including the field decontamination blank) at estimated concentrations (greater than the method detection limit but less than the method reporting limit). The presence of these SVOCs in the samples at concentrations less than the MRL is considered to be a result of laboratory contamination; therefore, these data are shown as not detected at a concentration greater than the MRL.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, phthalates, pesticides, and SVOCs. All surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the laboratory control limits.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of PAHs, phthalates, SVOCs and PCB congeners. The LCS/DLCS recoveries and relative percent differences were within the laboratory control limits.

Other

The laboratory reports for PAHs, phthalates, pesticides, and SVOCs indicate that the method reporting limits were elevated in a number of samples due to sample matrix effects and non-target background components.

Some organochlorine pesticide compounds are flagged “P” in the subcontracted CAS report because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD. These values are flagged “J” in the report tables to indicate that they are estimated values.

A field decontamination blank was collected and analyzed for metals, PAHs, phthalates, pesticides, SVOC, and PCB congeners. Three SVOCs were detected in the field decontamination blank at estimated concentrations between the MDL and the MRL. Because two of the three detected compounds (diethyl phthalate and di-n-butyl phthalate) were also detected in the method blank at similar concentrations, these results are considered a result of laboratory contamination and are shown as not detected at a concentration greater than the MRL (as discussed above). The third SVOC, bis(2-ethylhexyl)phthalate, was not detected in the method blank and is flagged as an estimated value “J”. Zinc also was detected in the field decontamination blank at a low concentration (0.65 ug/L). Zinc concentrations in the field samples were greater than 20 times the concentration detected in the field decontamination blank; therefore, no zinc data are qualified.

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: 2/23/09
Page: 1 of 1
Collected By: M35, JMB

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☐ Sample Time recorded in PST

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Organics				Metals		Field		
						TSS				PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	Pesticides (CAS)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)

FO095216	SW-43-ABC290-MMYY N ALBINA & RIVER	43_SW1	2/23/09	1442	G	•				•	•	•	•	•	•	9.0	41	7.1
FO095217	SW-43-ABC539-MMYY N KERBY & WHEELER	43_SW2	2/23/09	1410	G	•				•	•	•	•	•	•	9.1	31	7.2
FO095218	SW-43-ABC552-MMYY N WHEELER PL & KERBY	43_SW3	2/23/09	1518	G	•				•	•	•	•	•	•	9.8	60	7.2
FO095219	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	43_SW4	2/23/09	1358	G	•				•	•	•	•	•	•	9.4	24	7.5
FO095220	SW-44-ABC352-MMYY N HARDING & RIVER	44_SW1	2/23/09	1422	G	•				•	•	•	•	•	•	9.1	40	7.2
FO095221	SW-44A-ABC311-MMYY N LARABEE & RANDOLPH	44A_SW1	2/23/09	1455	G	•				•	•	•	•	•	•	9.1	37	7.3
FO095222	FIELD DECON BLANK	FDB	2/23/09	1530	G	•				•	•	•	•	•	•			
FO095223	DUPLICATE	DUP	2/23/09		G	•				•	•	•	•	•	•			

Signature: <u>Matt Sullivan</u>	Time: <u>1621</u>	Signature: _____	Time: _____	Signature: _____	Time: _____	Signature: _____	Time: _____
Printed Name: <u>Matt Sullivan</u>	Date: <u>2/23/09</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
Received By: <u>1</u>	Signature: _____	Received By: <u>2</u>	Signature: _____	Received By: <u>3</u>	Signature: _____	Received By: <u>4</u>	Signature: _____
Printed Name: <u>Kristen Wilson</u>	Date: <u>2/23/09</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____



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: **FO095216**

Sample Collected: 02/23/09 14:42
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0209
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN02157
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	41	μ mhos/cm	1	SM 2510 B	02/23/09
pH (FIELD)	7.1	pH Units	0.1	SM 4500-H B	02/23/09
TEMPERATURE	9.0	Deg. C	0.1	SM 2550 B	02/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	114	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	0.010	μ g/L	0.002	WPCLSOP M-10.02	02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.99	μ g/L	0.1	EPA 200.8	02/26/09
CADMIUM	0.53	μ g/L	0.1	EPA 200.8	02/26/09
CHROMIUM	5.20	μ g/L	0.4	EPA 200.8	02/26/09
COPPER	20.5	μ g/L	0.2	EPA 200.8	02/26/09
LEAD	14.1	μ g/L	0.1	EPA 200.8	02/26/09
NICKEL	3.99	μ g/L	0.2	EPA 200.8	02/26/09
SILVER	<0.10	μ g/L	0.1	EPA 200.8	02/26/09
ZINC	135	μ g/L	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.7	ng/L	2.7	EPA 8081	02/26/09
4,4'-DDE	<2.7	ng/L	2.7	EPA 8081	02/26/09
4,4'-DDT	<11	ng/L	11	EPA 8081	02/26/09
Aldrin	4.2	ng/L	2.7	EPA 8081	02/26/09
Alpha-BHC	<2.7	ng/L	2.7	EPA 8081	02/26/09
Alpha-Chlordane	<2.7	ng/L	2.7	EPA 8081	02/26/09
Beta-BHC	<2.7	ng/L	2.7	EPA 8081	02/26/09
Delta-BHC	<2.7	ng/L	2.7	EPA 8081	02/26/09
Dieldrin	<2.7	ng/L	2.7	EPA 8081	02/26/09
Endosulfan I	<2.7	ng/L	2.7	EPA 8081	02/26/09
Endosulfan II	<2.7	ng/L	2.7	EPA 8081	02/26/09
Endosulfan Sulfate	<2.7	ng/L	2.7	EPA 8081	02/26/09
Endrin	<2.7	ng/L	2.7	EPA 8081	02/26/09
Endrin Aldehyde	<2.7	ng/L	2.7	EPA 8081	02/26/09
Endrin Ketone	<2.7	ng/L	2.7	EPA 8081	02/26/09

Report Date: 04/01/09

Validated By: 



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LABORATORY ANALYSIS REPORT

Sample ID: FO095216

Sample Collected: 02/23/09 14:42

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 02/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 4

Address/Location: SW-43-ABC290-0209

2100 N ALBINA AVE

System ID: AN02157

Sample Point Code: 43_SW1

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<2.7	ng/L	2.7	EPA 8081	02/26/09
Gamma-Chlordane	<3.8	ng/L	3.8	EPA 8081	02/26/09
Heptachlor	<2.7	ng/L	2.7	EPA 8081	02/26/09
Heptachlor Epoxide	<2.7	ng/L	2.7	EPA 8081	02/26/09
Methoxychlor	<2.7	ng/L	2.7	EPA 8081	02/26/09
Toxaphene	<140	ng/L	140	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Anthracene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	0.0245	µg/L	0.010	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	0.0303	µg/L	0.010	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	0.0467	µg/L	0.010	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	0.0587	µg/L	0.020	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	0.0257	µg/L	0.010	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	2.54	µg/L	1.00	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Chrysene	0.0893	µg/L	0.010	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	0.0107	µg/L	0.010	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<4.00	µg/L	4.00	EPA 8270M-SIM	02/25/09
Fluoranthene	0.136	µg/L	0.020	EPA 8270M-SIM	02/25/09
Fluorene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	0.0243	µg/L	0.010	EPA 8270M-SIM	02/25/09
Naphthalene	0.0579	µg/L	0.020	EPA 8270M-SIM	02/25/09
Phenanthrene	0.128	µg/L	0.020	EPA 8270M-SIM	02/25/09
Pyrene	0.100	µg/L	0.020	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
1,2-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095216**

Sample Collected: 02/23/09 14:42
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0209
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN02157
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
1,4-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2,4-Dichlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2,4-Dimethylphenol	<21	µg/L	21	EPA 8270	03/02/09
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	03/02/09
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Chlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Methylphenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Nitrophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<11	µg/L	11	EPA 8270	03/02/09
3-Nitroaniline	<5.1	µg/L	5.1	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Methylphenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
4-Nitroaniline	<5.1	µg/L	5.1	EPA 8270	03/02/09
4-Nitrophenol	<11	µg/L	11	EPA 8270	03/02/09
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(a)anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzoic acid	<26	µg/L	26	EPA 8270	03/02/09
Benzyl alcohol	<2.6	µg/L	2.6	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095216**

Sample Collected: 02/23/09 14:42
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0209
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN02157
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	<5.1	µg/L	5.1	EPA 8270	03/02/09
Butyl benzyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Chrysene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	03/02/09
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Fluorene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<5.1	µg/L	5.1	EPA 8270	03/02/09
Hexachloroethane	<1.1	µg/L	1.1	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Isophorone	<1.1	µg/L	1.1	EPA 8270	03/02/09
Naphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Nitrobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<1.1	µg/L	1.1	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	03/02/09
Pentachlorophenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Phenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
Pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09

End of Report for Sample ID: FO095216

Report Date: 04/01/09

Validated By:



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: **FO095217**

Sample Collected: 02/23/09 14:10
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0209
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN02158
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	31	µmhos/cm	1	SM 2510 B	02/23/09
pH (FIELD)	7.2	pH Units	0.1	SM 4500-H B	02/23/09
TEMPERATURE	9.1	Deg. C	0.1	SM 2550 B	02/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	165	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	0.017	µg/L	0.002	WPCLSOP M-10.02	02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.67	µg/L	0.1	EPA 200.8	02/26/09
CADMIUM	19.4	µg/L	0.1	EPA 200.8	02/26/09
CHROMIUM	9.34	µg/L	0.4	EPA 200.8	02/26/09
COPPER	43.3	µg/L	0.2	EPA 200.8	02/26/09
LEAD	44.8	µg/L	0.1	EPA 200.8	02/26/09
NICKEL	6.76	µg/L	0.2	EPA 200.8	02/26/09
SILVER	0.23	µg/L	0.1	EPA 200.8	02/26/09
ZINC	227	µg/L	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.5	ng/L	2.5	EPA 8081	02/26/09
4,4'-DDE	<2.5	ng/L	2.5	EPA 8081	02/26/09
4,4'-DDT	<18	ng/L	18	EPA 8081	02/26/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	02/26/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	02/26/09
Alpha-Chlordane	<2.5	ng/L	2.5	EPA 8081	02/26/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	02/26/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	02/26/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endosulfan I	<3.3	ng/L	3.3	EPA 8081	02/26/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endrin	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endrin Aldehyde	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endrin Ketone	<3.8	ng/L	3.8	EPA 8081	02/26/09

Report Date: 04/01/09

Validated By:



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: **FO095217**

Sample Collected: 02/23/09 14:10
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0209
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN02158
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	02/26/09
Gamma-Chlordane	<3.3	ng/L	3.3	EPA 8081	02/26/09
Heptachlor	<2.5	ng/L	2.5	EPA 8081	02/26/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	02/26/09
Methoxychlor	<2.5	ng/L	2.5	EPA 8081	02/26/09
Toxaphene	<360	ng/L	360	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CONGENERS -PAC					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Anthracene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	0.0446	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	0.0483	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	0.0580	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	0.0696	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	0.0534	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	2.84	µg/L	1.92	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	<1.92	µg/L	1.92	EPA 8270M-SIM	02/25/09
Chrysene	0.112	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	0.0136	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<1.92	µg/L	1.92	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<1.92	µg/L	1.92	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<1.92	µg/L	1.92	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<1.92	µg/L	1.92	EPA 8270M-SIM	02/25/09
Fluoranthene	0.217	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Fluorene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	0.0371	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Naphthalene	0.347	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Phenanthrene	0.141	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Pyrene	0.120	µg/L	0.0192	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
1,2-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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: FO095217

Sample Collected: 02/23/09 14:10
Sample Received: 02/23/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0209
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN02158
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
1,4-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
2,4-Dichlorophenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
2,4-Dimethylphenol	<22	µg/L	22	EPA 8270	03/02/09
2,4-Dinitrophenol	<22	µg/L	22	EPA 8270	03/02/09
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Chlorophenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Methylphenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Nitrophenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<11	µg/L	11	EPA 8270	03/02/09
3-Nitroaniline	<5.4	µg/L	5.4	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Methylphenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
4-Nitroaniline	<5.4	µg/L	5.4	EPA 8270	03/02/09
4-Nitrophenol	<11	µg/L	11	EPA 8270	03/02/09
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(a)anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzoic acid	<27	µg/L	27	EPA 8270	03/02/09
Benzyl alcohol	<2.7	µg/L	2.7	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By: 



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: **FO095217**

Sample Collected: 02/23/09 14:10
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0209
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN02158
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	6.3	µg/L	5.4	EPA 8270	03/02/09
Butyl benzyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Chrysene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	03/02/09
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Fluorene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<5.4	µg/L	5.4	EPA 8270	03/02/09
Hexachloroethane	<1.1	µg/L	1.1	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Isophorone	<1.1	µg/L	1.1	EPA 8270	03/02/09
Naphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Nitrobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<1.1	µg/L	1.1	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	03/02/09
Pentachlorophenol	<5.4	µg/L	5.4	EPA 8270	03/02/09
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Phenol	<2.7	µg/L	2.7	EPA 8270	03/02/09
Pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09

End of Report for Sample ID: FO095217

Report Date: 04/01/09

Validated By:



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: **FO095218**

Sample Collected: 02/23/09 15:18
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0209
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN02159
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	60	$\mu\text{mhos/cm}$	1	SM 2510 B	02/23/09
pH (FIELD)	7.2	pH Units	0.1	SM 4500-H B	02/23/09
TEMPERATURE	9.8	Deg. C	0.1	SM 2550 B	02/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	203	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	0.062	$\mu\text{g/L}$	0.002	WPCLSOP M-10.02	02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.93	$\mu\text{g/L}$	0.1	EPA 200.8	02/26/09
CADMIUM	0.25	$\mu\text{g/L}$	0.1	EPA 200.8	02/26/09
CHROMIUM	3.68	$\mu\text{g/L}$	0.4	EPA 200.8	02/26/09
COPPER	32.2	$\mu\text{g/L}$	0.2	EPA 200.8	02/26/09
LEAD	25.9	$\mu\text{g/L}$	0.1	EPA 200.8	02/26/09
NICKEL	3.20	$\mu\text{g/L}$	0.2	EPA 200.8	02/26/09
SILVER	0.75	$\mu\text{g/L}$	0.1	EPA 200.8	02/26/09
ZINC	232	$\mu\text{g/L}$	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<5.0	ng/L	5.0	EPA 8081	02/26/09
4,4'-DDE	<11	ng/L	11	EPA 8081	02/26/09
4,4'-DDT	<5.0	ng/L	5.0	EPA 8081	02/26/09
Aldrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Alpha-BHC	<5.0	ng/L	5.0	EPA 8081	02/26/09
Alpha-Chlordane	<5.0	ng/L	5.0	EPA 8081	02/26/09
Beta-BHC	<5.0	ng/L	5.0	EPA 8081	02/26/09
Delta-BHC	<5.0	ng/L	5.0	EPA 8081	02/26/09
Dieldrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endosulfan I	5.4	ng/L	5.0	EPA 8081	02/26/09
Endosulfan II	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endosulfan Sulfate	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endrin Aldehyde	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endrin Ketone	<5.0	ng/L	5.0	EPA 8081	02/26/09

Report Date: 04/01/09

Validated By:



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: FO095218

Sample Collected: 02/23/09 15:18
Sample Received: 02/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0209
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN02159
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<5.0	ng/L	5.0	EPA 8081	02/26/09
Gamma-Chlordane	<5.0	ng/L	5.0	EPA 8081	02/26/09
Heptachlor	<5.0	ng/L	5.0	EPA 8081	02/26/09
Heptachlor Epoxide	<5.0	ng/L	5.0	EPA 8081	02/26/09
Methoxychlor	<5.0	ng/L	5.0	EPA 8081	02/26/09
Toxaphene	<250	ng/L	250	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Anthracene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	0.0287	µg/L	0.010	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	0.0290	µg/L	0.010	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	0.0263	µg/L	0.010	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	0.0223	µg/L	0.020	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	0.0274	µg/L	0.010	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	1.28	µg/L	1.00	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Chrysene	0.0376	µg/L	0.010	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	<0.0100	µg/L	0.010	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/25/09
Fluoranthene	<0.400	µg/L	0.400	EPA 8270M-SIM	02/25/09
Fluorene	<0.0200	µg/L	0.020	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	0.0203	µg/L	0.010	EPA 8270M-SIM	02/25/09
Naphthalene	0.0494	µg/L	0.020	EPA 8270M-SIM	02/25/09
Phenanthrene	0.0696	µg/L	0.020	EPA 8270M-SIM	02/25/09
Pyrene	0.0374	µg/L	0.020	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
1,2-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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: FO095218

Sample Collected: 02/23/09 15:18
Sample Received: 02/23/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0209
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN02159
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
1,4-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2,4-Dichlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2,4-Dimethylphenol	<21	µg/L	21	EPA 8270	03/02/09
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	03/02/09
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Chlorophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Methylphenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
2-Nitrophenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<11	µg/L	11	EPA 8270	03/02/09
3-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Methylphenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
4-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	03/02/09
4-Nitrophenol	<11	µg/L	11	EPA 8270	03/02/09
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(a)anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Benzoic acid	<26	µg/L	26	EPA 8270	03/02/09
Benzyl alcohol	<2.6	µg/L	2.6	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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: **FO095218**

Sample Collected: 02/23/09 15:18
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0209
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN02159
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<1.1	µg/L	1.1	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	<5.2	µg/L	5.2	EPA 8270	03/02/09
Butyl benzyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Chrysene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	03/02/09
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Fluorene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<5.2	µg/L	5.2	EPA 8270	03/02/09
Hexachloroethane	<1.1	µg/L	1.1	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Isophorone	<1.1	µg/L	1.1	EPA 8270	03/02/09
Naphthalene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Nitrobenzene	<1.1	µg/L	1.1	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<1.1	µg/L	1.1	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	03/02/09
Pentachlorophenol	<5.2	µg/L	5.2	EPA 8270	03/02/09
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Phenol	<2.6	µg/L	2.6	EPA 8270	03/02/09
Pyrene	<1.1	µg/L	1.1	EPA 8270	03/02/09

End of Report for Sample ID: FO095218

Report Date: 04/01/09

Validated By:



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: **FO095219**

Sample Collected: 02/23/09 13:58
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC499-0209
N KERBY & TILLAMOOK
Sample Point Code: 43_SW4
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN02160
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	24	µmhos/cm	1	SM 2510 B	02/23/09
pH (FIELD)	7.5	pH Units	0.1	SM 4500-H B	02/23/09
TEMPERATURE	9.4	Deg. C	0.1	SM 2550 B	02/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	94	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	0.012	µg/L	0.002	WPCLSOP M-10.02	02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.17	µg/L	0.1	EPA 200.8	02/26/09
CADMIUM	32.6	µg/L	0.1	EPA 200.8	02/26/09
CHROMIUM	6.15	µg/L	0.4	EPA 200.8	02/26/09
COPPER	35.9	µg/L	0.2	EPA 200.8	02/26/09
LEAD	28.8	µg/L	0.1	EPA 200.8	02/26/09
NICKEL	5.23	µg/L	0.2	EPA 200.8	02/26/09
SILVER	0.29	µg/L	0.1	EPA 200.8	02/26/09
ZINC	209	µg/L	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<8.8	ng/L	8.8	EPA 8081	02/26/09
4,4'-DDE	<3.1	ng/L	3.1	EPA 8081	02/26/09
4,4'-DDT	<18	ng/L	18	EPA 8081	02/26/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	02/26/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	02/26/09
Alpha-Chlordane	<2.5	ng/L	2.5	EPA 8081	02/26/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	02/26/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	02/26/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endosulfan I	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endrin	<2.5	ng/L	2.5	EPA 8081	02/26/09
Endrin Aldehyde	<3.3	ng/L	3.3	EPA 8081	02/26/09
Endrin Ketone	EST 8.4	ng/L	2.5	EPA 8081	02/26/09

Report Date: 04/01/09

Validated By: 



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: **FO095219**

Sample Collected: 02/23/09 13:58
Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC499-0209
N KERBY & TILLAMOOK
Sample Point Code: 43_SW4
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN02160
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	02/26/09
Gamma-Chlordane	<2.5	ng/L	2.5	EPA 8081	02/26/09
Heptachlor	<2.5	ng/L	2.5	EPA 8081	02/26/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	02/26/09
Methoxychlor	<5.9	ng/L	5.9	EPA 8081	02/26/09
Toxaphene	<300	ng/L	300	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CONGENERES -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Anthracene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	0.0164	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	0.0194	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	0.0331	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	0.0404	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	0.0221	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	5.93	µg/L	0.962	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	1.04	µg/L	0.962	EPA 8270M-SIM	02/25/09
Chrysene	0.0890	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	02/25/09
Fluoranthene	0.197	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Fluorene	0.0204	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	0.0173	µg/L	0.00962	EPA 8270M-SIM	02/25/09
Naphthalene	0.283	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Phenanthrene	0.148	µg/L	0.0192	EPA 8270M-SIM	02/25/09
Pyrene	0.0885	µg/L	0.0192	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.98	µg/L	0.98	EPA 8270	03/02/09
1,2-Dichlorobenzene	<0.98	µg/L	0.98	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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: FO095219

Sample Collected: 02/23/09 13:58
Sample Received: 02/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 3 of 4

Address/Location: SW-43-ABC499-0209
N KERBY & TILLAMOOK

System ID: AN02160

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<0.98	µg/L	0.98	EPA 8270	03/02/09
1,4-Dichlorobenzene	<0.98	µg/L	0.98	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
2,4-Dichlorophenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
2,4-Dimethylphenol	<20	µg/L	20	EPA 8270	03/02/09
2,4-Dinitrophenol	<20	µg/L	20	EPA 8270	03/02/09
2,4-Dinitrotoluene	<0.98	µg/L	0.98	EPA 8270	03/02/09
2,6-Dinitrotoluene	<0.98	µg/L	0.98	EPA 8270	03/02/09
2-Chloronaphthalene	<0.98	µg/L	0.98	EPA 8270	03/02/09
2-Chlorophenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
2-Methylnaphthalene	<0.98	µg/L	0.98	EPA 8270	03/02/09
2-Methylphenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
2-Nitroaniline	<0.98	µg/L	0.98	EPA 8270	03/02/09
2-Nitrophenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<9.8	µg/L	9.8	EPA 8270	03/02/09
3-Nitroaniline	<4.9	µg/L	4.9	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<9.8	µg/L	9.8	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<0.98	µg/L	0.98	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
4-Chloroaniline	<0.98	µg/L	0.98	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<0.98	µg/L	0.98	EPA 8270	03/02/09
4-Methylphenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
4-Nitroaniline	<4.9	µg/L	4.9	EPA 8270	03/02/09
4-Nitrophenol	<9.8	µg/L	9.8	EPA 8270	03/02/09
Acenaphthene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Acenaphthylene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Anthracene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Benzo(a)anthracene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Benzo(a)pyrene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Benzo(b)fluoranthene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Benzo(k)fluoranthene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Benzoic acid	<25	µg/L	25	EPA 8270	03/02/09
Benzyl alcohol	<2.5	µg/L	2.5	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<0.98	µg/L	0.98	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By:



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: FO095219

Sample Collected: 02/23/09 13:58

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 02/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 4 of 4

**Address/Location: SW-43-ABC499-0209
N KERBY & TILLAMOOK**

System ID: AN02160

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<0.98	µg/L	0.98	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<0.98	µg/L	0.98	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	120	µg/L	49	EPA 8270	03/02/09
Butyl benzyl phthalate	1.2	µg/L	0.98	EPA 8270	03/02/09
Chrysene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Dibenzofuran	<0.98	µg/L	0.98	EPA 8270	03/02/09
Diethyl phthalate	<0.98	µg/L	0.98	EPA 8270	03/02/09
Dimethyl phthalate	<0.98	µg/L	0.98	EPA 8270	03/02/09
Di-n-butyl phthalate	<0.98	µg/L	0.98	EPA 8270	03/02/09
Di-n-octyl phthalate	<0.98	µg/L	0.98	EPA 8270	03/02/09
Fluoranthene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Fluorene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Hexachlorobenzene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Hexachlorobutadiene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<4.9	µg/L	4.9	EPA 8270	03/02/09
Hexachloroethane	<0.98	µg/L	0.98	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Isophorone	<0.98	µg/L	0.98	EPA 8270	03/02/09
Naphthalene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Nitrobenzene	<0.98	µg/L	0.98	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<0.98	µg/L	0.98	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<0.98	µg/L	0.98	EPA 8270	03/02/09
Pentachlorophenol	<4.9	µg/L	4.9	EPA 8270	03/02/09
Phenanthrene	<0.98	µg/L	0.98	EPA 8270	03/02/09
Phenol	<2.5	µg/L	2.5	EPA 8270	03/02/09
Pyrene	<0.98	µg/L	0.98	EPA 8270	03/02/09

End of Report for Sample ID: FO095219

Report Date: 04/01/09

Validated By:

March 19, 2009

Analytical Report for Service Request No: K0901535

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: Portland Harbor

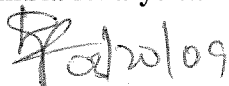
Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on February 24, 2009. For your reference, these analyses have been assigned our service request number K0901535.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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 PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Pradeep Divvela
Project Chemist

PD/lb

Page 1 of 45

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
Sample Matrix: Water

Service Request No.: K0901535
Date Received: 02/24/2009

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 II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Seven water samples were received for analysis at Columbia Analytical Services on 02/24/2009. 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.

Organochlorine Pesticides by EPA Method 8081A ULL

Second Source Exceptions:

The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are 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 Methoxychlor. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action was necessary.

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for the following analytes in CCV 0303F023, 0303F034, 0304F006 and 0304F019: Toxaphene; 0304F007 and 0304F020: Hexachlorobutadiene. 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.

Sample Confirmation Notes:

The confirmation comparison criteria of 40% difference for at least one analyte was exceeded in a few samples. The higher of the two values is reported because no evidence of a peak anomaly was observed.

The JP qualifier indicates that the confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Elevated Method Reporting Limits:

The reporting limit is elevated for all analytes in a few samples. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The results are flagged to indicate the matrix interference.

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

Approved by  Date 03/20/09

Semivolatile Organic Compounds by EPA Method 8270C LL

Elevated Method Reporting Limits:

The reporting limits are elevated for all samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored and viscous, which indicated the need to perform dilutions prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

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

Approved by  Date 03/20/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Organochlorine Pesticides

Sample Name: F0095216
 Lab Code: K0901535-001
 Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.7	1.2	5	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND	U	2.7	2.2	5	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	2.7	2.5	5	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND	U	2.7	0.74	5	02/26/09	03/04/09	KWG0901589	
Heptachlor	ND	Ui	2.7	2.4	5	02/26/09	03/04/09	KWG0901589	
Aldrin	4.2	D	2.7	0.58	5	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND	U	2.7	1.2	5	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND	Ui	3.8	3.8	5	02/26/09	03/04/09	KWG0901589	
Endosulfan I	ND	Ui	2.7	1.5	5	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND	U	2.7	1.5	5	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND	U	2.7	2.0	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND	Ui	2.7	2.7	5	02/26/09	03/04/09	KWG0901589	
Endrin	ND	U	2.7	2.6	5	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND	U	2.7	1.9	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	ND	Ui	2.7	2.3	5	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	ND	U	2.7	1.2	5	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND	U	2.7	1.5	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND	Ui	11	11	5	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	ND	U	2.7	1.7	5	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND	U	2.7	1.5	5	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND	U	140	48	5	02/26/09	03/04/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	92	10-121	03/04/09	Acceptable
Decachlorobiphenyl	111	17-150	03/04/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Organochlorine Pesticides

Sample Name: F0095217
 Lab Code: K0901535-002
 Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.5	1.1	5	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND	U	2.5	2.1	5	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND	U	2.5	0.70	5	02/26/09	03/04/09	KWG0901589	
Heptachlor	ND	Ui	2.5	0.98	5	02/26/09	03/04/09	KWG0901589	
Aldrin	ND	Ui	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND	U	2.5	1.1	5	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND	Ui	3.3	3.3	5	02/26/09	03/04/09	KWG0901589	
Endosulfan I	ND	Ui	3.3	3.3	5	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND	U	2.5	1.4	5	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND	U	2.5	1.9	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND	Ui	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Endrin	ND	U	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND	U	2.5	1.8	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	ND	U	2.5	1.1	5	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	ND	Ui	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND	U	2.5	1.4	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND	Ui	18	18	5	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	ND	Ui	3.8	3.8	5	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND	U	2.5	1.4	5	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND	Ui	360	360	5	02/26/09	03/04/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	92	10-121	03/04/09	Acceptable
Decachlorobiphenyl	146	17-150	03/04/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Organochlorine Pesticides

Sample Name: F0095218
 Lab Code: K0901535-003
 Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND	U	5.0	4.1	10	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	5.0	4.7	10	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND	U	5.0	1.4	10	02/26/09	03/04/09	KWG0901589	
Heptachlor	ND	U	5.0	1.8	10	02/26/09	03/04/09	KWG0901589	
Aldrin	ND	U	5.0	1.1	10	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND	U	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND	U	5.0	3.1	10	02/26/09	03/04/09	KWG0901589	
Endosulfan I	5.4	D	5.0	2.5	10	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND	U	5.0	2.7	10	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND	U	5.0	3.7	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND	Ui	11	11	10	02/26/09	03/04/09	KWG0901589	
Endrin	ND	U	5.0	4.9	10	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND	U	5.0	3.5	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	ND	U	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	ND	Ui	5.0	2.4	10	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND	U	5.0	2.8	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND	U	5.0	1.7	10	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	ND	U	5.0	3.2	10	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND	U	5.0	2.8	10	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND	U	250	90	10	02/26/09	03/04/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	10-121	03/04/09	Acceptable
Decachlorobiphenyl	95	17-150	03/04/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Organochlorine Pesticides

Sample Name: F0095219
 Lab Code: K0901535-004
 Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.5	1.1	5	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND	U	2.5	2.1	5	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND	U	2.5	0.70	5	02/26/09	03/04/09	KWG0901589	
Heptachlor	1.7	JD	2.5	0.90	5	02/26/09	03/04/09	KWG0901589	
Aldrin	ND	Ui	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND	U	2.5	1.1	5	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND	Ui	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Endosulfan I	ND	Ui	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND	U	2.5	1.4	5	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND	U	2.5	1.9	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND	Ui	3.1	3.1	5	02/26/09	03/04/09	KWG0901589	
Endrin	ND	U	2.5	2.5	5	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND	U	2.5	1.8	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	ND	Ui	8.8	8.8	5	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	ND	Ui	3.3	3.3	5	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND	U	2.5	1.4	5	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND	Ui	18	18	5	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	8.4	PD	2.5	1.6	5	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND	Ui	5.9	5.9	5	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND	Ui	300	300	5	02/26/09	03/04/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	98	10-121	03/04/09	Acceptable
Decachlorobiphenyl	129	17-150	03/04/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG0901589-5
 Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
beta-BHC	ND	U	0.49	0.41	1	02/26/09	02/28/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	02/26/09	02/28/09	KWG0901589	
delta-BHC	ND	U	0.49	0.14	1	02/26/09	02/28/09	KWG0901589	
Heptachlor	ND	U	0.49	0.18	1	02/26/09	02/28/09	KWG0901589	
Aldrin	ND	U	0.49	0.11	1	02/26/09	02/28/09	KWG0901589	
Heptachlor Epoxide	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
gamma-Chlordane†	ND	U	0.49	0.31	1	02/26/09	02/28/09	KWG0901589	
Endosulfan I	ND	U	0.49	0.25	1	02/26/09	02/28/09	KWG0901589	
alpha-Chlordane	ND	U	0.49	0.27	1	02/26/09	02/28/09	KWG0901589	
Dieldrin	ND	U	0.49	0.37	1	02/26/09	02/28/09	KWG0901589	
4,4'-DDE	0.24	J	0.49	0.19	1	02/26/09	02/28/09	KWG0901589	
Endrin	ND	U	0.49	0.49	1	02/26/09	02/28/09	KWG0901589	
Endosulfan II	ND	U	0.49	0.35	1	02/26/09	02/28/09	KWG0901589	
4,4'-DDD	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
Endrin Aldehyde	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
Endosulfan Sulfate	ND	U	0.49	0.28	1	02/26/09	02/28/09	KWG0901589	
4,4'-DDT	ND	U	0.49	0.17	1	02/26/09	02/28/09	KWG0901589	
Endrin Ketone	ND	U	0.49	0.32	1	02/26/09	02/28/09	KWG0901589	
Methoxychlor	ND	U	0.49	0.28	1	02/26/09	02/28/09	KWG0901589	
Toxaphene	ND	U	25	9.0	1	02/26/09	02/28/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	10-121	02/28/09	Acceptable
Decachlorobiphenyl	78	17-150	02/28/09	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.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
F0095216	K0901535-001	92 D	111 D
F0095217	K0901535-002	92 D	146 D
F0095218	K0901535-003	66 D	95 D
F0095219	K0901535-004	98 D	129 D
F0095220	K0901535-005	81 D	111 D
F0095221	K0901535-006	119 D	109 D
F0095222	K0901535-007	66	96
Method Blank	KWG0901589-5	50	78
Lab Control Sample	KWG0901589-1	44	72
Duplicate Lab Control Sample	KWG0901589-2	41	76

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	10-121
Sur2 = Decachlorobiphenyl	17-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Extracted: 02/26/2009
 Date Analyzed: 02/28/2009

**Lab Control Spike/Duplicate Lab Control Spike Summary
 Organochlorine Pesticides**

Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0901589

Analyte Name	Lab Control Sample KWG0901589-1 Lab Control Spike			Duplicate Lab Control Sample KWG0901589-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	8.48	10.0	85	9.10	10.0	91	43-127	7	30
beta-BHC	9.93	10.0	99	10.9	10.0	109	41-129	9	30
gamma-BHC (Lindane)	9.07	10.0	91	9.81	10.0	98	42-128	8	30
delta-BHC	9.08	10.0	91	10.3	10.0	103	47-141	12	30
Heptachlor	8.92	10.0	89	9.35	10.0	94	34-126	5	30
Aldrin	6.84	10.0	68	7.31	10.0	73	10-125	7	30
Heptachlor Epoxide	8.41	10.0	84	9.11	10.0	91	45-124	8	30
gamma-Chlordane	9.12	10.0	91	10.1	10.0	101	48-119	10	30
Endosulfan I	8.50	10.0	85	8.88	10.0	89	30-115	4	30
alpha-Chlordane	9.22	10.0	92	10.1	10.0	101	48-119	9	30
Dieldrin	9.23	10.0	92	10.2	10.0	102	50-120	10	30
4,4'-DDE	9.53	10.0	95	10.5	10.0	105	36-137	9	30
Endrin	9.90	10.0	99	11.3	10.0	113	53-132	13	30
Endosulfan II	8.86	10.0	89	9.73	10.0	97	32-123	9	30
4,4'-DDD	9.19	10.0	92	10.2	10.0	102	38-140	11	30
Endrin Aldehyde	6.74	10.0	67	7.86	10.0	79	30-114	15	30
Endosulfan Sulfate	8.87	10.0	89	9.83	10.0	98	46-120	10	30
4,4'-DDT	11.1	10.0	111	12.5	10.0	125	45-146	12	30
Endrin Ketone	8.76	10.0	88	9.91	10.0	99	45-127	12	30
Methoxychlor	11.5	10.0	115	12.9	10.0	129	48-140	11	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095216
 Lab Code: K0901535-001
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.18	5	03/02/09	03/10/09	KWG0901700	
Phenol	ND	U	2.6	0.32	5	03/02/09	03/10/09	KWG0901700	
2-Chlorophenol	ND	U	2.6	0.28	5	03/02/09	03/10/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	03/02/09	03/10/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	1.1	0.15	5	03/02/09	03/10/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/10/09	KWG0901700	
Benzyl Alcohol	ND	U	2.6	0.37	5	03/02/09	03/10/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
2-Methylphenol	ND	U	2.6	0.56	5	03/02/09	03/10/09	KWG0901700	
Hexachloroethane	ND	U	1.1	0.13	5	03/02/09	03/10/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.19	5	03/02/09	03/10/09	KWG0901700	
4-Methylphenol†	ND	U	2.6	0.61	5	03/02/09	03/10/09	KWG0901700	
Nitrobenzene	ND	U	1.1	0.15	5	03/02/09	03/10/09	KWG0901700	
Isophorone	ND	U	1.1	0.081	5	03/02/09	03/10/09	KWG0901700	
2-Nitrophenol	ND	U	2.6	0.32	5	03/02/09	03/10/09	KWG0901700	
2,4-Dimethylphenol	ND	U	21	12	5	03/02/09	03/10/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	03/02/09	03/10/09	KWG0901700	
2,4-Dichlorophenol	ND	U	2.6	0.24	5	03/02/09	03/10/09	KWG0901700	
Benzoic Acid	ND	U	26	5.6	5	03/02/09	03/10/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	1.1	0.081	5	03/02/09	03/10/09	KWG0901700	
Naphthalene	ND	U	1.1	0.12	5	03/02/09	03/10/09	KWG0901700	
4-Chloroaniline	ND	U	1.1	0.13	5	03/02/09	03/10/09	KWG0901700	
Hexachlorobutadiene	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	2.6	0.19	5	03/02/09	03/10/09	KWG0901700	
2-Methylnaphthalene	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	5.1	0.96	5	03/02/09	03/10/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	03/02/09	03/10/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	03/02/09	03/10/09	KWG0901700	
2-Chloronaphthalene	ND	U	1.1	0.21	5	03/02/09	03/10/09	KWG0901700	
2-Nitroaniline	ND	U	1.1	0.13	5	03/02/09	03/10/09	KWG0901700	
Acenaphthylene	ND	U	1.1	0.076	5	03/02/09	03/10/09	KWG0901700	
Dimethyl Phthalate	ND	U	1.1	0.11	5	03/02/09	03/10/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	03/02/09	03/10/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095216
 Lab Code: K0901535-001
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
3-Nitroaniline	ND	U	5.1	0.15	5	03/02/09	03/10/09	KWG0901700	
2,4-Dinitrophenol	ND	U	21	0.86	5	03/02/09	03/10/09	KWG0901700	
Dibenzofuran	ND	U	1.1	0.091	5	03/02/09	03/10/09	KWG0901700	
4-Nitrophenol	ND	U	11	1.5	5	03/02/09	03/10/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	1.1	0.091	5	03/02/09	03/10/09	KWG0901700	
Fluorene	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
Diethyl Phthalate	ND	U	1.1	0.061	5	03/02/09	03/10/09	KWG0901700	
4-Nitroaniline	ND	U	5.1	0.096	5	03/02/09	03/10/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	03/02/09	03/10/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	03/02/09	03/10/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/10/09	KWG0901700	
Hexachlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/10/09	KWG0901700	
Pentachlorophenol	ND	U	5.1	1.8	5	03/02/09	03/10/09	KWG0901700	
Phenanthrene	ND	U	1.1	0.12	5	03/02/09	03/10/09	KWG0901700	
Anthracene	ND	U	1.1	0.13	5	03/02/09	03/10/09	KWG0901700	
Di-n-butyl Phthalate	0.21	JD	1.1	0.12	5	03/02/09	03/10/09	KWG0901700	
Fluoranthene	0.26	JD	1.1	0.11	5	03/02/09	03/10/09	KWG0901700	
Pyrene	0.39	JD	1.1	0.096	5	03/02/09	03/10/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	1.1	0.091	5	03/02/09	03/10/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	11	2.2	5	03/02/09	03/10/09	KWG0901700	
Benz(a)anthracene	ND	U	1.1	0.091	5	03/02/09	03/10/09	KWG0901700	
Chrysene	ND	U	1.1	0.15	5	03/02/09	03/10/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	4.8	JD	5.1	0.66	5	03/02/09	03/10/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	1.1	0.091	5	03/02/09	03/10/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	1.1	0.086	5	03/02/09	03/10/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	03/02/09	03/10/09	KWG0901700	
Benzo(a)pyrene	ND	U	1.1	0.16	5	03/02/09	03/10/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	03/02/09	03/10/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	1.1	0.086	5	03/02/09	03/10/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	1.1	0.096	5	03/02/09	03/10/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095216
Lab Code: K0901535-001

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	56	21-119	03/10/09	Acceptable
Phenol-d6	62	31-121	03/10/09	Acceptable
Nitrobenzene-d5	57	29-121	03/10/09	Acceptable
2-Fluorobiphenyl	61	25-109	03/10/09	Acceptable
2,4,6-Tribromophenol	69	30-131	03/10/09	Acceptable
Terphenyl-d14	81	20-140	03/10/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095217
 Lab Code: K0901535-002
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.19	5	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	2.7	0.34	5	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	2.7	0.30	5	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	1.1	0.16	5	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	2.7	0.40	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	2.7	0.60	5	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.20	5	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	2.7	0.65	5	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	1.1	0.16	5	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	1.1	0.087	5	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	2.7	0.34	5	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	22	12	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	2.7	0.26	5	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	27	6.0	5	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	1.1	0.087	5	03/02/09	03/11/09	KWG0901700	
Naphthalene	0.34	JD	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	2.7	0.20	5	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	5.4	1.1	5	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	2.7	0.32	5	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	2.7	0.17	5	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	1.1	0.23	5	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	1.1	0.081	5	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	1.1	0.18	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095217
 Lab Code: K0901535-002
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	5.4	0.16	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	22	0.92	5	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	11	1.6	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	0.20	JD	1.1	0.065	5	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	5.4	0.11	5	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.14	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	1.1	0.26	5	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	5.4	1.9	5	03/02/09	03/11/09	KWG0901700	
Phenanthrene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	0.16	JD	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Fluoranthene	0.32	JD	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
Pyrene	0.40	JD	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	11	2.4	5	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	1.1	0.16	5	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	6.3	D	5.4	0.70	5	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	1.1	0.17	5	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095217
Lab Code: K0901535-002

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	64	21-119	03/11/09	Acceptable
Phenol-d6	68	31-121	03/11/09	Acceptable
Nitrobenzene-d5	62	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	72	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	71	30-131	03/11/09	Acceptable
Terphenyl-d14	88	20-140	03/11/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095218
 Lab Code: K0901535-003
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.18	5	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	2.6	0.33	5	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	2.6	0.28	5	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	2.6	0.38	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	2.6	0.57	5	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.19	5	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	1.1	JD	2.6	0.62	5	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	1.1	0.082	5	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	2.6	0.33	5	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	21	12	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	2.6	0.24	5	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	26	5.7	5	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	1.1	0.082	5	03/02/09	03/11/09	KWG0901700	
Naphthalene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	2.6	0.19	5	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	5.2	0.97	5	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	1.1	0.21	5	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	1.1	0.077	5	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095218
 Lab Code: K0901535-003
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	5.2	0.15	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	21	0.87	5	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	11	1.5	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	0.71	JD	1.1	0.062	5	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	5.2	0.097	5	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	5.2	1.8	5	03/02/09	03/11/09	KWG0901700	
Phenanthrene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	0.36	JD	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Fluoranthene	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
Pyrene	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	11	2.2	5	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	2.0	JD	5.2	0.67	5	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	1.1	0.092	5	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	1.1	0.087	5	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	1.1	0.16	5	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	1.1	0.087	5	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	1.1	0.097	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095218
Lab Code: K0901535-003

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	66	21-119	03/11/09	Acceptable
Phenol-d6	68	31-121	03/11/09	Acceptable
Nitrobenzene-d5	67	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	58	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	73	30-131	03/11/09	Acceptable
Terphenyl-d14	43	20-140	03/11/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095219
 Lab Code: K0901535-004
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.98	0.18	5	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	2.5	0.32	5	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	2.5	0.27	5	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	0.98	0.15	5	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	2.5	0.37	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	0.98	0.13	5	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	2.5	0.55	5	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	0.98	0.12	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	0.98	0.19	5	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	2.5	0.60	5	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	0.98	0.14	5	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	0.98	0.080	5	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	2.5	0.32	5	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	20	11	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	0.98	0.12	5	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	2.5	0.24	5	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	25	5.5	5	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	0.98	0.080	5	03/02/09	03/11/09	KWG0901700	
Naphthalene	0.78	JD	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	0.98	0.13	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	0.98	0.14	5	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	2.5	0.19	5	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	0.98	0.13	5	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	4.9	0.95	5	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	2.5	0.29	5	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	2.5	0.16	5	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	0.98	0.21	5	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	0.98	0.12	5	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	0.98	0.075	5	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	0.98	0.17	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095219
 Lab Code: K0901535-004
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.98	0.13	5	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	4.9	0.15	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	20	0.85	5	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	0.98	0.090	5	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	9.8	1.4	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	0.98	0.090	5	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	0.98	0.14	5	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	0.98	0.14	5	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	ND	U	0.98	0.060	5	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	4.9	0.095	5	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	9.8	0.13	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	0.98	0.24	5	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	0.98	0.13	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	4.9	1.7	5	03/02/09	03/11/09	KWG0901700	
Phenanthrene	0.25	JD	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	0.98	0.12	5	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	0.35	JD	0.98	0.12	5	03/02/09	03/11/09	KWG0901700	
Fluoranthene	0.40	JD	0.98	0.10	5	03/02/09	03/11/09	KWG0901700	
Pyrene	0.48	JD	0.98	0.095	5	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	1.2	D	0.98	0.090	5	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	9.8	2.2	5	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	0.98	0.090	5	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	0.98	0.14	5	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	120	D	49	6.5	50	03/02/09	03/12/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	0.98	0.090	5	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	0.98	0.085	5	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	0.98	0.12	5	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	0.98	0.16	5	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	0.98	0.11	5	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	0.98	0.085	5	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	0.98	0.095	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095219
Lab Code: K0901535-004

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	65	21-119	03/11/09	Acceptable
Phenol-d6	70	31-121	03/11/09	Acceptable
Nitrobenzene-d5	66	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	71	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	85	30-131	03/11/09	Acceptable
Terphenyl-d14	90	20-140	03/11/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095220
 Lab Code: K0901535-005
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.19	5	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	2.6	0.33	5	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	2.6	0.28	5	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	2.6	0.38	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	2.6	0.57	5	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.20	5	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	2.6	0.62	5	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	1.1	0.083	5	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	2.6	0.33	5	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	21	12	5	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	2.6	0.25	5	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	26	5.7	5	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	1.1	0.083	5	03/02/09	03/11/09	KWG0901700	
Naphthalene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	2.6	0.20	5	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	5.2	0.98	5	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	1.1	0.22	5	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	1.1	0.078	5	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	1.1	0.18	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095220
 Lab Code: K0901535-005
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	5.2	0.15	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	21	0.88	5	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	1.1	0.093	5	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	11	1.5	5	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	1.1	0.093	5	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	ND	U	1.1	0.062	5	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	5.2	0.098	5	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	5.2	1.8	5	03/02/09	03/11/09	KWG0901700	
Phenanthrene	0.20	JD	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	0.17	JD	1.1	0.12	5	03/02/09	03/11/09	KWG0901700	
Fluoranthene	0.29	JD	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
Pyrene	0.28	JD	1.1	0.098	5	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	1.1	0.093	5	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	11	2.3	5	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	1.1	0.093	5	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	1.1	0.15	5	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	2.8	JD	5.2	0.68	5	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	1.1	0.093	5	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	1.1	0.088	5	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	1.1	0.16	5	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	1.1	0.088	5	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	1.1	0.098	5	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095220
Lab Code: K0901535-005

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	62	21-119	03/11/09	Acceptable
Phenol-d6	63	31-121	03/11/09	Acceptable
Nitrobenzene-d5	58	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	60	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	70	30-131	03/11/09	Acceptable
Terphenyl-d14	83	20-140	03/11/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095221
 Lab Code: K0901535-006
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	2.1	0.36	10	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	5.1	0.64	10	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	5.1	0.55	10	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	2.1	0.22	10	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	2.1	0.30	10	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	5.1	0.74	10	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	5.1	1.2	10	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	2.1	0.38	10	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	5.1	1.3	10	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	2.1	0.29	10	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	2.1	0.17	10	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	5.1	0.64	10	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	41	23	10	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	5.1	0.48	10	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	51	12	10	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	2.1	0.17	10	03/02/09	03/11/09	KWG0901700	
Naphthalene	0.93	JD	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	2.1	0.26	10	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	2.1	0.28	10	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	5.1	0.38	10	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	11	2.0	10	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	5.1	0.59	10	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	5.1	0.32	10	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	2.1	0.42	10	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	2.1	0.16	10	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	2.1	0.22	10	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	2.1	0.34	10	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095221
 Lab Code: K0901535-006
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	11	0.30	10	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	41	1.8	10	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	21	2.9	10	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	2.1	0.28	10	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	2.1	0.28	10	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	ND	U	2.1	0.13	10	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	11	0.20	10	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	21	0.26	10	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	2.1	0.49	10	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	11	3.5	10	03/02/09	03/11/09	KWG0901700	
Phenanthrene	0.26	JD	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	ND	U	2.1	0.24	10	03/02/09	03/11/09	KWG0901700	
Fluoranthene	0.44	JD	2.1	0.21	10	03/02/09	03/11/09	KWG0901700	
Pyrene	0.57	JD	2.1	0.20	10	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	21	4.4	10	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	2.1	0.29	10	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	5.8	JD	11	1.4	10	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	2.1	0.18	10	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	2.1	0.32	10	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	2.1	0.22	10	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	2.1	0.18	10	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	2.1	0.20	10	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095221
Lab Code: K0901535-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	03/11/09	Acceptable
Phenol-d6	76	31-121	03/11/09	Acceptable
Nitrobenzene-d5	76	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	77	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	87	30-131	03/11/09	Acceptable
Terphenyl-d14	87	20-140	03/11/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095222
 Lab Code: K0901535-007
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.22	0.038	1	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	0.54	0.068	1	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	0.54	0.058	1	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	0.22	0.023	1	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	0.22	0.031	1	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	0.54	0.078	1	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	0.54	0.12	1	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	0.22	0.040	1	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	0.54	0.13	1	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	0.22	0.030	1	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	0.22	0.018	1	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	0.54	0.068	1	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	4.3	2.4	1	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	0.54	0.050	1	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	5.4	1.2	1	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	0.22	0.018	1	03/02/09	03/11/09	KWG0901700	
Naphthalene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	0.22	0.027	1	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	0.22	0.029	1	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	0.54	0.040	1	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	1.1	0.21	1	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	0.54	0.062	1	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	0.54	0.033	1	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	0.22	0.044	1	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	0.22	0.016	1	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	0.22	0.023	1	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	0.22	0.036	1	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095222
 Lab Code: K0901535-007
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	1.1	0.031	1	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	4.3	0.19	1	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	2.2	0.30	1	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	0.22	0.029	1	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	0.22	0.029	1	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	0.038	J	0.22	0.013	1	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	1.1	0.021	1	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	2.2	0.027	1	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	0.22	0.052	1	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	1.1	0.37	1	03/02/09	03/11/09	KWG0901700	
Phenanthrene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	0.039	J	0.22	0.025	1	03/02/09	03/11/09	KWG0901700	
Fluoranthene	ND	U	0.22	0.022	1	03/02/09	03/11/09	KWG0901700	
Pyrene	ND	U	0.22	0.021	1	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	2.2	0.46	1	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	0.22	0.030	1	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	0.15	J	1.1	0.14	1	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	0.22	0.019	1	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	0.22	0.033	1	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	0.22	0.019	1	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095222
Lab Code: K0901535-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	61	21-119	03/11/09	Acceptable
Phenol-d6	63	31-121	03/11/09	Acceptable
Nitrobenzene-d5	65	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	60	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	51	30-131	03/11/09	Acceptable
Terphenyl-d14	85	20-140	03/11/09	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
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0901700-3
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.19	0.035	1	03/02/09	03/10/09	KWG0901700	
Phenol	0.10	J	0.48	0.063	1	03/02/09	03/10/09	KWG0901700	
2-Chlorophenol	ND	U	0.48	0.054	1	03/02/09	03/10/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	0.19	0.021	1	03/02/09	03/10/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	0.19	0.029	1	03/02/09	03/10/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
Benzyl Alcohol	ND	U	0.48	0.073	1	03/02/09	03/10/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
2-Methylphenol	ND	U	0.48	0.11	1	03/02/09	03/10/09	KWG0901700	
Hexachloroethane	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	0.19	0.037	1	03/02/09	03/10/09	KWG0901700	
4-Methylphenol†	ND	U	0.48	0.12	1	03/02/09	03/10/09	KWG0901700	
Nitrobenzene	ND	U	0.19	0.028	1	03/02/09	03/10/09	KWG0901700	
Isophorone	ND	U	0.19	0.016	1	03/02/09	03/10/09	KWG0901700	
2-Nitrophenol	ND	U	0.48	0.063	1	03/02/09	03/10/09	KWG0901700	
2,4-Dimethylphenol	ND	U	3.8	2.2	1	03/02/09	03/10/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
2,4-Dichlorophenol	ND	U	0.48	0.047	1	03/02/09	03/10/09	KWG0901700	
Benzoic Acid	ND	U	4.8	1.1	1	03/02/09	03/10/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	0.19	0.016	1	03/02/09	03/10/09	KWG0901700	
Naphthalene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
4-Chloroaniline	ND	U	0.19	0.025	1	03/02/09	03/10/09	KWG0901700	
Hexachlorobutadiene	ND	U	0.19	0.027	1	03/02/09	03/10/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	0.48	0.037	1	03/02/09	03/10/09	KWG0901700	
2-Methylnaphthalene	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	0.95	0.19	1	03/02/09	03/10/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	0.48	0.058	1	03/02/09	03/10/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	0.48	0.031	1	03/02/09	03/10/09	KWG0901700	
2-Chloronaphthalene	ND	U	0.19	0.041	1	03/02/09	03/10/09	KWG0901700	
2-Nitroaniline	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
Acenaphthylene	ND	U	0.19	0.015	1	03/02/09	03/10/09	KWG0901700	
Dimethyl Phthalate	ND	U	0.19	0.021	1	03/02/09	03/10/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	0.19	0.033	1	03/02/09	03/10/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0901700-3
 Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
3-Nitroaniline	ND	U	0.95	0.029	1	03/02/09	03/10/09	KWG0901700	
2,4-Dinitrophenol	ND	U	3.8	0.17	1	03/02/09	03/10/09	KWG0901700	
Dibenzofuran	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
4-Nitrophenol	ND	U	1.9	0.28	1	03/02/09	03/10/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
Fluorene	ND	U	0.19	0.027	1	03/02/09	03/10/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	0.19	0.027	1	03/02/09	03/10/09	KWG0901700	
Diethyl Phthalate	0.019	J	0.19	0.012	1	03/02/09	03/10/09	KWG0901700	
4-Nitroaniline	ND	U	0.95	0.019	1	03/02/09	03/10/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	1.9	0.025	1	03/02/09	03/10/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	0.19	0.048	1	03/02/09	03/10/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
Hexachlorobenzene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
Pentachlorophenol	ND	U	0.95	0.34	1	03/02/09	03/10/09	KWG0901700	
Phenanthrene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
Anthracene	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
Di-n-butyl Phthalate	0.066	J	0.19	0.023	1	03/02/09	03/10/09	KWG0901700	
Fluoranthene	ND	U	0.19	0.020	1	03/02/09	03/10/09	KWG0901700	
Pyrene	ND	U	0.19	0.019	1	03/02/09	03/10/09	KWG0901700	
Butyl Benzyl Phthalate	0.040	J	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	1.9	0.43	1	03/02/09	03/10/09	KWG0901700	
Benz(a)anthracene	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
Chrysene	ND	U	0.19	0.028	1	03/02/09	03/10/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	03/02/09	03/10/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	03/02/09	03/10/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
Benzo(a)pyrene	ND	U	0.19	0.031	1	03/02/09	03/10/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	03/02/09	03/10/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	03/02/09	03/10/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	03/02/09	03/10/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0901700-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	76	21-119	03/10/09	Acceptable
Phenol-d6	78	31-121	03/10/09	Acceptable
Nitrobenzene-d5	79	29-121	03/10/09	Acceptable
2-Fluorobiphenyl	70	25-109	03/10/09	Acceptable
2,4,6-Tribromophenol	60	30-131	03/10/09	Acceptable
Terphenyl-d14	94	20-140	03/10/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535

Surrogate Recovery Summary
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: PERCENT
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
F0095216	K0901535-001	56 D	62 D	57 D	61 D	69 D	81 D
F0095217	K0901535-002	64 D	68 D	62 D	72 D	71 D	88 D
F0095218	K0901535-003	66 D	68 D	67 D	58 D	73 D	43 D
F0095219	K0901535-004	65 D	70 D	66 D	71 D	85 D	90 D
F0095220	K0901535-005	62 D	63 D	58 D	60 D	70 D	83 D
F0095221	K0901535-006	68 D	76 D	76 D	77 D	87 D	87 D
F0095222	K0901535-007	61	63	65	60	51	85
Method Blank	KWG0901700-3	76	78	79	70	60	94
Lab Control Sample	KWG0901700-1	78	77	75	65	71	85
Duplicate Lab Control Sample	KWG0901700-2	72	73	71	61	67	82

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Extracted: 03/02/2009
 Date Analyzed: 03/10/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0901700

Analyte Name	Lab Control Sample KWG0901700-1 Lab Control Spike			Duplicate Lab Control Sample KWG0901700-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	4.11	5.00	82	3.68	5.00	74	39-115	11	30
Phenol	4.13	5.00	83	3.79	5.00	76	39-117	9	30
2-Chlorophenol	4.26	5.00	85	3.74	5.00	75	40-113	13	30
1,3-Dichlorobenzene	2.35	5.00	47	2.18	5.00	44	18-71	7	30
1,4-Dichlorobenzene	2.32	5.00	46	2.14	5.00	43	19-73	8	30
1,2-Dichlorobenzene	2.71	5.00	54	2.36	5.00	47	22-78	14	30
Benzyl Alcohol	4.29	5.00	86	3.90	5.00	78	37-119	10	30
Bis(2-chloroisopropyl) Ether	4.17	5.00	83	3.80	5.00	76	35-113	9	30
2-Methylphenol	3.54	5.00	71	3.27	5.00	65	26-113	8	30
Hexachloroethane	1.88	5.00	38	1.65	5.00	33	11-62	13	30
N-Nitrosodi-n-propylamine	3.91	5.00	78	3.53	5.00	71	32-117	10	30
4-Methylphenol	3.85	5.00	77	3.53	5.00	71	25-118	9	30
Nitrobenzene	3.91	5.00	78	3.60	5.00	72	37-116	8	30
Isophorone	3.56	5.00	71	3.25	5.00	65	39-112	9	30
2-Nitrophenol	3.79	5.00	76	3.30	5.00	66	42-116	14	30
2,4-Dimethylphenol	2.29	5.00	46	1.99	5.00	40	10-113	14	30
Bis(2-chloroethoxy)methane	3.68	5.00	74	3.31	5.00	66	40-113	11	30
2,4-Dichlorophenol	3.69	5.00	74	3.17	5.00	63	39-115	15	30
Benzoic Acid	3.64	15.0	24	3.17	15.0	21	10-102	14	30
1,2,4-Trichlorobenzene	2.37	5.00	47	2.17	5.00	43	21-78	9	30
Naphthalene	3.23	5.00	65	2.93	5.00	59	33-98	10	30
4-Chloroaniline	2.78	5.00	56	2.69	5.00	54	10-119	3	30
Hexachlorobutadiene	1.67	5.00	33	1.43	5.00	29	10-61	15	30
4-Chloro-3-methylphenol	3.67	5.00	73	3.39	5.00	68	37-119	8	30
2-Methylnaphthalene	2.94	5.00	59	2.78	5.00	56	32-95	6	30
Hexachlorocyclopentadiene	0.755	5.00	15	0.721	5.00	14	10-39	5	30
2,4,6-Trichlorophenol	3.75	5.00	75	3.30	5.00	66	40-117	13	30
2,4,5-Trichlorophenol	3.86	5.00	77	3.42	5.00	68	44-116	12	30
2-Chloronaphthalene	3.05	5.00	61	2.86	5.00	57	21-115	7	30
2-Nitroaniline	3.78	5.00	76	3.49	5.00	70	43-124	8	30
Acenaphthylene	3.55	5.00	71	3.48	5.00	70	41-114	2	30
Dimethyl Phthalate	3.81	5.00	76	3.53	5.00	71	47-117	8	30
2,6-Dinitrotoluene	4.06	5.00	81	3.70	5.00	74	45-120	9	30
Acenaphthene	3.48	5.00	70	3.33	5.00	67	38-106	4	30
3-Nitroaniline	3.89	5.00	78	3.43	5.00	69	31-125	13	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Extracted: 03/02/2009
 Date Analyzed: 03/10/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: ug/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG0901700

Analyte Name	Lab Control Sample KWG0901700-1 Lab Control Spike			Duplicate Lab Control Sample KWG0901700-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	1.90	5.00	38	1.74	5.00	35	10-121	9	30
Dibenzofuran	3.53	5.00	71	3.35	5.00	67	40-107	5	30
4-Nitrophenol	3.84	5.00	77	3.28	5.00	66	43-133	16	30
2,4-Dinitrotoluene	3.83	5.00	77	3.63	5.00	73	47-125	6	30
Fluorene	3.59	5.00	72	3.43	5.00	69	40-112	5	30
4-Chlorophenyl Phenyl Ether	3.32	5.00	66	3.12	5.00	62	39-108	6	30
Diethyl Phthalate	4.01	5.00	80	3.59	5.00	72	47-120	11	30
4-Nitroaniline	4.26	5.00	85	3.73	5.00	75	36-128	13	30
2-Methyl-4,6-dinitrophenol	3.31	5.00	66	3.04	5.00	61	19-127	8	30
N-Nitrosodiphenylamine	3.83	5.00	77	3.39	5.00	68	36-114	12	30
4-Bromophenyl Phenyl Ether	3.46	5.00	69	3.21	5.00	64	43-110	7	30
Hexachlorobenzene	3.55	5.00	71	3.26	5.00	65	42-107	8	30
Pentachlorophenol	3.31	5.00	66	3.12	5.00	62	28-114	6	30
Phenanthrene	3.87	5.00	77	3.55	5.00	71	43-110	9	30
Anthracene	3.50	5.00	70	3.32	5.00	66	40-110	5	30
Di-n-butyl Phthalate	3.90	5.00	78	3.64	5.00	73	45-135	7	30
Fluoranthene	3.80	5.00	76	3.60	5.00	72	42-119	5	30
Pyrene	3.89	5.00	78	3.73	5.00	75	43-118	4	30
Butyl Benzyl Phthalate	3.95	5.00	79	3.75	5.00	75	48-124	5	30
3,3'-Dichlorobenzidine	3.56	5.00	71	3.18	5.00	64	15-108	11	30
Benz(a)anthracene	3.74	5.00	75	3.51	5.00	70	45-112	6	30
Chrysene	3.98	5.00	80	3.80	5.00	76	47-112	5	30
Bis(2-ethylhexyl) Phthalate	3.84	5.00	77	3.77	5.00	75	32-149	2	30
Di-n-octyl Phthalate	3.83	5.00	77	3.63	5.00	73	49-127	5	30
Benzo(b)fluoranthene	3.77	5.00	75	3.62	5.00	72	45-115	4	30
Benzo(k)fluoranthene	3.91	5.00	78	3.68	5.00	74	46-115	6	30
Benzo(a)pyrene	3.23	5.00	65	3.11	5.00	62	40-117	4	30
Indeno(1,2,3-cd)pyrene	3.81	5.00	76	3.64	5.00	73	44-119	5	30
Dibenz(a,h)anthracene	3.80	5.00	76	3.44	5.00	69	45-118	10	30
Benzo(g,h,i)perylene	3.84	5.00	77	3.65	5.00	73	45-116	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



CHAIN OF CUSTODY

PROJECT NAME Portland Harbor		PROJECT NUMBER		PROJECT MANAGER Jennifer Shackelford	
COMPANY/ADDRESS City of Portland		CITY/STATE/ZIP		E-MAIL ADDRESS	
PHONE #		FAX #		SAMPLER'S SIGNATURE	
SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS
FO095216	2/13/09	1442	W	2	Semivolatile Organics by GC/MS 625 <input type="checkbox"/> 8270 <input type="checkbox"/> 8270LL <input checked="" type="checkbox"/>
FO095217		1410	W	2	Volatiles Organics 624 <input type="checkbox"/> 8260 <input type="checkbox"/> 8021 <input type="checkbox"/> BTEX <input type="checkbox"/>
FO095218		1518	W	2	Hydrocarbons (*see below) Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Oil <input type="checkbox"/>
FO095219		1358	W	2	Fuel Fingerprint (FIQ) <input type="checkbox"/> NW-HCID Screen
FO095220		1428	W	2	Oil & Grease/TRPH 1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/>
FO095221		1455	W	2	PCB's Aroclors <input type="checkbox"/> Congeners <input type="checkbox"/>
FO095222		1530	W	2	Pesticides/Herbicides 608 <input type="checkbox"/> 8081A <input checked="" type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>
					Chlorophenolics - 8151M Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PCP <input type="checkbox"/>
					PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/>
					Metals, Total or Dissolved (See list below)
					Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/>
					pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)
					NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3
					TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>
					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					
RECEIVED BY:					
Signature					
Date/Time					
Firm					
RELINQUISHED BY:					
Signature					
Date/Time					
Firm					
SPECIAL INSTRUCTIONS/COMMENTS:					
CIRCLE WHICH METALS ARE TO BE ANALYZED:					
Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg					
Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg					
INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: (CIRCLE ONE)					
Please run low-level 8270 analysis. Thanks.					

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PID

Client / Project: City of Portland Service Request K09 01535
Received: 2-24-09 Opened: 2-24-09 By: SW

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): 11.1
Temperature Blank (°C): 8.6
Thermometer ID: SMO 237
6. If applicable, list Chain of Custody Numbers: _____
7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other NO ICE
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
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.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate in the table below* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles tested* received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials and 1631 Mercury bottles received without headspace? *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
<u>All Samples</u>			<u>✓</u>							<u>SW</u>

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: Nothing major checked 2/25/09
SW

March 17, 2009

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 02/24/09 14:55.
The following list is a summary of the Work Orders contained in this report, generated on 03/17/09 21:08.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSB0692	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

03/17/09 21:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095216	PSB0692-01	Water	02/23/09 14:42	02/24/09 14:55
FO095217	PSB0692-02	Water	02/23/09 14:10	02/24/09 14:55
FO095218	PSB0692-03	Water	02/23/09 15:18	02/24/09 14:55
FO095219	PSB0692-04	Water	02/23/09 13:58	02/24/09 14:55
FO095220	PSB0692-05	Water	02/23/09 14:28	02/24/09 14:55
FO095221	PSB0692-06	Water	02/23/09 14:55	02/24/09 14:55
FO095222	PSB0692-07	Water	02/23/09 15:30	02/24/09 14:55
FO095223	PSB0692-08	Water	02/23/09 00:00	02/24/09 14:55

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-01 (FO095216)				Water			Sampled: 02/23/09 14:42			
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.54	0.526	1.00	ug/l	1x	9020785	02/25/09 13:00	03/03/09 21:36	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	4.00	4.00	"	4x	"	"	03/04/09 22:52	RL1
Diethyl phthalate	"	ND	0.526	1.00	"	1x	"	"	03/03/09 21:36	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	"	"	03/06/09 23:18	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	"	"	"	
Anthracene	"	ND	0.0200	0.0200	"	"	"	"	"	
Benzo (a) anthracene	"	0.0245	0.0100	0.0100	"	"	"	"	"	
Benzo (a) pyrene	"	0.0303	0.0100	0.0100	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0467	0.0100	0.0100	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0587	0.0200	0.0200	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0257	0.0100	0.0100	"	"	"	"	"	
Chrysene	"	0.0893	0.0100	0.0100	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.0107	0.0100	0.0100	"	"	"	"	"	
Fluoranthene	"	0.136	0.0200	0.0200	"	"	"	"	"	
Fluorene	"	ND	0.0200	0.0200	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0243	0.0100	0.0100	"	"	"	"	"	
Naphthalene	"	0.0579	0.0200	0.0200	"	"	"	"	"	
Phenanthrene	"	0.128	0.0200	0.0200	"	"	"	"	"	
Pyrene	"	0.100	0.0200	0.0200	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10			90.8%			25 - 125 %	"			"
Pyrene-d10			60.3%			23 - 150 %	"			"
Benzo (a) pyrene-d12			99.7%			10 - 125 %	"			"

PSB0692-02 (FO095217)

				Water			Sampled: 02/23/09 14:10			
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.84	1.01	1.92	ug/l	2x	9020785	02/25/09 13:00	03/05/09 00:06	
Butyl benzyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	RL1
Di-n-butyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	RL1
Di-n-octyl phthalate	"	ND	1.92	1.92	"	"	"	"	"	RL1
Diethyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	RL1
Dimethyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	RL1
Acenaphthene	"	ND	0.0192	0.0192	"	1x	"	"	03/06/09 23:52	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-02 (FO095217)		Water				Sampled: 02/23/09 14:10				
Benzo (a) anthracene	EPA 8270m	0.0446	0.00962	0.00962	ug/l	1x	9020785	02/25/09 13:00	03/06/09 23:52	
Benzo (a) pyrene	"	0.0483	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0580	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0696	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0534	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	0.112	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.0136	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	0.217	0.0192	0.0192	"	"	"	"	"	
Fluorene	"	ND	0.0192	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0371	0.00962	0.00962	"	"	"	"	"	
Naphthalene	"	0.347	0.0192	0.0192	"	"	"	"	"	
Phenanthrene	"	0.141	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	0.120	0.0192	0.0192	"	"	"	"	"	
Surrogate(s): Fluorene-d10				90.8%		25 - 125 %	"			"
Pyrene-d10				58.2%		23 - 150 %	"			"
Benzo (a) pyrene-d12				85.9%		10 - 125 %	"			"
PSB0692-03 (FO095218)		Water				Sampled: 02/23/09 15:18				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.28	0.526	1.00	ug/l	1x	9020785	02/25/09 13:00	03/04/09 20:26	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	1.00	1.00	"	"	"	"	"	
Diethyl phthalate	"	0.566	0.526	1.00	"	"	"	"	"	J
Dimethyl phthalate	"	ND	0.526	1.00	"	"	"	"	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	"	"	03/02/09 23:00	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	"	"	"	
Anthracene	"	ND	0.0200	0.0200	"	"	"	"	"	
Benzo (a) anthracene	"	0.0287	0.0100	0.0100	"	"	"	"	"	
Benzo (a) pyrene	"	0.0290	0.0100	0.0100	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0263	0.0100	0.0100	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0223	0.0200	0.0200	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0274	0.0100	0.0100	"	"	"	"	"	
Chrysene	"	0.0376	0.0100	0.0100	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	"	"	"	
Fluoranthene	"	ND	0.400	0.400	"	"	"	"	"	RL1
Fluorene	"	ND	0.0200	0.0200	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-03 (FO095218)		Water				Sampled: 02/23/09 15:18				
Indeno (1,2,3-cd) pyrene	EPA 8270m	0.0203	0.0100	0.0100	ug/l	1x	9020785	02/25/09 13:00	03/02/09 23:00	
Naphthalene	"	0.0494	0.0200	0.0200	"	"	"	"	"	
Phenanthrene	"	0.0696	0.0200	0.0200	"	"	"	"	"	
Pyrene	"	0.0374	0.0200	0.0200	"	"	"	"	"	
Surrogate(s): Fluorene-d10			72.1%			25 - 125 %	"			"
Pyrene-d10			44.3%			23 - 150 %	"			"
Benzo (a) pyrene-d12			65.3%			10 - 125 %	"			"
PSB0692-04 (FO095219)		Water				Sampled: 02/23/09 13:58				
Bis(2-ethylhexyl)phthalate	EPA 8270m	5.93	0.506	0.962	ug/l	1x	9020785	02/25/09 13:00	03/03/09 17:18	
Butyl benzyl phthalate	"	1.04	0.506	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	0.885	0.506	0.962	"	"	"	"	"	J
Diethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Acenaphthene	"	ND	0.0192	0.0192	"	"	"	"	03/02/09 23:35	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	0.0164	0.00962	0.00962	"	"	"	"	"	
Benzo (a) pyrene	"	0.0194	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0331	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0404	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0221	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	0.0890	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	0.197	0.0192	0.0192	"	"	"	"	"	
Fluorene	"	0.0204	0.0192	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0173	0.00962	0.00962	"	"	"	"	"	
Naphthalene	"	0.283	0.0192	0.0192	"	"	"	"	"	
Phenanthrene	"	0.148	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	0.0885	0.0192	0.0192	"	"	"	"	"	
Surrogate(s): Fluorene-d10			85.3%			25 - 125 %	"			"
Pyrene-d10			53.4%			23 - 150 %	"			"
Benzo (a) pyrene-d12			83.5%			10 - 125 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9020785

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9020785-BLK1)										Extracted: 02/25/09 13:00				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	03/03/09 11:07	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	03/02/09 14:41	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 114% Limits: 25-125% "</i>														
<i>Pyrene-d10 115% 23-150% "</i>														
<i>Benzo (a) pyrene-d12 114% 10-125% "</i>														

LCS (9020785-BS1)

Extracted: 02/25/09 13:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	4.31	0.526	1.00	ug/l	1x	--	4.00	108%	(20-150)	--	--	03/03/09 11:44	
Butyl benzyl phthalate	"	4.09	0.526	1.00	"	"	--	"	102%	"	--	--	"	
Di-n-butyl phthalate	"	5.21	0.526	1.00	"	"	--	"	130%	"	--	--	"	
Di-n-octyl phthalate	"	2.78	0.526	1.00	"	"	--	"	69.5%	"	--	--	"	
Diethyl phthalate	"	4.23	0.526	1.00	"	"	--	"	106%	"	--	--	"	
Dimethyl phthalate	"	3.74	0.526	1.00	"	"	--	"	93.4%	"	--	--	"	
Acenaphthene	"	2.64	0.0200	0.0200	"	"	--	2.50	105%	(35-120)	--	--	03/02/09 15:15	
Acenaphthylene	"	2.49	0.0200	0.0200	"	"	--	"	99.8%	(34-116)	--	--	"	
Anthracene	"	2.62	0.0200	0.0200	"	"	--	"	105%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.85	0.0100	0.0100	"	"	--	"	114%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.82	0.0100	0.0100	"	"	--	"	113%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.88	0.0100	0.0100	"	"	--	"	115%	(37-131)	--	--	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9020785

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9020785-BS1)										Extracted: 02/25/09 13:00				
Benzo (ghi) perylene	EPA 8270m	2.50	0.0200	0.0200	ug/l	1x	--	2.50	99.8%	(26-126)	--	--	03/02/09 15:15	
Benzo (k) fluoranthene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(18-145)	--	--	"	
Chrysene	"	3.14	0.0100	0.0100	"	"	--	"	126%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.76	0.0100	0.0100	"	"	--	"	110%	(20-141)	--	--	"	
Fluoranthene	"	2.86	0.0200	0.0200	"	"	--	"	115%	(31-125)	--	--	"	
Fluorene	"	2.64	0.0200	0.0200	"	"	--	"	106%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.71	0.0100	0.0100	"	"	--	"	108%	(30-135)	--	--	"	
Naphthalene	"	2.82	0.0200	0.0200	"	"	--	"	113%	(30-113)	--	--	"	
Phenanthrene	"	2.65	0.0200	0.0200	"	"	--	"	106%	(34-126)	--	--	"	
Pyrene	"	2.62	0.0200	0.0200	"	"	--	"	105%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10	Recovery:	116%	Limits:	25-125%	"								03/02/09 15:15	
Pyrene-d10		115%		23-150%	"								"	
Benzo (a) pyrene-d12		117%		10-125%	"								"	

Matrix Spike (9020785-MS1)

QC Source: PSB0693-11

Extracted: 02/25/09 13:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	6.44	2.58	4.90	ug/l	5x	2.77	3.92	93.7%	(10-150)	--	--	03/03/09 12:21	
Butyl benzyl phthalate	"	4.81	2.58	4.90	"	"	0.709	"	105%	"	--	--	"	J
Di-n-butyl phthalate	"	4.57	2.58	4.90	"	"	ND	"	116%	"	--	--	"	J
Di-n-octyl phthalate	"	4.54	2.58	4.90	"	"	ND	"	116%	"	--	--	"	J
Diethyl phthalate	"	3.72	2.58	4.90	"	"	ND	"	94.7%	"	--	--	"	J
Dimethyl phthalate	"	3.05	2.58	4.90	"	"	ND	"	77.9%	"	--	--	"	J
Acenaphthene	"	1.54	0.0980	0.0980	"	"	ND	2.45	62.6%	(35-120)	--	--	03/02/09 17:52	
Acenaphthylene	"	1.56	0.0980	0.0980	"	"	ND	"	63.5%	(34-116)	--	--	"	
Anthracene	"	1.13	0.0980	0.0980	"	"	0.0318	"	44.7%	(24-119)	--	--	"	
Benzo (a) anthracene	"	0.740	0.0490	0.0490	"	"	0.0417	"	28.5%	(22-129)	--	--	"	
Benzo (a) pyrene	"	0.569	0.0490	0.0490	"	"	0.0350	"	21.8%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	0.691	0.0490	0.0490	"	"	0.0609	"	25.7%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.464	0.0980	0.0980	"	"	0.0569	"	16.6%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	0.549	0.0490	0.0490	"	"	0.0419	"	20.7%	(0-145)	--	--	"	
Chrysene	"	0.869	0.0490	0.0490	"	"	0.110	"	31.0%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.464	0.0490	0.0490	"	"	0.0105	"	18.5%	(0-141)	--	--	"	
Fluoranthene	"	1.36	0.0980	0.0980	"	"	0.366	"	40.4%	(30-125)	--	--	"	
Fluorene	"	1.52	0.0980	0.0980	"	"	0.0252	"	61.0%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	0.460	0.0490	0.0490	"	"	0.0304	"	17.5%	(0-135)	--	--	"	
Naphthalene	"	1.91	0.0980	0.0980	"	"	0.105	"	73.7%	(30-126)	--	--	"	
Phenanthrene	"	1.62	0.0980	0.0980	"	"	0.237	"	56.5%	(34-126)	--	--	"	
Pyrene	"	0.742	0.0980	0.0980	"	"	0.143	"	24.4%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10	Recovery:	71.0%	Limits:	25-125%	"								03/02/09 17:52	
Pyrene-d10		38.9%		23-150%	"								"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9020785

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Matrix Spike (9020785-MS1)

QC Source: PSB0693-11

Extracted: 02/25/09 13:00

Surrogate(s): Benzo (a) pyrene-d12

Recovery: 57.2%

Limits: 10-125% 5x

03/02/09 17:52

Matrix Spike Dup (9020785-MSD1)

QC Source: PSB0693-11

Extracted: 02/25/09 13:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	6.84	2.58	4.90	ug/l	5x	2.77	3.92	104%	(10-150)	10.3% (50)	03/03/09 12:57	
Butyl benzyl phthalate	"	4.98	2.58	4.90	"	"	0.709	"	109%	"	4.16% "	"	
Di-n-butyl phthalate	"	4.93	2.58	4.90	"	"	ND	"	126%	"	7.61% "	"	
Di-n-octyl phthalate	"	4.68	2.58	4.90	"	"	ND	"	119%	"	3.07% "	"	J
Diethyl phthalate	"	4.07	2.58	4.90	"	"	ND	"	104%	"	9.17% "	"	J
Dimethyl phthalate	"	3.29	2.58	4.90	"	"	ND	"	83.9%	"	7.41% "	"	J
Acenaphthene	"	1.69	0.0980	0.0980	"	"	ND	2.45	69.0%	(35-120)	9.60% (45)	03/02/09 18:26	
Acenaphthylene	"	1.71	0.0980	0.0980	"	"	ND	"	69.9%	(34-116)	9.62% "	"	
Anthracene	"	1.33	0.0980	0.0980	"	"	0.0318	"	52.8%	(24-119)	16.6% "	"	
Benzo (a) anthracene	"	0.882	0.0490	0.0490	"	"	0.0417	"	34.3%	(22-129)	18.5% "	"	
Benzo (a) pyrene	"	0.700	0.0490	0.0490	"	"	0.0350	"	27.1%	(4-112)	21.8% "	"	
Benzo (b) fluoranthene	"	0.740	0.0490	0.0490	"	"	0.0609	"	27.7%	(0-136)	7.45% "	"	
Benzo (ghi) perylene	"	0.576	0.0980	0.0980	"	"	0.0569	"	21.2%	(0-126)	24.2% "	"	
Benzo (k) fluoranthene	"	0.653	0.0490	0.0490	"	"	0.0419	"	25.0%	(0-145)	18.7% "	"	
Chrysene	"	1.02	0.0490	0.0490	"	"	0.110	"	37.0%	(7-137)	17.6% "	"	
Dibenzo (a,h) anthracene	"	0.581	0.0490	0.0490	"	"	0.0105	"	23.3%	(0-141)	22.9% "	"	
Fluoranthene	"	1.27	0.0980	0.0980	"	"	0.366	"	36.9%	(30-125)	8.92% "	"	
Fluorene	"	1.70	0.0980	0.0980	"	"	0.0252	"	68.4%	(27-124)	11.4% "	"	
Indeno (1,2,3-cd) pyrene	"	0.585	0.0490	0.0490	"	"	0.0304	"	22.6%	(0-135)	25.2% "	"	
Naphthalene	"	2.02	0.0980	0.0980	"	"	0.105	"	77.9%	(30-126)	5.54% "	"	
Phenanthrene	"	1.83	0.0980	0.0980	"	"	0.237	"	64.9%	(34-126)	13.9% "	"	
Pyrene	"	0.890	0.0980	0.0980	"	"	0.143	"	30.5%	(14-168)	22.0% "	"	

Surrogate(s): Fluorene-d10

Recovery: 78.1%

Limits: 25-125% "

03/02/09 18:26

Pyrene-d10

46.4%

23-150% "

"

Benzo (a) pyrene-d12

74.0%

10-125% "

"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

03/17/09 21:08

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- RL1 - Reporting limit raised due to sample matrix effects.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave, Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502 1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSB0692**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.			
REPORT TO: Jennifer Shackelford		P.O. NUMBER: 36238					
PHONE: FAX:		PRESERVATIVE					
PROJECT NAME: Portland Harbor		PROJECT NUMBER:		REQUESTED ANALYSES			
SAMPLED BY: Stormwater Samp							
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCBs - 209	PAH + PAHs				
1 F0095216	2/23/09 1442	X	X				W 2
2 F0095217	1410	X	X				W 2
3 F0095218	1518	X	X				W 2
4 F0095219	1358	X	X				W 2
5 F0095220	1428	X	X				W 2 (*)
6 F0095221	1455	X	X				W 2
7 F0095222	1530	X	X				W 2
8 F0095223	—	X					W 18 Kew
9							
10							
RELEASED BY: Kristen White		DATE: 2/24/09		RECEIVED BY: Bob F		DATE: 2/24/09	
PRINT NAME: Kristen White		FIRM: City of Portland		PRINT NAME: Bob F		FIRM: TAP	
RELEASED BY: Bob F		DATE: 2/24/09		RECEIVED BY: Jenica Moy		DATE: 2/24/09	
PRINT NAME: Bob F		FIRM: TAP		PRINT NAME: Jenica Moy		FIRM: TAP	
ADDITIONAL REMARKS:		TEMP:		PAGE		OF	

(*) Please use custom UIC list w/ low MKIs. Thanks.
 (**) Please use labelled bottle for PCB analysis. Thanks.
 (marked "PCB" on cap)

TestAmerica Sample Receipt Checklist

Received by:

Unpacked by:

Logged-in by:

Work Order No.

(section A)

(section B)

Date: 2/24/09

Date: 2/24/09

Date: 2/24/09

Time: 1455

Initials: [Signature]

Initials: [Signature]

Initials: [Signature]

Client: COFP

Project: Portland Harbor

Temperature out of range:

***ESI Clients (see Section C)

Cooler Temperature (IR): 3.6, 5.1, 2.3, 4.8, 1.2, 4.1 °C plastic glass NA (oil/air samples, ESI client)

Digi #1

Digi #2

Temperature Blank: °C

Not enough Ice
No Ice
Ice Melted
W/in 4 Hours
Other:

A

Custody Seals: (#)

Signature: Y N Dated:

V None

Received from:

V TA Courier

Senvoy

UPS

Fed Ex

Client

TDP

DHL

SDS

Mid-Valley

GS/TA

GS/Senvoy

Other:

Container Type:

6 #Cooler(s)

#Box(s)

None (#Other:)

Coolant Type:

Gel Ice

V Loose Ice

None

Packing Material:

Bubble Bags

Styrofoam Cubbies

Peanuts

V None (#Other:)

B

Sample Status:
(If N circled, see NOD)

General:

Intact?

Y N

Containers Match COC?

Y N none given

IDs Match COC?

Y N

For Analyses Requested:

Cyanide Checked?

Y N NA

Correct Type & Preservation?

Y N

Adequate Volume?

Y N

Within Hold Time?

Y N

HF Dilution Required?

Y N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace?

Y N NA

TB on COC? not provided

Y N NA

Metals:

HNO3 Preserved?

Y N NA

Dissolved Metals Filtered?

Y N NA

C

***ESI Clients Only:

Temperature Blank: °C not provided Digi: #1 #2

All preserved bottles checked Y N NA (voas/soils/all unp.)

All preserved accordingly? Y N (see NOD) NA (voas/soils/all unp.)

FED EX/ UPS: Was the tracking paper keepable? YES NO

If circled NO, what is the Tracking number?

FED EX Goldstreak UPS DHL Other:

Project Managers:

Comments:

PM Reviewed: (Initial/Date)

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

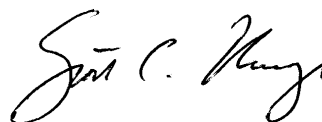
Pace Project #: 1090080
Sample Receipt Date: 02/26/2009
Client Project #: PSB0692
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:

March 13, 2009



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.5 parts-per-trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 34-131%. All of the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the analytical process did not introduce significant levels of PCB congeners to the sample extracts.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds in the lab spikes were recovered at 98-113% with relative percent differences of 0.0-8.5%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PSB0692

1090080

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone: (612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: 4.2 °C

Ice: (Y) N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSB0692-01	Water		Sampled: 02/23/09 14:42	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:42	***209 Congeners*** to Pace
Containers Supplied:				FO 095216
1L Amber - Unpres. (A)				
Sample ID: PSB0692-02	Water		Sampled: 02/23/09 14:10	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:10	***209 Congeners*** to Pace
Containers Supplied:				FO 095217
1L Amber - Unpres. (A)				
Sample ID: PSB0692-03	Water		Sampled: 02/23/09 15:18	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 15:18	***209 Congeners*** to Pace
Containers Supplied:				FO 095218
1L Amber - Unpres. (A)				
Sample ID: PSB0692-04	Water		Sampled: 02/23/09 13:58	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 13:58	***209 Congeners*** to Pace
Containers Supplied:				FO 095219
1L Amber - Unpres. (A)				
Sample ID: PSB0692-05	Water		Sampled: 02/23/09 14:28	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:28	***209 Congeners*** to Pace
Containers Supplied:				FO 095220
1L Amber - Unpres. (A)				
Sample ID: PSB0692-06	Water		Sampled: 02/23/09 14:55	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:55	***209 Congeners*** to Pace
Containers Supplied:				FO 095221
1L Amber - Unpres. (A)				

Jessica Moyz
Released By

2/25/09
Date/Time

Received By

Date/Time

Received By

Date/Time

Report No.....1090080_1668A

2/26/09 09:12

Page 4 of 2

SUBCONTRACT ORDER

TestAmerica Portland

PSB0692

1090080

Analysis	Units	Due	Expires	Comments
Sample ID: PSB0692-07				
Water		Sampled: 02/23/09 15:30		
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 15:30	***209 Congeners*** to Pace
Containers Supplied:				Fo 095222
1L Amber - Unpres. (A)				
Sample ID: PSB0692-08				
Water		Sampled: 02/23/09 00:00		
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				Fo 095223
1L Amber - Unpres. (A)				

Sample Condition Upon Receipt

Pace Analytical

Client Name: TEST AMERICA

Project # 1090080

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 9796 8712 1361

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Optional:
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Temp Blank: Yes ☒ No

Thermometer Used 80344042, 179425

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 4.2°C

Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: 2/26/09

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Colliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 02/27/09

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSB0692-01;FO 095216		
Lab Sample ID	1090080001		
Filename	P90312B_05		
Injected By	BAL		
Total Amount Extracted	992 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2009
ICAL ID	P90312B01	Received	02/26/2009
CCal Filename(s)	P90312B_02	Extracted	02/27/2009
Method Blank ID	BLANK-19082	Analyzed	03/13/2009 04:20

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.587	2.73	2.0	1.22	61
13C-4-MoCB	3	9.462	2.78	2.0	1.24	62
13C-2,2'-DiCB	4	9.774	1.58	2.0	1.43	72
13C-4,4'-DiCB	15	17.573	1.52	2.0	1.62	81
13C-2,2',6-TrCB	19	13.967	1.09	2.0	1.49	74
13C-3,4,4'-TrCB	37	25.837	1.00	2.0	1.66	83
13C-2,2',6,6'-TeCB	54	17.873	0.77	2.0	1.48	74
13C-3,4,4',5-TeCB	81	33.198	0.74	2.0	1.51	76
13C-3,3',4,4'-TeCB	77	33.785	0.77	2.0	1.65	82
13C-2,2',4,6,6'-PeCB	104	24.429	1.69	2.0	1.79	90
13C-2,3,3',4,4'-PeCB	105	37.440	1.57	2.0	1.60	80
13C-2,3,4,4',5-PeCB	114	36.786	1.54	2.0	1.54	77
13C-2,3',4,4',5-PeCB	118	36.249	1.53	2.0	1.63	81
13C-2,3',4,4',5'-PeCB	123	35.914	1.53	2.0	1.60	80
13C-3,3',4,4',5-PeCB	126	40.659	1.53	2.0	1.49	74
13C-2,2',4,4',6,6'-HxCB	155	30.733	1.23	2.0	1.90	95
13C-HxCB (156/157)	156/157	43.744	1.18	4.0	2.96	74
13C-2,3',4,4',5,5'-HxCB	167	42.604	1.19	2.0	1.57	78
13C-3,3',4,4',5,5'-HxCB	169	47.081	1.23	2.0	1.48	74
13C-2,2',3,4',5,6,6'-HpCB	188	36.769	1.11	2.0	2.16	108
13C-2,3,3',4,4',5,5'-HpCB	189	49.627	0.96	2.0	1.76	88
13C-2,2',3,3',5,5',6'-OxCB	202	42.286	0.93	2.0	1.99	99
13C-2,3,3',4,4',5,5',6-OxCB	205	52.213	0.89	2.0	1.64	82
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.937	0.83	2.0	1.60	80
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.088	0.75	2.0	1.72	86
13C--DeCB	209	55.510	0.77	2.0	1.52	76
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.260	0.99	2.0	1.75	87
13C-2,3,3',5,5'-PeCB	111	33.885	1.66	2.0	1.75	88
13C-2,2',3,3',5,5',6-HpCB	178	39.938	1.04	2.0	1.86	93
Recovery Standards						
13C-2,5-DiCB	9	12.517	1.51	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.389	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.985	1.56	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.452	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.739	0.88	2.0	NA	NA

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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-01;FO 095216
Lab Sample ID 1090080001
Filename P90312B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.252
2		---	---	ND	---	0.252
3		---	---	ND	---	0.252
4		---	---	ND	---	0.252
5		---	---	ND	---	0.252
6		---	---	ND	---	0.252
7		---	---	ND	---	0.252
8		---	---	ND	---	0.252
9		---	---	ND	---	0.252
10		---	---	ND	---	0.252
11		---	---	ND	---	1.51
12	12/13	---	---	ND	---	0.504
13	12/13	---	---	ND	---	0.504
14		---	---	ND	---	0.252
15		---	---	ND	---	0.252
16		---	---	ND	---	0.252
17		---	---	ND	---	0.252
18	18/30	---	---	ND	---	0.504
19		---	---	ND	---	0.252
20	20/28	21.293	0.93	0.554	---	0.504
21	21/33	---	---	ND	---	0.504
22		21.997	1.04	0.279	---	0.252
23		---	---	ND	---	0.252
24		---	---	ND	---	0.252
25		---	---	ND	---	0.252
26	26/29	---	---	ND	---	0.504
27		---	---	ND	---	0.252
28	20/28	21.293	0.93	(0.554)	---	0.504
29	26/29	---	---	ND	---	0.504
30	18/30	---	---	ND	---	0.504
31		20.941	1.00	0.402	---	0.252
32		---	---	ND	---	0.252
33	21/33	---	---	ND	---	0.504
34		---	---	ND	---	0.252
35		---	---	ND	---	0.252
36		---	---	ND	---	0.252
37		25.871	1.01	0.306	---	0.252
38		---	---	ND	---	0.252
39		---	---	ND	---	0.252
40	40/41/71	---	---	ND	---	1.51
41	40/41/71	---	---	ND	---	1.51
42		---	---	ND	---	0.504
43		---	---	ND	---	0.504
44	44/47/65	---	---	ND	---	1.51
45	45/51	---	---	ND	---	1.01
46		---	---	ND	---	0.504
47	44/47/65	---	---	ND	---	1.51
48		---	---	ND	---	0.504

Conc = Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-01;FO 095216
Lab Sample ID 1090080001
Filename P90312B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.01
50	50/53	---	---	ND	---	1.01
51	45/51	---	---	ND	---	1.01
52		23.423	0.76	1.70	---	0.504
53	50/53	---	---	ND	---	1.01
54		---	---	ND	---	0.504
55		---	---	ND	---	0.504
56		29.811	0.82	0.624	---	0.504
57		---	---	ND	---	0.504
58		---	---	ND	---	0.504
59	59/62/75	---	---	ND	---	1.51
60		---	---	ND	---	0.504
61	61/70/74/76	28.771	0.76	3.20	---	2.02
62	59/62/75	---	---	ND	---	1.51
63		---	---	ND	---	0.504
64		25.921	0.78	0.548	---	0.504
65	44/47/65	---	---	ND	---	1.51
66		29.123	0.77	1.13	---	0.504
67		---	---	ND	---	0.504
68		---	---	ND	---	0.504
69	49/69	---	---	ND	---	1.01
70	61/70/74/76	28.771	0.76	(3.20)	---	2.02
71	40/41/71	---	---	ND	---	1.51
72		---	---	ND	---	0.504
73		---	---	ND	---	0.504
74	61/70/74/76	28.771	0.76	(3.20)	---	2.02
75	59/62/75	---	---	ND	---	1.51
76	61/70/74/76	28.771	0.76	(3.20)	---	2.02
77		---	---	ND	---	0.504
78		---	---	ND	---	0.504
79		---	---	ND	---	0.504
80		---	---	ND	---	0.504
81		---	---	ND	---	0.504
82		33.382	1.45	0.619	---	0.504
83		---	---	ND	---	0.504
84		28.922	1.62	1.21	---	0.504
85	85/116/117	---	---	ND	---	1.51
86	86/87/97/108/119/125	32.208	1.53	3.57	---	3.03
87	86/87/97/108/119/125	32.208	1.53	(3.57)	---	3.03
88	88/91	---	---	ND	---	1.01
89		---	---	ND	---	0.504
90	90/101/113	31.018	1.52	4.47	---	1.51
91	88/91	---	---	ND	---	1.01
92		30.398	1.62	0.785	---	0.504
93	93/98/100/102	---	---	ND	---	2.02
94		---	---	ND	---	0.504
95		27.782	1.61	2.97	---	0.504
96		---	---	ND	---	0.504

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSB0692-01;FO 095216
Lab Sample ID 1090080001
Filename P90312B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	32.208	1.53	(3.57)	---	3.03
98	93/98/100/102	---	---	ND	---	2.02
99		31.638	1.51	1.87	---	0.504
100	93/98/100/102	---	---	ND	---	2.02
101	90/101/113	31.018	1.52	(4.47)	---	1.51
102	93/98/100/102	---	---	ND	---	2.02
103		---	---	ND	---	0.504
104		---	---	ND	---	0.504
105		37.457	1.51	2.66	---	0.504
106		---	---	ND	---	0.504
107	107/124	---	---	ND	---	1.01
108	86/87/97/108/119/125	32.208	1.53	(3.57)	---	3.03
109		---	---	ND	---	0.504
110	110/115	33.080	1.58	6.52	---	1.01
111		---	---	ND	---	0.504
112		---	---	ND	---	0.504
113	90/101/113	31.018	1.52	(4.47)	---	1.51
114		---	---	ND	---	0.504
115	110/115	33.080	1.58	(6.52)	---	1.01
116	85/116/117	---	---	ND	---	1.51
117	85/116/117	---	---	ND	---	1.51
118		36.283	1.49	5.60	---	0.504
119	86/87/97/108/119/125	32.208	1.53	(3.57)	---	3.03
120		---	---	ND	---	0.504
121		---	---	ND	---	0.504
122		---	---	ND	---	0.504
123		---	---	ND	---	0.504
124	107/124	---	---	ND	---	1.01
125	86/87/97/108/119/125	32.208	1.53	(3.57)	---	3.03
126		---	---	ND	---	0.504
127		---	---	ND	---	0.504
128	128/166	40.743	1.19	1.28	---	1.01
129	129/138/163	39.486	1.24	6.81	---	1.51
130		---	---	ND	---	0.504
131		---	---	ND	---	0.504
132		36.316	1.20	2.27	---	0.504
133		---	---	ND	---	0.504
134	134/143	---	---	ND	---	1.01
135	135/151	34.087	1.23	1.12	---	1.01
136		---	---	ND	---	0.504
137		---	---	ND	---	0.504
138	129/138/163	39.486	1.24	(6.81)	---	1.51
139	139/140	---	---	ND	---	1.01
140	139/140	---	---	ND	---	1.01
141		38.412	1.20	0.884	---	0.504
142		---	---	ND	---	0.504
143	134/143	---	---	ND	---	1.01
144		---	---	ND	---	0.504

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-01;FO 095216
Lab Sample ID 1090080001
Filename P90312B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.504
146		37.591	1.31	0.599	---	0.504
147	147/149	35.042	1.27	3.42	---	1.01
148		---	---	ND	---	0.504
149	147/149	35.042	1.27	(3.42)	---	1.01
150		---	---	ND	---	0.504
151	135/151	34.087	1.23	(1.12)	---	1.01
152		---	---	ND	---	0.504
153	153/168	38.228	1.28	3.95	---	1.01
154		---	---	ND	---	0.504
155		---	---	ND	---	0.504
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		39.888	1.22	0.690	---	0.504
159		---	---	ND	---	0.504
160		---	---	ND	---	0.504
161		---	---	ND	---	0.504
162		---	---	ND	---	0.504
163	129/138/163	39.486	1.24	(6.81)	---	1.51
164		---	---	ND	---	0.504
165		---	---	ND	---	0.504
166	128/166	40.743	1.19	(1.28)	---	1.01
167		---	---	ND	---	0.504
168	153/168	38.228	1.28	(3.95)	---	1.01
169		---	---	ND	---	0.504
170		46.444	1.13	0.884	---	0.504
171	171/173	---	---	ND	---	1.01
172		---	---	ND	---	0.504
173	171/173	---	---	ND	---	1.01
174		41.733	1.02	0.891	---	0.504
175		---	---	ND	---	0.504
176		---	---	ND	---	0.504
177		---	---	ND	---	0.504
178		---	---	ND	---	0.504
179		---	---	ND	---	0.504
180	180/193	45.203	1.03	1.81	---	1.01
181		---	---	ND	---	0.504
182		---	---	ND	---	0.504
183	183/185	---	---	ND	---	1.01
184		---	---	ND	---	0.504
185	183/185	---	---	ND	---	1.01
186		---	---	ND	---	0.504
187		40.894	1.11	0.879	---	0.504
188		---	---	ND	---	0.504
189		---	---	ND	---	0.504
190		---	---	ND	---	0.504
191		---	---	ND	---	0.504
192		---	---	ND	---	0.504

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-01;FO 095216
Lab Sample ID 1090080001
Filename P90312B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.203	1.03	(1.81)	---	1.01
194		---	---	ND	---	0.756
195		---	---	ND	---	0.756
196		---	---	ND	---	0.756
197	197/200	---	---	ND	---	1.51
198	198/199	---	---	ND	---	1.51
199	198/199	---	---	ND	---	1.51
200	197/200	---	---	ND	---	1.51
201		---	---	ND	---	0.756
202		---	---	ND	---	0.756
203		---	---	ND	---	0.756
204		---	---	ND	---	0.756
205		---	---	ND	---	0.756
206		---	---	ND	---	0.756
207		---	---	ND	---	0.756
208		---	---	ND	---	0.756
209		---	---	ND	---	0.756

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSB0692-01;FO 095216
Lab Sample ID 1090080001
Filename P90312B_05

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	1.54
Total Tetrachloro Biphenyls	7.21
Total Pentachloro Biphenyls	30.3
Total Hexachloro Biphenyls	21.0
Total Heptachloro Biphenyls	4.47
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	64.5

ND = Not Detected

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSB0692-02;FO 095217		
Lab Sample ID	1090080002		
Filename	P90312B_06		
Injected By	BAL		
Total Amount Extracted	979 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2009
ICAL ID	P90312B01	Received	02/26/2009
CCal Filename(s)	P90312B_02	Extracted	02/27/2009
Method Blank ID	BLANK-19082	Analyzed	03/13/2009 05:22

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.611	2.89	2.0	1.05	53
13C-4-MoCB	3	9.498	3.09	2.0	1.16	58
13C-2,2'-DiCB	4	9.810	1.57	2.0	1.25	63
13C-4,4'-DiCB	15	17.623	1.51	2.0	1.43	72
13C-2,2',6-TrCB	19	14.004	1.14	2.0	1.40	70
13C-3,4,4'-TrCB	37	25.890	1.01	2.0	1.62	81
13C-2,2',6,6'-TeCB	54	17.924	0.78	2.0	1.51	75
13C-3,4,4',5-TeCB	81	33.252	0.79	2.0	1.58	79
13C-3,3',4,4'-TeCB	77	33.839	0.78	2.0	1.65	83
13C-2,2',4,6,6'-PeCB	104	24.465	1.63	2.0	1.76	88
13C-2,3,3',4,4'-PeCB	105	37.478	1.47	2.0	1.59	80
13C-2,3,4,4',5-PeCB	114	36.824	1.56	2.0	1.49	74
13C-2,3',4,4',5-PeCB	118	36.304	1.52	2.0	1.60	80
13C-2,3',4,4',5'-PeCB	123	35.952	1.55	2.0	1.58	79
13C-3,3',4,4',5-PeCB	126	40.715	1.47	2.0	1.45	73
13C-2,2',4,4',6,6'-HxCB	155	30.787	1.30	2.0	1.90	95
13C-HxCB (156/157)	156/157	43.801	1.20	4.0	2.99	75
13C-2,3',4,4',5,5'-HxCB	167	42.643	1.22	2.0	1.54	77
13C-3,3',4,4',5,5'-HxCB	169	47.138	1.22	2.0	1.46	73
13C-2,2',3,4',5,6,6'-HpCB	188	36.808	1.11	2.0	2.15	107
13C-2,3,3',4,4',5,5'-HpCB	189	49.677	0.98	2.0	1.81	91
13C-2,2',3,3',5,5',6'-OxCB	202	42.342	0.91	2.0	1.97	98
13C-2,3,3',4,4',5,5',6-OxCB	205	52.263	0.91	2.0	1.56	78
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.988	0.85	2.0	1.55	77
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.116	0.81	2.0	1.69	84
13C--DeCB	209	55.561	0.72	2.0	1.47	73
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.312	0.99	2.0	1.74	87
13C-2,3,3',5,5'-PeCB	111	33.940	1.64	2.0	1.73	87
13C-2,2',3,3',5,5',6-HpCB	178	39.994	1.09	2.0	1.80	90
Recovery Standards						
13C-2,5-DiCB	9	12.554	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.442	0.77	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.039	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.507	1.22	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.768	0.95	2.0	NA	NA

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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-02;FO 095217
Lab Sample ID 1090080002
Filename P90312B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.255
2		---	---	ND	---	0.255
3		---	---	ND	---	0.255
4		---	---	ND	---	0.255
5		---	---	ND	---	0.255
6		---	---	ND	---	0.255
7		---	---	ND	---	0.255
8		---	---	ND	---	0.255
9		---	---	ND	---	0.255
10		---	---	ND	---	0.255
11		---	---	ND	---	1.53
12	12/13	---	---	ND	---	0.511
13	12/13	---	---	ND	---	0.511
14		---	---	ND	---	0.255
15		---	---	ND	---	0.255
16		---	---	ND	---	0.255
17		---	---	ND	---	0.255
18	18/30	---	---	ND	---	0.511
19		---	---	ND	---	0.255
20	20/28	21.329	1.02	0.583	---	0.511
21	21/33	---	---	ND	---	0.511
22		---	---	ND	---	0.255
23		---	---	ND	---	0.255
24		---	---	ND	---	0.255
25		---	---	ND	---	0.255
26	26/29	---	---	ND	---	0.511
27		---	---	ND	---	0.255
28	20/28	21.329	1.02	(0.583)	---	0.511
29	26/29	---	---	ND	---	0.511
30	18/30	---	---	ND	---	0.511
31		20.993	0.93	0.437	---	0.255
32		---	---	ND	---	0.255
33	21/33	---	---	ND	---	0.511
34		---	---	ND	---	0.255
35		---	---	ND	---	0.255
36		---	---	ND	---	0.255
37		---	---	ND	---	0.255
38		---	---	ND	---	0.255
39		---	---	ND	---	0.255
40	40/41/71	---	---	ND	---	1.53
41	40/41/71	---	---	ND	---	1.53
42		---	---	ND	---	0.511
43		---	---	ND	---	0.511
44	44/47/65	---	---	ND	---	1.53
45	45/51	---	---	ND	---	1.02
46		---	---	ND	---	0.511
47	44/47/65	---	---	ND	---	1.53
48		---	---	ND	---	0.511

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-02;FO 095217
Lab Sample ID 1090080002
Filename P90312B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.02
50	50/53	---	---	ND	---	1.02
51	45/51	---	---	ND	---	1.02
52		23.475	0.76	1.24	---	0.511
53	50/53	---	---	ND	---	1.02
54		---	---	ND	---	0.511
55		---	---	ND	---	0.511
56		29.864	0.79	0.526	---	0.511
57		---	---	ND	---	0.511
58		---	---	ND	---	0.511
59	59/62/75	---	---	ND	---	1.53
60		---	---	ND	---	0.511
61	61/70/74/76	28.825	0.74	2.11	---	2.04
62	59/62/75	---	---	ND	---	1.53
63		---	---	ND	---	0.511
64		---	---	ND	---	0.511
65	44/47/65	---	---	ND	---	1.53
66		29.160	0.85	0.988	---	0.511
67		---	---	ND	---	0.511
68		---	---	ND	---	0.511
69	49/69	---	---	ND	---	1.02
70	61/70/74/76	28.825	0.74	(2.11)	---	2.04
71	40/41/71	---	---	ND	---	1.53
72		---	---	ND	---	0.511
73		---	---	ND	---	0.511
74	61/70/74/76	28.825	0.74	(2.11)	---	2.04
75	59/62/75	---	---	ND	---	1.53
76	61/70/74/76	28.825	0.74	(2.11)	---	2.04
77		---	---	ND	---	0.511
78		---	---	ND	---	0.511
79		---	---	ND	---	0.511
80		---	---	ND	---	0.511
81		---	---	ND	---	0.511
82		---	---	ND	---	0.511
83		---	---	ND	---	0.511
84		28.976	1.48	0.745	---	0.511
85	85/116/117	---	---	ND	---	1.53
86	86/87/97/108/119/125	---	---	ND	---	3.06
87	86/87/97/108/119/125	---	---	ND	---	3.06
88	88/91	---	---	ND	---	1.02
89		---	---	ND	---	0.511
90	90/101/113	31.072	1.56	4.55	---	1.53
91	88/91	---	---	ND	---	1.02
92		30.435	1.53	0.862	---	0.511
93	93/98/100/102	---	---	ND	---	2.04
94		---	---	ND	---	0.511
95		27.819	1.54	3.37	---	0.511
96		---	---	ND	---	0.511

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-02;FO 095217
Lab Sample ID 1090080002
Filename P90312B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.06
98	93/98/100/102	---	---	ND	---	2.04
99		31.693	1.44	1.17	---	0.511
100	93/98/100/102	---	---	ND	---	2.04
101	90/101/113	31.072	1.56	(4.55)	---	1.53
102	93/98/100/102	---	---	ND	---	2.04
103		---	---	ND	---	0.511
104		---	---	ND	---	0.511
105		37.512	1.57	1.22	---	0.511
106		---	---	ND	---	0.511
107	107/124	---	---	ND	---	1.02
108	86/87/97/108/119/125	---	---	ND	---	3.06
109		---	---	ND	---	0.511
110	110/115	33.135	1.61	3.92	---	1.02
111		---	---	ND	---	0.511
112		---	---	ND	---	0.511
113	90/101/113	31.072	1.56	(4.55)	---	1.53
114		---	---	ND	---	0.511
115	110/115	33.135	1.61	(3.92)	---	1.02
116	85/116/117	---	---	ND	---	1.53
117	85/116/117	---	---	ND	---	1.53
118		36.321	1.53	3.01	---	0.511
119	86/87/97/108/119/125	---	---	ND	---	3.06
120		---	---	ND	---	0.511
121		---	---	ND	---	0.511
122		---	---	ND	---	0.511
123		---	---	ND	---	0.511
124	107/124	---	---	ND	---	1.02
125	86/87/97/108/119/125	---	---	ND	---	3.06
126		---	---	ND	---	0.511
127		---	---	ND	---	0.511
128	128/166	40.799	1.27	1.04	---	1.02
129	129/138/163	39.541	1.25	11.6	---	1.53
130		38.870	1.22	0.551	---	0.511
131		---	---	ND	---	0.511
132		36.371	1.27	3.42	---	0.511
133		---	---	ND	---	0.511
134	134/143	---	---	ND	---	1.02
135	135/151	34.124	1.25	4.14	---	1.02
136		31.491	1.30	1.43	---	0.511
137		---	---	ND	---	0.511
138	129/138/163	39.541	1.25	(11.6)	---	1.53
139	139/140	---	---	ND	---	1.02
140	139/140	---	---	ND	---	1.02
141		38.468	1.28	2.48	---	0.511
142		---	---	ND	---	0.511
143	134/143	---	---	ND	---	1.02
144		34.711	1.32	0.542	---	0.511

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Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-02;FO 095217
Lab Sample ID 1090080002
Filename P90312B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.511
146		37.646	1.16	1.63	---	0.511
147	147/149	35.097	1.25	9.44	---	1.02
148		---	---	ND	---	0.511
149	147/149	35.097	1.25	(9.44)	---	1.02
150		---	---	ND	---	0.511
151	135/151	34.124	1.25	(4.14)	---	1.02
152		---	---	ND	---	0.511
153	153/168	38.283	1.25	11.1	---	1.02
154		---	---	ND	---	0.511
155		---	---	ND	---	0.511
156	156/157	---	---	ND	---	1.02
157	156/157	---	---	ND	---	1.02
158		39.943	1.21	1.01	---	0.511
159		---	---	ND	---	0.511
160		---	---	ND	---	0.511
161		---	---	ND	---	0.511
162		---	---	ND	---	0.511
163	129/138/163	39.541	1.25	(11.6)	---	1.53
164		39.222	1.24	0.817	---	0.511
165		---	---	ND	---	0.511
166	128/166	40.799	1.27	(1.04)	---	1.02
167		---	---	ND	---	0.511
168	153/168	38.283	1.25	(11.1)	---	1.02
169		---	---	ND	---	0.511
170		46.484	1.00	4.54	---	0.511
171	171/173	42.878	0.99	1.45	---	1.02
172		44.572	1.06	0.938	---	0.511
173	171/173	42.878	0.99	(1.45)	---	1.02
174		41.788	1.09	5.61	---	0.511
175		---	---	ND	---	0.511
176		38.065	1.04	0.587	---	0.511
177		42.224	1.03	3.09	---	0.511
178		40.011	0.99	1.04	---	0.511
179		37.143	1.09	2.02	---	0.511
180	180/193	45.243	1.03	11.5	---	1.02
181		---	---	ND	---	0.511
182		---	---	ND	---	0.511
183	183/185	41.587	1.01	3.92	---	1.02
184		---	---	ND	---	0.511
185	183/185	41.587	1.01	(3.92)	---	1.02
186		---	---	ND	---	0.511
187		40.950	1.04	6.25	---	0.511
188		---	---	ND	---	0.511
189		---	---	ND	---	0.511
190		47.037	1.07	0.971	---	0.511
191		---	---	ND	---	0.511
192		---	---	ND	---	0.511

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-02;FO 095217
Lab Sample ID 1090080002
Filename P90312B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.243	1.03	(11.5)	---	1.02
194		51.811	0.91	2.71	---	0.766
195		49.397	0.90	1.07	---	0.766
196		47.876	0.97	1.37	---	0.766
197	197/200	---	---	ND	---	1.53
198	198/199	47.222	0.92	2.83	---	1.53
199	198/199	47.222	0.92	(2.83)	---	1.53
200	197/200	---	---	ND	---	1.53
201		---	---	ND	---	0.766
202		---	---	ND	---	0.766
203		48.077	0.91	1.69	---	0.766
204		---	---	ND	---	0.766
205		---	---	ND	---	0.766
206		---	---	ND	---	0.766
207		---	---	ND	---	0.766
208		---	---	ND	---	0.766
209		---	---	ND	---	0.766

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Nn = Value obtained from additional analyses

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-02;FO 095217
Lab Sample ID 1090080002
Filename P90312B_06

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	1.02
Total Tetrachloro Biphenyls	4.86
Total Pentachloro Biphenyls	18.9
Total Hexachloro Biphenyls	49.3
Total Heptachloro Biphenyls	41.9
Total Octachloro Biphenyls	9.67
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	126

ND = Not Detected

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSB0692-03;FO 095218		
Lab Sample ID	1090080003		
Filename	P90312B_07		
Injected By	BAL		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2009
ICAL ID	P90312B01	Received	02/26/2009
CCal Filename(s)	P90312B_02	Extracted	02/27/2009
Method Blank ID	BLANK-19082	Analyzed	03/13/2009 06:23

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.611	3.12	2.0	0.985	49
13C-4-MoCB	3	9.486	2.84	2.0	1.11	55
13C-2,2'-DiCB	4	9.810	1.60	2.0	1.22	61
13C-4,4'-DiCB	15	17.621	1.45	2.0	1.35	68
13C-2,2',6-TrCB	19	14.003	1.05	2.0	1.27	63
13C-3,4,4'-TrCB	37	25.904	0.99	2.0	1.47	73
13C-2,2',6,6'-TeCB	54	17.923	0.80	2.0	1.44	72
13C-3,4,4',5-TeCB	81	33.264	0.73	2.0	1.36	68
13C-3,3',4,4'-TeCB	77	33.851	0.79	2.0	1.39	70
13C-2,2',4,6,6'-PeCB	104	24.478	1.54	2.0	1.80	90
13C-2,3,3',4,4'-PeCB	105	37.490	1.49	2.0	1.44	72
13C-2,3,4,4',5-PeCB	114	36.836	1.62	2.0	1.38	69
13C-2,3',4,4',5-PeCB	118	36.316	1.56	2.0	1.40	70
13C-2,3',4,4',5'-PeCB	123	35.964	1.52	2.0	1.45	73
13C-3,3',4,4',5-PeCB	126	40.726	1.49	2.0	1.34	67
13C-2,2',4,4',6,6'-HxCB	155	30.800	1.28	2.0	2.03	101
13C-HxCB (156/157)	156/157	43.794	1.20	4.0	2.89	72
13C-2,3',4,4',5,5'-HxCB	167	42.637	1.20	2.0	1.54	77
13C-3,3',4,4',5,5'-HxCB	169	47.131	1.25	2.0	1.40	70
13C-2,2',3,4',5,6,6'-HpCB	188	36.819	1.06	2.0	2.47	124
13C-2,3,3',4,4',5,5'-HpCB	189	49.669	0.93	2.0	1.80	90
13C-2,2',3,3',5,5',6,6'-OxCB	202	42.335	0.95	2.0	2.22	111
13C-2,3,3',4,4',5,5',6-OxCB	205	52.234	0.89	2.0	1.49	74
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.958	0.77	2.0	1.42	71
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.109	0.81	2.0	1.69	84
13C--DeCB	209	55.532	0.73	2.0	1.41	71
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.310	1.01	2.0	1.70	85
13C-2,3,3',5,5'-PeCB	111	33.952	1.57	2.0	1.70	85
13C-2,2',3,3',5,5',6-HpCB	178	39.988	1.04	2.0	1.95	98
Recovery Standards						
13C-2,5-DiCB	9	12.553	1.48	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.456	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.051	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.502	1.22	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.760	0.88	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-03;FO 095218
Lab Sample ID 1090080003
Filename P90312B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.242
2		---	---	ND	---	0.242
3		---	---	ND	---	0.242
4		---	---	ND	---	0.242
5		---	---	ND	---	0.242
6		---	---	ND	---	0.242
7		---	---	ND	---	0.242
8		---	---	ND	---	0.242
9		---	---	ND	---	0.242
10		---	---	ND	---	0.242
11		---	---	ND	---	1.45
12	12/13	---	---	ND	---	0.485
13	12/13	---	---	ND	---	0.485
14		---	---	ND	---	0.242
15		---	---	ND	---	0.242
16		---	---	ND	---	0.242
17		---	---	ND	---	0.242
18	18/30	---	---	ND	---	0.485
19		---	---	ND	---	0.242
20	20/28	---	---	ND	---	0.485
21	21/33	---	---	ND	---	0.485
22		---	---	ND	---	0.242
23		---	---	ND	---	0.242
24		---	---	ND	---	0.242
25		---	---	ND	---	0.242
26	26/29	---	---	ND	---	0.485
27		---	---	ND	---	0.242
28	20/28	---	---	ND	---	0.485
29	26/29	---	---	ND	---	0.485
30	18/30	---	---	ND	---	0.485
31		---	---	ND	---	0.242
32		---	---	ND	---	0.242
33	21/33	---	---	ND	---	0.485
34		---	---	ND	---	0.242
35		---	---	ND	---	0.242
36		---	---	ND	---	0.242
37		---	---	ND	---	0.242
38		---	---	ND	---	0.242
39		---	---	ND	---	0.242
40	40/41/71	---	---	ND	---	1.45
41	40/41/71	---	---	ND	---	1.45
42		---	---	ND	---	0.485
43		---	---	ND	---	0.485
44	44/47/65	---	---	ND	---	1.45
45	45/51	---	---	ND	---	0.969
46		---	---	ND	---	0.485
47	44/47/65	---	---	ND	---	1.45
48		---	---	ND	---	0.485

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-03;FO 095218
Lab Sample ID 1090080003
Filename P90312B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.969
50	50/53	---	---	ND	---	0.969
51	45/51	---	---	ND	---	0.969
52		23.489	0.78	0.557	---	0.485
53	50/53	---	---	ND	---	0.969
54		---	---	ND	---	0.485
55		---	---	ND	---	0.485
56		---	---	ND	---	0.485
57		---	---	ND	---	0.485
58		---	---	ND	---	0.485
59	59/62/75	---	---	ND	---	1.45
60		---	---	ND	---	0.485
61	61/70/74/76	---	---	ND	---	1.94
62	59/62/75	---	---	ND	---	1.45
63		---	---	ND	---	0.485
64		---	---	ND	---	0.485
65	44/47/65	---	---	ND	---	1.45
66		---	---	ND	---	0.485
67		---	---	ND	---	0.485
68		---	---	ND	---	0.485
69	49/69	---	---	ND	---	0.969
70	61/70/74/76	---	---	ND	---	1.94
71	40/41/71	---	---	ND	---	1.45
72		---	---	ND	---	0.485
73		---	---	ND	---	0.485
74	61/70/74/76	---	---	ND	---	1.94
75	59/62/75	---	---	ND	---	1.45
76	61/70/74/76	---	---	ND	---	1.94
77		---	---	ND	---	0.485
78		---	---	ND	---	0.485
79		---	---	ND	---	0.485
80		---	---	ND	---	0.485
81		---	---	ND	---	0.485
82		---	---	ND	---	0.485
83		---	---	ND	---	0.485
84		---	---	ND	---	0.485
85	85/116/117	---	---	ND	---	1.45
86	86/87/97/108/119/125	---	---	ND	---	2.91
87	86/87/97/108/119/125	---	---	ND	---	2.91
88	88/91	---	---	ND	---	0.969
89		---	---	ND	---	0.485
90	90/101/113	---	---	ND	---	1.45
91	88/91	---	---	ND	---	0.969
92		---	---	ND	---	0.485
93	93/98/100/102	---	---	ND	---	1.94
94		---	---	ND	---	0.485
95		27.849	1.53	0.753	---	0.485
96		---	---	ND	---	0.485

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Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-03;FO 095218
Lab Sample ID 1090080003
Filename P90312B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	2.91
98	93/98/100/102	---	---	ND	---	1.94
99		---	---	ND	---	0.485
100	93/98/100/102	---	---	ND	---	1.94
101	90/101/113	---	---	ND	---	1.45
102	93/98/100/102	---	---	ND	---	1.94
103		---	---	ND	---	0.485
104		---	---	ND	---	0.485
105		---	---	ND	---	0.485
106		---	---	ND	---	0.485
107	107/124	---	---	ND	---	0.969
108	86/87/97/108/119/125	---	---	ND	---	2.91
109		---	---	ND	---	0.485
110	110/115	---	---	ND	---	0.969
111		---	---	ND	---	0.485
112		---	---	ND	---	0.485
113	90/101/113	---	---	ND	---	1.45
114		---	---	ND	---	0.485
115	110/115	---	---	ND	---	0.969
116	85/116/117	---	---	ND	---	1.45
117	85/116/117	---	---	ND	---	1.45
118		36.333	1.53	0.725	---	0.485
119	86/87/97/108/119/125	---	---	ND	---	2.91
120		---	---	ND	---	0.485
121		---	---	ND	---	0.485
122		---	---	ND	---	0.485
123		---	---	ND	---	0.485
124	107/124	---	---	ND	---	0.969
125	86/87/97/108/119/125	---	---	ND	---	2.91
126		---	---	ND	---	0.485
127		---	---	ND	---	0.485
128	128/166	---	---	ND	---	0.969
129	129/138/163	---	---	ND	---	1.45
130		---	---	ND	---	0.485
131		---	---	ND	---	0.485
132		---	---	ND	---	0.485
133		---	---	ND	---	0.485
134	134/143	---	---	ND	---	0.969
135	135/151	---	---	ND	---	0.969
136		---	---	ND	---	0.485
137		---	---	ND	---	0.485
138	129/138/163	---	---	ND	---	1.45
139	139/140	---	---	ND	---	0.969
140	139/140	---	---	ND	---	0.969
141		---	---	ND	---	0.485
142		---	---	ND	---	0.485
143	134/143	---	---	ND	---	0.969
144		---	---	ND	---	0.485

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-03;FO 095218
Lab Sample ID 1090080003
Filename P90312B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.485
146		---	---	ND	---	0.485
147	147/149	---	---	ND	---	0.969
148		---	---	ND	---	0.485
149	147/149	---	---	ND	---	0.969
150		---	---	ND	---	0.485
151	135/151	---	---	ND	---	0.969
152		---	---	ND	---	0.485
153	153/168	---	---	ND	---	0.969
154		---	---	ND	---	0.485
155		---	---	ND	---	0.485
156	156/157	---	---	ND	---	0.969
157	156/157	---	---	ND	---	0.969
158		---	---	ND	---	0.485
159		---	---	ND	---	0.485
160		---	---	ND	---	0.485
161		---	---	ND	---	0.485
162		---	---	ND	---	0.485
163	129/138/163	---	---	ND	---	1.45
164		---	---	ND	---	0.485
165		---	---	ND	---	0.485
166	128/166	---	---	ND	---	0.969
167		---	---	ND	---	0.485
168	153/168	---	---	ND	---	0.969
169		---	---	ND	---	0.485
170		---	---	ND	---	0.485
171	171/173	---	---	ND	---	0.969
172		---	---	ND	---	0.485
173	171/173	---	---	ND	---	0.969
174		---	---	ND	---	0.485
175		---	---	ND	---	0.485
176		---	---	ND	---	0.485
177		---	---	ND	---	0.485
178		---	---	ND	---	0.485
179		---	---	ND	---	0.485
180	180/193	---	---	ND	---	0.969
181		---	---	ND	---	0.485
182		---	---	ND	---	0.485
183	183/185	---	---	ND	---	0.969
184		---	---	ND	---	0.485
185	183/185	---	---	ND	---	0.969
186		---	---	ND	---	0.485
187		---	---	ND	---	0.485
188		---	---	ND	---	0.485
189		---	---	ND	---	0.485
190		---	---	ND	---	0.485
191		---	---	ND	---	0.485
192		---	---	ND	---	0.485

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-03;FO 095218
Lab Sample ID 1090080003
Filename P90312B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.969
194		---	---	ND	---	0.727
195		---	---	ND	---	0.727
196		---	---	ND	---	0.727
197	197/200	---	---	ND	---	1.45
198	198/199	---	---	ND	---	1.45
199	198/199	---	---	ND	---	1.45
200	197/200	---	---	ND	---	1.45
201		---	---	ND	---	0.727
202		---	---	ND	---	0.727
203		---	---	ND	---	0.727
204		---	---	ND	---	0.727
205		---	---	ND	---	0.727
206		---	---	ND	---	0.727
207		---	---	ND	---	0.727
208		---	---	ND	---	0.727
209		---	---	ND	---	0.727

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSB0692-03;FO 095218
Lab Sample ID 1090080003
Filename P90312B_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	0.557
Total Pentachloro Biphenyls	1.48
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	2.03

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSB0692-04;FO 095219		
Lab Sample ID	1090080004		
Filename	P90312B_08		
Injected By	BAL		
Total Amount Extracted	988 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2009
ICAL ID	P90312B01	Received	02/26/2009
CCal Filename(s)	P90312B_02	Extracted	02/27/2009
Method Blank ID	BLANK-19082	Analyzed	03/13/2009 07:25

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.623	2.67	2.0	1.09	55
13C-4-MoCB	3	9.510	2.69	2.0	1.22	61
13C-2,2'-DiCB	4	9.822	1.63	2.0	1.33	66
13C-4,4'-DiCB	15	17.634	1.50	2.0	1.40	70
13C-2,2',6-TrCB	19	14.027	1.15	2.0	1.41	70
13C-3,4,4'-TrCB	37	25.907	1.00	2.0	1.58	79
13C-2,2',6,6'-TeCB	54	17.941	0.81	2.0	1.50	75
13C-3,4,4',5-TeCB	81	33.269	0.78	2.0	1.49	75
13C-3,3',4,4'-TeCB	77	33.856	0.73	2.0	1.61	81
13C-2,2',4,6,6'-PeCB	104	24.481	1.60	2.0	1.65	82
13C-2,3,3',4,4'-PeCB	105	37.512	1.56	2.0	1.44	72
13C-2,3,4,4',5-PeCB	114	36.841	1.59	2.0	1.36	68
13C-2,3',4,4',5-PeCB	118	36.321	1.55	2.0	1.45	72
13C-2,3',4,4',5'-PeCB	123	35.986	1.56	2.0	1.44	72
13C-3,3',4,4',5-PeCB	126	40.748	1.53	2.0	1.34	67
13C-2,2',4,4',6,6'-HxCB	155	30.804	1.23	2.0	2.02	101
13C-HxCB (156/157)	156/157	43.817	1.19	4.0	2.95	74
13C-2,3',4,4',5,5'-HxCB	167	42.677	1.24	2.0	1.53	77
13C-3,3',4,4',5,5'-HxCB	169	47.154	1.19	2.0	1.43	72
13C-2,2',3,4',5,6,6'-HpCB	188	36.824	1.06	2.0	2.43	122
13C-2,3,3',4,4',5,5'-HpCB	189	49.698	1.00	2.0	1.85	93
13C-2,2',3,3',5,5',6,6'-OxCB	202	42.358	0.93	2.0	2.14	107
13C-2,3,3',4,4',5,5',6-OxCB	205	52.285	0.85	2.0	1.50	75
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.009	0.79	2.0	1.49	74
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.160	0.76	2.0	1.67	84
13C--DeCB	209	55.583	0.79	2.0	1.37	69
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.329	1.01	2.0	1.72	86
13C-2,3,3',5,5'-PeCB	111	33.957	1.55	2.0	1.65	82
13C-2,2',3,3',5,5',6-HpCB	178	40.011	1.04	2.0	1.85	93
Recovery Standards						
13C-2,5-DiCB	9	12.578	1.48	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.458	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.055	1.55	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.524	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.811	0.85	2.0	NA	NA

Conc = Concentration
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSB0692-04;FO 095219
Lab Sample ID 1090080004
Filename P90312B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.253
2		---	---	ND	---	0.253
3		---	---	ND	---	0.253
4		---	---	ND	---	0.253
5		---	---	ND	---	0.253
6		---	---	ND	---	0.253
7		---	---	ND	---	0.253
8		---	---	ND	---	0.253
9		---	---	ND	---	0.253
10		---	---	ND	---	0.253
11		---	---	ND	---	1.52
12	12/13	---	---	ND	---	0.506
13	12/13	---	---	ND	---	0.506
14		---	---	ND	---	0.253
15		---	---	ND	---	0.253
16		---	---	ND	---	0.253
17		---	---	ND	---	0.253
18	18/30	---	---	ND	---	0.506
19		---	---	ND	---	0.253
20	20/28	21.345	0.93	0.542	---	0.506
21	21/33	---	---	ND	---	0.506
22		22.067	1.02	0.279	---	0.253
23		---	---	ND	---	0.253
24		---	---	ND	---	0.253
25		---	---	ND	---	0.253
26	26/29	---	---	ND	---	0.506
27		---	---	ND	---	0.253
28	20/28	21.345	0.93	(0.542)	---	0.506
29	26/29	---	---	ND	---	0.506
30	18/30	---	---	ND	---	0.506
31		21.010	1.07	0.427	---	0.253
32		---	---	ND	---	0.253
33	21/33	---	---	ND	---	0.506
34		---	---	ND	---	0.253
35		---	---	ND	---	0.253
36		---	---	ND	---	0.253
37		25.940	0.94	0.385	---	0.253
38		---	---	ND	---	0.253
39		---	---	ND	---	0.253
40	40/41/71	---	---	ND	---	1.52
41	40/41/71	---	---	ND	---	1.52
42		---	---	ND	---	0.506
43		---	---	ND	---	0.506
44	44/47/65	---	---	ND	---	1.52
45	45/51	---	---	ND	---	1.01
46		---	---	ND	---	0.506
47	44/47/65	---	---	ND	---	1.52
48		---	---	ND	---	0.506

Conc = Concentration
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B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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NA = Not Applicable
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-04;FO 095219
Lab Sample ID 1090080004
Filename P90312B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.01
50	50/53	---	---	ND	---	1.01
51	45/51	---	---	ND	---	1.01
52		23.492	0.73	0.960	---	0.506
53	50/53	---	---	ND	---	1.01
54		---	---	ND	---	0.506
55		---	---	ND	---	0.506
56		29.881	0.75	0.795	---	0.506
57		---	---	ND	---	0.506
58		---	---	ND	---	0.506
59	59/62/75	---	---	ND	---	1.52
60		---	---	ND	---	0.506
61	61/70/74/76	28.842	0.75	2.40	---	2.02
62	59/62/75	---	---	ND	---	1.52
63		---	---	ND	---	0.506
64		---	---	ND	---	0.506
65	44/47/65	---	---	ND	---	1.52
66		29.194	0.75	1.35	---	0.506
67		---	---	ND	---	0.506
68		---	---	ND	---	0.506
69	49/69	---	---	ND	---	1.01
70	61/70/74/76	28.842	0.75	(2.40)	---	2.02
71	40/41/71	---	---	ND	---	1.52
72		---	---	ND	---	0.506
73		---	---	ND	---	0.506
74	61/70/74/76	28.842	0.75	(2.40)	---	2.02
75	59/62/75	---	---	ND	---	1.52
76	61/70/74/76	28.842	0.75	(2.40)	---	2.02
77		---	---	ND	---	0.506
78		---	---	ND	---	0.506
79		---	---	ND	---	0.506
80		---	---	ND	---	0.506
81		---	---	ND	---	0.506
82		---	---	ND	---	0.506
83		---	---	ND	---	0.506
84		28.993	1.63	0.665	---	0.506
85	85/116/117	---	---	ND	---	1.52
86	86/87/97/108/119/125	---	---	ND	---	3.04
87	86/87/97/108/119/125	---	---	ND	---	3.04
88	88/91	---	---	ND	---	1.01
89		---	---	ND	---	0.506
90	90/101/113	31.089	1.52	3.98	---	1.52
91	88/91	---	---	ND	---	1.01
92		30.468	1.53	0.615	---	0.506
93	93/98/100/102	---	---	ND	---	2.02
94		---	---	ND	---	0.506
95		27.852	1.55	2.92	---	0.506
96		---	---	ND	---	0.506

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-04;FO 095219
Lab Sample ID 1090080004
Filename P90312B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.04
98	93/98/100/102	---	---	ND	---	2.02
99		31.709	1.63	0.936	---	0.506
100	93/98/100/102	---	---	ND	---	2.02
101	90/101/113	31.089	1.52	(3.98)	---	1.52
102	93/98/100/102	---	---	ND	---	2.02
103		---	---	ND	---	0.506
104		---	---	ND	---	0.506
105		37.529	1.41	1.28	---	0.506
106		---	---	ND	---	0.506
107	107/124	---	---	ND	---	1.01
108	86/87/97/108/119/125	---	---	ND	---	3.04
109		---	---	ND	---	0.506
110	110/115	33.152	1.53	3.52	---	1.01
111		---	---	ND	---	0.506
112		---	---	ND	---	0.506
113	90/101/113	31.089	1.52	(3.98)	---	1.52
114		---	---	ND	---	0.506
115	110/115	33.152	1.53	(3.52)	---	1.01
116	85/116/117	---	---	ND	---	1.52
117	85/116/117	---	---	ND	---	1.52
118		36.355	1.50	2.91	---	0.506
119	86/87/97/108/119/125	---	---	ND	---	3.04
120		---	---	ND	---	0.506
121		---	---	ND	---	0.506
122		---	---	ND	---	0.506
123		---	---	ND	---	0.506
124	107/124	---	---	ND	---	1.01
125	86/87/97/108/119/125	---	---	ND	---	3.04
126		---	---	ND	---	0.506
127		---	---	ND	---	0.506
128	128/166	40.815	1.26	1.02	---	1.01
129	129/138/163	39.558	1.22	12.1	---	1.52
130		38.887	1.16	0.579	---	0.506
131		---	---	ND	---	0.506
132		36.388	1.25	3.69	---	0.506
133		---	---	ND	---	0.506
134	134/143	---	---	ND	---	1.01
135	135/151	34.141	1.27	4.63	---	1.01
136		31.525	1.25	1.54	---	0.506
137		---	---	ND	---	0.506
138	129/138/163	39.558	1.22	(12.1)	---	1.52
139	139/140	---	---	ND	---	1.01
140	139/140	---	---	ND	---	1.01
141		38.484	1.20	2.82	---	0.506
142		---	---	ND	---	0.506
143	134/143	---	---	ND	---	1.01
144		34.728	1.11	0.614	---	0.506

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-04;FO 095219
Lab Sample ID 1090080004
Filename P90312B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.506
146		37.663	1.19	1.74	---	0.506
147	147/149	35.114	1.25	10.4	---	1.01
148		---	---	ND	---	0.506
149	147/149	35.114	1.25	(10.4)	---	1.01
150		---	---	ND	---	0.506
151	135/151	34.141	1.27	(4.63)	---	1.01
152		---	---	ND	---	0.506
153	153/168	38.300	1.21	12.1	---	1.01
154		---	---	ND	---	0.506
155		---	---	ND	---	0.506
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		39.977	1.30	1.02	---	0.506
159		---	---	ND	---	0.506
160		---	---	ND	---	0.506
161		---	---	ND	---	0.506
162		---	---	ND	---	0.506
163	129/138/163	39.558	1.22	(12.1)	---	1.52
164		39.256	1.21	0.815	---	0.506
165		---	---	ND	---	0.506
166	128/166	40.815	1.26	(1.02)	---	1.01
167		---	---	ND	---	0.506
168	153/168	38.300	1.21	(12.1)	---	1.01
169		---	---	ND	---	0.506
170		46.517	1.01	4.77	---	0.506
171	171/173	42.895	1.00	1.68	---	1.01
172		44.605	1.00	1.03	---	0.506
173	171/173	42.895	1.00	(1.68)	---	1.01
174		41.805	1.03	6.29	---	0.506
175		---	---	ND	---	0.506
176		38.082	1.13	0.724	---	0.506
177		42.258	1.04	3.47	---	0.506
178		40.027	1.14	1.16	---	0.506
179		37.176	1.07	2.36	---	0.506
180	180/193	45.260	1.03	12.9	---	1.01
181		---	---	ND	---	0.506
182		---	---	ND	---	0.506
183	183/185	41.604	1.02	4.08	---	1.01
184		---	---	ND	---	0.506
185	183/185	41.604	1.02	(4.08)	---	1.01
186		---	---	ND	---	0.506
187		40.966	1.04	6.91	---	0.506
188		---	---	ND	---	0.506
189		---	---	ND	---	0.506
190		47.054	0.91	1.02	---	0.506
191		---	---	ND	---	0.506
192		---	---	ND	---	0.506

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-04;FO 095219
Lab Sample ID 1090080004
Filename P90312B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.260	1.03	(12.9)	---	1.01
194		51.832	0.88	2.86	---	0.759
195		49.418	0.85	1.09	---	0.759
196		47.909	0.89	1.45	---	0.759
197	197/200	---	---	ND	---	1.52
198	198/199	47.238	0.95	2.94	---	1.52
199	198/199	47.238	0.95	(2.94)	---	1.52
200	197/200	---	---	ND	---	1.52
201		---	---	ND	---	0.759
202		---	---	ND	---	0.759
203		48.110	0.91	1.71	---	0.759
204		---	---	ND	---	0.759
205		---	---	ND	---	0.759
206		---	---	ND	---	0.759
207		---	---	ND	---	0.759
208		---	---	ND	---	0.759
209		---	---	ND	---	0.759

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSB0692-04;FO 095219
Lab Sample ID 1090080004
Filename P90312B_08

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	1.63
Total Tetrachloro Biphenyls	5.50
Total Pentachloro Biphenyls	16.8
Total Hexachloro Biphenyls	53.1
Total Heptachloro Biphenyls	46.4
Total Octachloro Biphenyls	10.1
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	133

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-19082		
Filename	P90312A_07		
Injected By	SMT	Matrix	Water
Total Amount Extracted	1900 mL	Extracted	02/27/2009
ICAL ID	P90312A03	Analyzed	03/12/2009 17:05
CCal Filename(s)	P90312A_02	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	6.587	2.75	2.0	0.944	47
13C-4-MoCB	3	9.438	3.14	2.0	0.897	45
13C-2,2'-DiCB	4	9.750	1.59	2.0	1.05	52
13C-4,4'-DiCB	15	17.537	1.54	2.0	0.853	43
13C-2,2',6-TrCB	19	13.943	1.12	2.0	0.889	44
13C-3,4,4'-TrCB	37	25.803	1.05	2.0	0.987	49
13C-2,2',6,6'-TeCB	54	17.839	0.83	2.0	0.772	39
13C-3,4,4',5-TeCB	81	33.129	0.74	2.0	1.06	53
13C-3,3',4,4'-TeCB	77	33.733	0.74	2.0	1.22	61
13C-2,2',4,6,6'-PeCB	104	24.378	1.58	2.0	0.978	49
13C-2,3,3',4,4'-PeCB	105	37.371	1.51	2.0	1.29	64
13C-2,3,4,4',5-PeCB	114	36.701	1.48	2.0	1.27	64
13C-2,3',4,4',5-PeCB	118	36.181	1.60	2.0	1.24	62
13C-2,3',4,4',5'-PeCB	123	35.846	1.49	2.0	1.14	57
13C-3,3',4,4',5-PeCB	126	40.590	1.52	2.0	1.29	65
13C-2,2',4,4',6,6'-HxCB	155	30.682	1.34	2.0	1.14	57
13C-HxCB (156/157)	156/157	43.658	1.20	4.0	2.77	69
13C-2,3',4,4',5,5'-HxCB	167	42.502	1.24	2.0	1.34	67
13C-3,3',4,4',5,5'-HxCB	169	46.978	1.20	2.0	1.42	71
13C-2,2',3,4',5,6,6'-HpCB	188	36.701	1.09	2.0	1.35	68
13C-2,3,3',4,4',5,5'-HpCB	189	49.517	0.96	2.0	1.45	72
13C-2,2',3,3',5,5',6,6'-OxCB	202	42.217	0.90	2.0	1.39	70
13C-2,3,3',4,4',5,5',6-OxCB	205	52.081	0.89	2.0	1.40	70
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.827	0.82	2.0	1.41	70
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.978	0.82	2.0	1.42	71
13C--DeCB	209	55.400	0.71	2.0	1.43	72

Cleanup Standards

13C-2,4,4'-TrCB	28	21.225	0.98	2.0	1.40	70
13C-2,3,3',5,5'-PeCB	111	33.834	1.59	2.0	1.69	84
13C-2,2',3,3',5,5',6-HpCB	178	39.869	1.08	2.0	1.89	94

Recovery Standards

13C-2,5-DiCB	9	12.493	1.61	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.355	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.933	1.61	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.383	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.607	0.87	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-19082
P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.132
2		---	---	ND	---	0.132
3		---	---	ND	---	0.132
4		---	---	ND	---	0.132
5		---	---	ND	---	0.132
6		---	---	ND	---	0.132
7		---	---	ND	---	0.132
8		---	---	ND	---	0.132
9		---	---	ND	---	0.132
10		---	---	ND	---	0.132
11		---	---	ND	---	0.790
12	12/13	---	---	ND	---	0.263
13	12/13	---	---	ND	---	0.263
14		---	---	ND	---	0.132
15		---	---	ND	---	0.132
16		---	---	ND	---	0.132
17		---	---	ND	---	0.132
18	18/30	---	---	ND	---	0.263
19		---	---	ND	---	0.132
20	20/28	---	---	ND	---	0.263
21	21/33	---	---	ND	---	0.263
22		---	---	ND	---	0.132
23		---	---	ND	---	0.132
24		---	---	ND	---	0.132
25		---	---	ND	---	0.132
26	26/29	---	---	ND	---	0.263
27		---	---	ND	---	0.132
28	20/28	---	---	ND	---	0.263
29	26/29	---	---	ND	---	0.263
30	18/30	---	---	ND	---	0.263
31		---	---	ND	---	0.132
32		---	---	ND	---	0.132
33	21/33	---	---	ND	---	0.263
34		---	---	ND	---	0.132
35		---	---	ND	---	0.132
36		---	---	ND	---	0.132
37		---	---	ND	---	0.132
38		---	---	ND	---	0.132
39		---	---	ND	---	0.132
40	40/41/71	---	---	ND	---	0.790
41	40/41/71	---	---	ND	---	0.790
42		---	---	ND	---	0.263
43		---	---	ND	---	0.263
44	44/47/65	---	---	ND	---	0.790
45	45/51	---	---	ND	---	0.527

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19082
Filename P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.263
47	44/47/65	---	---	ND	---	0.790
48		---	---	ND	---	0.263
49	49/69	---	---	ND	---	0.527
50	50/53	---	---	ND	---	0.527
51	45/51	---	---	ND	---	0.527
52		---	---	ND	---	0.263
53	50/53	---	---	ND	---	0.527
54		---	---	ND	---	0.263
55		---	---	ND	---	0.263
56		---	---	ND	---	0.263
57		---	---	ND	---	0.263
58		---	---	ND	---	0.263
59	59/62/75	---	---	ND	---	0.790
60		---	---	ND	---	0.263
61	61/70/74/76	---	---	ND	---	1.05
62	59/62/75	---	---	ND	---	0.790
63		---	---	ND	---	0.263
64		---	---	ND	---	0.263
65	44/47/65	---	---	ND	---	0.790
66		---	---	ND	---	0.263
67		---	---	ND	---	0.263
68		---	---	ND	---	0.263
69	49/69	---	---	ND	---	0.527
70	61/70/74/76	---	---	ND	---	1.05
71	40/41/71	---	---	ND	---	0.790
72		---	---	ND	---	0.263
73		---	---	ND	---	0.263
74	61/70/74/76	---	---	ND	---	1.05
75	59/62/75	---	---	ND	---	0.790
76	61/70/74/76	---	---	ND	---	1.05
77		---	---	ND	---	0.263
78		---	---	ND	---	0.263
79		---	---	ND	---	0.263
80		---	---	ND	---	0.263
81		---	---	ND	---	0.263
82		---	---	ND	---	0.263
83		---	---	ND	---	0.263
84		---	---	ND	---	0.263
85	85/116/117	---	---	ND	---	0.790
86	86/87/97/108/119/125	---	---	ND	---	1.58
87	86/87/97/108/119/125	---	---	ND	---	1.58
88	88/91	---	---	ND	---	0.527
89		---	---	ND	---	0.263
90	90/101/113	---	---	ND	---	0.790

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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*! = See Discussion
! = Outside QC Limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19082
Filename P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.527
92		---	---	ND	---	0.263
93	93/98/100/102	---	---	ND	---	1.05
94		---	---	ND	---	0.263
95		---	---	ND	---	0.263
96		---	---	ND	---	0.263
97	86/87/97/108/119/125	---	---	ND	---	1.58
98	93/98/100/102	---	---	ND	---	1.05
99		---	---	ND	---	0.263
100	93/98/100/102	---	---	ND	---	1.05
101	90/101/113	---	---	ND	---	0.790
102	93/98/100/102	---	---	ND	---	1.05
103		---	---	ND	---	0.263
104		---	---	ND	---	0.263
105		---	---	ND	---	0.263
106		---	---	ND	---	0.263
107	107/124	---	---	ND	---	0.527
108	86/87/97/108/119/125	---	---	ND	---	1.58
109		---	---	ND	---	0.263
110	110/115	---	---	ND	---	0.527
111		---	---	ND	---	0.263
112		---	---	ND	---	0.263
113	90/101/113	---	---	ND	---	0.790
114		---	---	ND	---	0.263
115	110/115	---	---	ND	---	0.527
116	85/116/117	---	---	ND	---	0.790
117	85/116/117	---	---	ND	---	0.790
118		---	---	ND	---	0.263
119	86/87/97/108/119/125	---	---	ND	---	1.58
120		---	---	ND	---	0.263
121		---	---	ND	---	0.263
122		---	---	ND	---	0.263
123		---	---	ND	---	0.263
124	107/124	---	---	ND	---	0.527
125	86/87/97/108/119/125	---	---	ND	---	1.58
126		---	---	ND	---	0.263
127		---	---	ND	---	0.263
128	128/166	---	---	ND	---	0.527
129	129/138/163	---	---	ND	---	0.790
130		---	---	ND	---	0.263
131		---	---	ND	---	0.263
132		---	---	ND	---	0.263
133		---	---	ND	---	0.263
134	134/143	---	---	ND	---	0.527
135	135/151	---	---	ND	---	0.527

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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NC = Not Calculated
*! = See Discussion
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-19082
P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.263
137		---	---	ND	---	0.263
138	129/138/163	---	---	ND	---	0.790
139	139/140	---	---	ND	---	0.527
140	139/140	---	---	ND	---	0.527
141		---	---	ND	---	0.263
142		---	---	ND	---	0.263
143	134/143	---	---	ND	---	0.527
144		---	---	ND	---	0.263
145		---	---	ND	---	0.263
146		---	---	ND	---	0.263
147	147/149	---	---	ND	---	0.527
148		---	---	ND	---	0.263
149	147/149	---	---	ND	---	0.527
150		---	---	ND	---	0.263
151	135/151	---	---	ND	---	0.527
152		---	---	ND	---	0.263
153	153/168	---	---	ND	---	0.527
154		---	---	ND	---	0.263
155		---	---	ND	---	0.263
156	156/157	---	---	ND	---	0.527
157	156/157	---	---	ND	---	0.527
158		---	---	ND	---	0.263
159		---	---	ND	---	0.263
160		---	---	ND	---	0.263
161		---	---	ND	---	0.263
162		---	---	ND	---	0.263
163	129/138/163	---	---	ND	---	0.790
164		---	---	ND	---	0.263
165		---	---	ND	---	0.263
166	128/166	---	---	ND	---	0.527
167		---	---	ND	---	0.263
168	153/168	---	---	ND	---	0.527
169		---	---	ND	---	0.263
170		---	---	ND	---	0.263
171	171/173	---	---	ND	---	0.527
172		---	---	ND	---	0.263
173	171/173	---	---	ND	---	0.527
174		---	---	ND	---	0.263
175		---	---	ND	---	0.263
176		---	---	ND	---	0.263
177		---	---	ND	---	0.263
178		---	---	ND	---	0.263
179		---	---	ND	---	0.263
180	180/193	---	---	ND	---	0.527

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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*! = See Discussion
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19082
Filename P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.263
182		---	---	ND	---	0.263
183	183/185	---	---	ND	---	0.527
184		---	---	ND	---	0.263
185	183/185	---	---	ND	---	0.527
186		---	---	ND	---	0.263
187		---	---	ND	---	0.263
188		---	---	ND	---	0.263
189		---	---	ND	---	0.263
190		---	---	ND	---	0.263
191		---	---	ND	---	0.263
192		---	---	ND	---	0.263
193	180/193	---	---	ND	---	0.527
194		---	---	ND	---	0.395
195		---	---	ND	---	0.395
196		---	---	ND	---	0.395
197	197/200	---	---	ND	---	0.790
198	198/199	---	---	ND	---	0.790
199	198/199	---	---	ND	---	0.790
200	197/200	---	---	ND	---	0.790
201		---	---	ND	---	0.395
202		---	---	ND	---	0.395
203		---	---	ND	---	0.395
204		---	---	ND	---	0.395
205		---	---	ND	---	0.395
206		---	---	ND	---	0.395
207		---	---	ND	---	0.395
208		---	---	ND	---	0.395
209		---	---	ND	---	0.395

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID
Lab Sample ID BLANK-19082
Filename P90312A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	ND

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-19083	
Filename	P90312A_04	Matrix
Total Amount Extracted	1920 mL	Water
ICAL ID	P90312A03	Dilution
CCal Filename(s)	P90312A_02	Extracted
Method Blank ID	BLANK-19082	Analyzed
		03/12/2009 14:01
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.04	104	2.0	1.01	50
3	1.0	1.03	103	2.0	1.03	51
4	1.0	0.992	99	2.0	1.16	58
15	1.0	1.06	106	2.0	0.959	48
19	1.0	0.994	99	2.0	1.04	52
37	1.0	1.10	110	2.0	1.18	59
54	1.0	1.01	101	2.0	0.920	46
81	1.0	1.01	101	2.0	1.35	68
77	1.0	1.01	101	2.0	1.50	75
104	1.0	0.978	98	2.0	1.16	58
105	1.0	0.995	99	2.0	1.57	79
114	1.0	1.07	107	2.0	1.50	75
118	1.0	1.06	106	2.0	1.51	76
123	1.0	1.05	105	2.0	1.44	72
126	1.0	1.02	102	2.0	1.51	75
155	1.0	0.994	99	2.0	1.49	75
156/157	2.0	2.06	103	4.0	3.40	85
167	1.0	1.06	106	2.0	1.65	82
169	1.0	1.02	102	2.0	1.68	84
188	1.0	1.05	105	2.0	1.69	84
189	1.0	1.04	104	2.0	1.70	85
202	1.0	1.01	101	2.0	1.69	84
205	1.0	1.11	111	2.0	1.58	79
206	1.0	1.13	113	2.0	1.57	78
208	1.0	1.13	113	2.0	1.57	79
209	1.0	1.10	110	2.0	1.61	81

P = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
! = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-19084	Matrix	Water
Filename	P90312A_05	Dilution	NA
Total Amount Extracted	1920 mL	Extracted	02/27/2009
ICAL ID	P90312A03	Analyzed	03/12/2009 15:02
CCal Filename(s)	P90312A_02	Injected By	SMT
Method Blank ID	BLANK-19082		

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.976	98	2.0	0.859	43
3	1.0	1.02	102	2.0	0.842	42
4	1.0	1.01	101	2.0	0.967	48
15	1.0	1.07	107	2.0	0.842	42
19	1.0	0.977	98	2.0	0.884	44
37	1.0	1.01	101	2.0	1.09	55
54	1.0	0.979	98	2.0	0.863	43
81	1.0	1.01	101	2.0	1.28	64
77	1.0	0.978	98	2.0	1.43	72
104	1.0	1.03	103	2.0	1.14	57
105	1.0	1.02	102	2.0	1.45	73
114	1.0	1.03	103	2.0	1.46	73
118	1.0	1.05	105	2.0	1.43	72
123	1.0	0.997	100	2.0	1.35	68
126	1.0	0.997	100	2.0	1.46	73
155	1.0	1.05	105	2.0	1.32	66
156/157	2.0	2.10	105	4.0	3.08	77
167	1.0	1.09	109	2.0	1.53	76
169	1.0	1.06	106	2.0	1.54	77
188	1.0	1.07	107	2.0	1.59	79
189	1.0	1.10	110	2.0	1.61	81
202	1.0	1.03	103	2.0	1.57	78
205	1.0	1.04	104	2.0	1.56	78
206	1.0	1.05	105	2.0	1.54	77
208	1.0	1.06	106	2.0	1.56	78
209	1.0	1.04	104	2.0	1.53	77

P = Recovery outside of method 1668A control limits
 Nn = Result obtained from alternate analysis
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 ! = See Discussion
 ng = Nanograms
 I = Interference

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-19083
Spike 1 Filename P90312A_04

Spike 2 ID LCSD-19084
Spike 2 Filename P90312A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	104	98	5.9
4-MoCB	3	103	102	1.0
2,2'-DiCB	4	99	101	2.0
4,4'-DiCB	15	106	107	0.9
2,2',6-TrCB	19	99	98	1.0
3,4,4'-TrCB	37	110	101	8.5
2,2',6,6'-TeCB	54	101	98	3.0
3,3,4,4'-TeCB	77	101	98	3.0
3,4,4',5-TeCB	81	101	101	0.0
2,2',4,6,6'-PeCB	104	98	103	5.0
2,3,3',4,4'-PeCB	105	99	102	3.0
2,3,4,4',5-PeCB	114	107	103	3.8
2,3',4,4',5-PeCB	118	106	105	0.9
2,3,4,4',5'-PeCB	123	105	100	4.9
3,3',4,4',5-PeCB	126	102	100	2.0
2,2',4,4',6,6'-HxCB	155	99	105	5.9
(156/157)	156/157	103	105	1.9
2,3',4,4',5,5'-HxCB	167	106	109	2.8
3,3',4,4',5,5'-HxCB	169	102	106	3.8
2,2',3,4',5,6,6'-HpCB	188	105	107	1.9
2,3,3',4,4',5,5'-HpCB	189	104	110	5.6
2,2',3,3',5,5',6,6'-OcCB	202	101	103	2.0
2,3,3',4,4',5,5',6-OcCB	205	111	104	6.5
2,2',3,3',4,4',5,5',6-NoCB	206	113	105	7.3
2,2',3,3',4,5,5',6,6'-NoCB	208	113	106	6.4
Decachlorobiphenyl	209	110	104	5.6

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

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Laboratory Data QA/QC Review Albina Riverlots Source Control Investigation Second Quarter 2009 Stormwater Sampling – Event 5

To: File
From: Julia Fowler, GSI
Date: May 22, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on March 23, 2009. Six stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO095377) and field duplicate (FO095378) were also submitted for analysis.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
 - Total Metals – EPA 200.8
 - Total Mercury – WPCL SOP M-10.02
 - Total Suspended Solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Organochlorine Pesticides – EPA 8081
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The following QA/QC review is based on the available documentation supplied from each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample (LCS/DLCS) recoveries within laboratory control limits

The results of the QA/QC review of the subcontracted laboratory reports 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 throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of PAHs, phthalates, pesticides, SVOCs, and PCB congeners. Naphthalene was detected in the method blank analyzed for PAHs by EPA 8270M-SIM at a concentration between one-half the method reporting limit (MRL) and the MRL. In accordance with TA policy, the detections of naphthalene reported in samples FO095372, FO095373, FO095374, FO095375, and FO095376 are flagged as estimated ("B"); these detections should be considered as biased high or possibly false positives.

Phenol and di-n-butyl phthalate were detected in the method blank analyzed for SVOCs by 8270C at estimated concentrations between the MDL and the MRL. For those samples with detected concentrations of phenol, if the concentration is less than 10 times higher than the method blank results, the sample result is flagged with a "B" indicating the result is an estimated value. The results for phenol should therefore be considered biased high or possibly false

positives. The values in the accompanying DEQ table for di-n-butyl phthalate are from the EPA 8270M-SIM method and are not qualified.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, phthalates, pesticides, and SVOCs. The control criteria were exceeded during the PAH analysis by EPA 8270M-SIM for two surrogates in sample FO095374. TA reports that there was insufficient sample volume to re-extract and no further corrective action was possible. Based on information from WPCL¹, because the sample results appear to be consistent with the other samples, the data are not qualified.

The control criterion was exceeded during the SVOC analysis by 8270C for one surrogate in sample FO095376. CAS reports a reanalysis was not performed because insufficient sample was available and no further action was taken. WPCL notes that some results for late-eluting compounds could be low estimates in this sample. However, because the other two surrogates were within control criteria, no data are qualified.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the target ranges specified in the method, with the exception of three congeners in the laboratory control sample (LCS). These exceptions are flagged “P” in the Pace laboratory report. Pace states that the data were automatically corrected for variation in recovery and accurate values were obtained.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) were processed during the laboratory analysis of PAHs and phthalates. The MS/MSD recoveries and relative percent differences were within the laboratory control limits.

CAS reports there was insufficient volume to perform a matrix spike/matrix spike duplicate (MS/MSD) analysis for SVOCs by EPA 8270C and pesticides. A laboratory control sample/duplicate laboratory control sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Laboratory Control/ Duplicate Laboratory Control Samples

A laboratory control sample (LCS) was processed during the laboratory analysis of PAHs and phthalates. The LCS recoveries were within the laboratory control limits.

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of SVOCs, pesticides and PCB congeners. The LCS/DLCS recoveries and relative percent differences were within the laboratory control limits.

Other

The CAS laboratory report for pesticides indicates that the method reporting limits were elevated in most samples due to non-target background components (matrix interference). Additionally,

¹ Email communication from Peter Abrams, WPCL to Julia Fowler, GSI. May 21, 2008.

CAS notes that the JP qualifier indicates that the confirmation comparison criteria are not applicable because at least one of the values is below the MRL.

A field decontamination blank was collected and analyzed for metals, PAHs, phthalates, pesticides, SVOC, and PCB congeners. Two metals (copper and zinc) were detected in the field decontamination blank at estimated concentrations between the MDL and the MRL. Copper and zinc concentrations in the field samples were greater than 10 times the concentrations detected in the field decontamination blank; therefore, no copper or zinc data are flagged. 4,4'-DDE also was detected in the field decontamination blank. DDE was detected in two samples at similar concentrations; these data are flagged as estimated.



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



Date: 3/23/04
Page: 1 of 1
Collected By: M. J. J. J.

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

TSS

PCB Congeners (All 209)

PAH + Phthalates (TA)

SVOC's (CAS)

Pesticides (CAS)

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)

Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO095371

SW-43-ABC290-AMNY
N ALBINA & RIVER

43_SW1

3/23/04

1348

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FO095372

SW-43-ABC39-AMNY
N KERBY & WHEELER

43_SW2

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FO095373

SW-43-ABC52-AMNY
N WHEELER PL & KERBY

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FO095374

SW-43-ABC49-AMNY
N KERBY & TILLAMOOK

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FO095375

SW-44-ABC352-AMNY
N HARDING & RIVER

44_SW1

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FO095376

SW-44A-ABC311-AMNY
N LARABEE & RANDOLPH

44A_SW1

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Signature: *Mark Sullivan* Time: 10:47
Printed Name: Mark Sullivan Date: 3/23/04

Signature: _____ Time: _____
Printed Name: _____ Date: _____

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Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: *Mark Sullivan* Time: 10:47
Printed Name: Mark Sullivan Date: 3/23/04

Signature: _____ Time: _____
Printed Name: _____ Date: _____

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Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: *Mark Sullivan* Time: 10:47
Printed Name: Mark Sullivan Date: 3/23/04

Signature: _____ Time: _____
Printed Name: _____ Date: _____

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Signature: _____ Time: _____
Printed Name: _____ Date: _____



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: **FO095371**

Sample Collected: 03/23/09 13:48
Sample Received: 03/23/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0309
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN03338
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	122	µmhos/cm	1	SM 2510 B	03/23/09
pH (FIELD)	7.3	pH Units	0.1	SM 4500-H B	03/23/09
TEMPERATURE	9.8	Deg. C	0.1	SM 2550 B	03/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	45	mg/L	2	SM 2540 D	03/25/09
METALS					
MERCURY	0.013	µg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.14	µg/L	0.1	EPA 200.8	03/24/09
CADMIUM	1.43	µg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	2.95	µg/L	0.4	EPA 200.8	03/24/09
COPPER	27.5	µg/L	0.2	EPA 200.8	03/24/09
LEAD	9.61	µg/L	0.1	EPA 200.8	03/24/09
NICKEL	4.28	µg/L	0.2	EPA 200.8	03/24/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	03/24/09
ZINC	210	µg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDE	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDT	<2.5	ng/L	2.5	EPA 8081	03/25/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan I	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin Aldehyde	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin Ketone	<2.5	ng/L	2.5	EPA 8081	03/25/09

Report Date: 04/30/09

Validated By:



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: **FO095371**

Sample Collected: 03/23/09 13:48
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0309
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN03338
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor	<39	ng/L	39	EPA 8081	03/25/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	03/25/09
Methoxychlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Toxaphene	<130	ng/L	130	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Anthracene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	0.0103	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	0.0141	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	0.0225	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	0.0104	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	1.78	µg/L	0.962	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Chrysene	0.0411	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Diethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Fluoranthene	0.0633	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Fluorene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	0.0103	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Naphthalene	<0.0288	µg/L	0.0288	EPA 8270M-SIM	03/26/09
Phenanthrene	0.0538	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Pyrene	0.0746	µg/L	0.0192	EPA 8270M-SIM	03/26/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

Validated By:



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: **FO095371**

Sample Collected: 03/23/09 13:48
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0309
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN03338
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	03/30/09
3-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	03/30/09
Benzyl alcohol	0.52	µg/L	0.50	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

Validated By:



LABORATORY ANALYSIS REPORT

Sample ID: **FO095371**

Sample Collected: 03/23/09 13:48
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC290-0309
2100 N ALBINA AVE
Sample Point Code: 43_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN03338
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	2.0	µg/L	1.0	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Chrysene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	03/30/09
Diethyl phthalate	0.23	µg/L	0.20	EPA 8270	03/30/09
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluorene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<1.0	µg/L	1.0	EPA 8270	03/30/09
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Isophorone	0.20	µg/L	0.20	EPA 8270	03/30/09
Naphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
Pentachlorophenol	<1.0	µg/L	1.0	EPA 8270	03/30/09
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Phenol	0.60	µg/L	0.50	EPA 8270	03/30/09
Pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09

End of Report for Sample ID: FO095371



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: FO095372

Sample Collected: 03/23/09 13:30
Sample Received: 03/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0309
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN03339
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	90	µmhos/cm	1	SM 2510 B	03/23/09
pH (FIELD)	6.9	pH Units	0.1	SM 4500-H B	03/23/09
TEMPERATURE	10.5	Deg. C	0.1	SM 2550 B	03/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	28	mg/L	2	SM 2540 D	03/25/09
METALS					
MERCURY	0.011	µg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.13	µg/L	0.1	EPA 200.8	03/24/09
CADMIUM	32.6	µg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	2.85	µg/L	0.4	EPA 200.8	03/24/09
COPPER	28.9	µg/L	0.2	EPA 200.8	03/24/09
LEAD	9.57	µg/L	0.1	EPA 200.8	03/24/09
NICKEL	6.99	µg/L	0.2	EPA 200.8	03/24/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	03/24/09
ZINC	338	µg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDE	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDT	<3.7	ng/L	3.7	EPA 8081	03/25/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan I	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin Aldehyde	<2.5	ng/L	2.5	EPA 8081	03/25/09

Report Date: 04/30/09

Validated By:



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: FO095372

Sample Collected: 03/23/09 13:30
Sample Received: 03/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0309
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN03339
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	03/25/09
Methoxychlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Toxaphene	<130	ng/L	130	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Anthracene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	1.18	µg/L	0.962	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Chrysene	0.0142	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Diethyl phthalate	1.82	µg/L	0.962	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Fluoranthene	<0.0288	µg/L	0.0288	EPA 8270M-SIM	03/26/09
Fluorene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Naphthalene	EST 0.0312	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Phenanthrene	0.0214	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Pyrene	0.0295	µg/L	0.0192	EPA 8270M-SIM	03/26/09

SEMI-VOLATILE ORGANICS - CAS

Report Date: 04/30/09

Validated By:



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: **FO095372**

Sample Collected: 03/23/09 13:30
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0309
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN03339
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	03/30/09
3-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

Validated By:



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: **FO095372**

Sample Collected: 03/23/09 13:30
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC539-0309
N KERBY & WHEELER
Sample Point Code: 43_SW2
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN03339
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	03/30/09
Benzyl alcohol	<0.50	µg/L	0.50	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	1.4	µg/L	1.0	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Chrysene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	03/30/09
Diethyl phthalate	2.2	µg/L	0.20	EPA 8270	03/30/09
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluorene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<1.0	µg/L	1.0	EPA 8270	03/30/09
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Isophorone	<0.20	µg/L	0.20	EPA 8270	03/30/09
Naphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
Pentachlorophenol	<1.0	µg/L	1.0	EPA 8270	03/30/09
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Phenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
Pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09

End of Report for Sample ID: FO095372

Report Date: 04/30/09

Validated By:



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: FO095373

Sample Collected: 03/23/09 14:59
Sample Received: 03/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0309
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN03340
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	552	µmhos/cm	1	SM 2510 B	03/23/09
pH (FIELD)	7.6	pH Units	0.1	SM 4500-H B	03/23/09
TEMPERATURE	10.7	Deg. C	0.1	SM 2550 B	03/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	131	mg/L	2	SM 2540 D	03/25/09
METALS					
MERCURY	0.032	µg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	2.87	µg/L	0.1	EPA 200.8	03/24/09
CADMIUM	0.98	µg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	7.55	µg/L	0.4	EPA 200.8	03/24/09
COPPER	26.1	µg/L	0.2	EPA 200.8	03/24/09
LEAD	34.5	µg/L	0.1	EPA 200.8	03/24/09
NICKEL	5.34	µg/L	0.2	EPA 200.8	03/24/09
SILVER	0.11	µg/L	0.1	EPA 200.8	03/24/09
ZINC	118	µg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDE	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDT	<2.5	ng/L	2.5	EPA 8081	03/25/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan I	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin Aldehyde	<2.5	ng/L	2.5	EPA 8081	03/25/09

Report Date: 04/30/09

Validated By:



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: **FO095373**

Sample Collected: 03/23/09 14:59
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0309
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN03340
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	03/25/09
Methoxychlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Toxaphene	<130	ng/L	130	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Anthracene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	0.0279	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	0.0267	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	0.0234	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	0.0402	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	0.0212	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Chrysene	0.0573	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Diethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Fluoranthene	0.138	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Fluorene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	0.0214	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Naphthalene	EST 0.0352	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Phenanthrene	0.103	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Pyrene	0.188	µg/L	0.0192	EPA 8270M-SIM	03/26/09

SEMI-VOLATILE ORGANICS - CAS

Report Date: 04/30/09

Validated By:



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: FO095373

Sample Collected: 03/23/09 14:59
Sample Received: 03/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0309
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN03340
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	03/30/09
3-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

Validated By:



LABORATORY ANALYSIS REPORT

Sample ID: **FO095373**

Sample Collected: 03/23/09 14:59
Sample Received: 03/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-43-ABC552-0309
N WHEELER AVE & WHEELER PL
Sample Point Code: 43_SW3
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN03340
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	03/30/09
Benzyl alcohol	<0.50	µg/L	0.50	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	<1.0	µg/L	1.0	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Chrysene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	03/30/09
Diethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluorene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<1.0	µg/L	1.0	EPA 8270	03/30/09
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Isophorone	<0.20	µg/L	0.20	EPA 8270	03/30/09
Naphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
Pentachlorophenol	<1.0	µg/L	1.0	EPA 8270	03/30/09
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Phenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
Pyrene	0.26	µg/L	0.20	EPA 8270	03/30/09

End of Report for Sample ID: FO095373

Report Date: 04/30/09

Validated By:



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: FO095374

Sample Collected: 03/23/09 13:22

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 1 of 4

**Address/Location: SW-43-ABC499-0309
N KERBY & TILLAMOOK**

System ID: AN03341

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	122	µmhos/cm	1	SM 2510 B	03/23/09
pH (FIELD)	7.1	pH Units	0.1	SM 4500-H B	03/23/09
TEMPERATURE	10.7	Deg. C	0.1	SM 2550 B	03/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	270	mg/L	2	SM 2540 D	03/25/09
METALS					
MERCURY	0.012	µg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.68	µg/L	0.1	EPA 200.8	03/24/09
CADMIUM	29.4	µg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	3.24	µg/L	0.4	EPA 200.8	03/24/09
COPPER	28.0	µg/L	0.2	EPA 200.8	03/24/09
LEAD	6.01	µg/L	0.1	EPA 200.8	03/24/09
NICKEL	7.92	µg/L	0.2	EPA 200.8	03/24/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	03/24/09
ZINC	380	µg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDE	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDT	<2.5	ng/L	2.5	EPA 8081	03/25/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan I	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin Aldehyde	<2.5	ng/L	2.5	EPA 8081	03/25/09

Report Date: 04/30/09

Validated By:



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: **FO095374** Sample Collected: 03/23/09 13:22 Sample Status: **COMPLETE AND VALIDATED**
Sample Received: 03/23/09

Proj./Company Name: **PORTLAND HARBOR STORMWATER SAMP**
Address/Location: **SW-43-ABC499-0309**
N KERBY & TILLAMOOK
Sample Point Code: **43_SW4**
Sample Type: **GRAB**
Sample Matrix: **STORMWTR**

Report Page: Page 2 of 4

System ID: **AN03341**
EID File #: **1020.005**
LocCode: **PORTHASW**
Collected By: **MJS/JXB**

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	03/25/09
Methoxychlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Toxaphene	<130	ng/L	130	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0190	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0190	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Anthracene	<0.0190	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	<0.0190	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	2.48	µg/L	0.952	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	03/26/09
Chrysene	0.0224	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Diethyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	03/26/09
Fluoranthene	0.0289	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Fluorene	<0.0190	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	03/26/09
Naphthalene	EST 0.0673	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Phenanthrene	0.0249	µg/L	0.0190	EPA 8270M-SIM	03/26/09
Pyrene	0.0400	µg/L	0.0190	EPA 8270M-SIM	03/26/09

SEMI-VOLATILE ORGANICS - CAS

Report Date: 04/30/09

Validated By:



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: FO095374

Sample Collected: 03/23/09 13:22

Sample Status: COMPLETE AND
VALIDATED

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 3 of 4

Address/Location: SW-43-ABC499-0309

N KERBY & TILLAMOOK

System ID: AN03341

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,4,5-Trichlorophenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
2,4-Dichlorophenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
2,4-Dimethylphenol	<3.9	µg/L	3.9	EPA 8270	03/30/09
2,4-Dinitrophenol	<3.9	µg/L	3.9	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chlorophenol	<0.50	µg/L	0.49	EPA 8270	03/30/09
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Methylphenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Nitrophenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	03/30/09
3-Nitroaniline	<0.98	µg/L	0.98	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chloro-3-methylphenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Methylphenol	<0.49	µg/L	0.49	EPA 8270	03/30/09
4-Nitroaniline	<0.98	µg/L	0.98	EPA 8270	03/30/09
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

Validated By: 



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: FO095374

Sample Collected: 03/23/09 13:22

Sample Status: COMPLETE AND
VALIDATED

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 4 of 4

Address/Location: SW-43-ABC499-0309
N KERBY & TILLAMOOK

System ID: AN03341

Sample Point Code: 43_SW4

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	7.5	µg/L	4.9	EPA 8270	03/30/09
Benzyl alcohol	<0.49	µg/L	0.49	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	3.2	µg/L	0.98	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Chrysene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	03/30/09
Diethyl phthalate	12	µg/L	0.20	EPA 8270	03/30/09
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluorene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<0.98	µg/L	0.98	EPA 8270	03/30/09
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Isophorone	<0.20	µg/L	0.20	EPA 8270	03/30/09
Naphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
Pentachlorophenol	<0.98	µg/L	0.98	EPA 8270	03/30/09
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Phenol	0.94	µg/L	0.49	EPA 8270	03/30/09
Pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09

End of Report for Sample ID: FO095374

Report Date: 04/30/09

Validated By:

April 13, 2009

Analytical Report for Service Request No: K0902522

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: Portland Harbor Stormwater

Dear Jennifer:

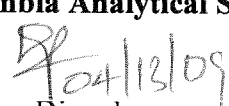
Enclosed are the results of the samples submitted to our laboratory on March 24, 2009. For your reference, these analyses have been assigned our service request number K0902522.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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 PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/lb

Page 1 of 45

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: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request No.: K0902522
Date Received: 03/24/2009

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 II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Seven water samples were received for analysis at Columbia Analytical Services on 03/24/2009. The temperatures of the cooler and blank were 8.0C and 6.7C respectively upon receipt. 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.

Organochlorine Pesticides by EPA Method 8081A ULL

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for 4,4'-DDD in CCV 0401F034. 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.

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.

Sample Confirmation Notes:

The JP qualifier indicates that the confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Elevated Method Reporting Limits:

The reporting limit is elevated for all analytes in most of the samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The results are flagged to indicate the matrix interference.

The reporting limit is further 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 limit. The results are flagged to indicate the matrix interference.

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

Approved by  Date 04/12/09

Semivolatile Organic Compounds by EPA Method 8270C LL

Surrogate Exceptions:

The control criteria were exceeded for Terphenyl-d14 in FO 095376. A reanalysis was not performed because insufficient sample was available. No further corrective action was possible.

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  Date 04/13/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Stormwater
 Sample Matrix: Water

Service Request: K0902522
 Date Collected: 03/23/2009
 Date Received: 03/24/2009

Organochlorine Pesticides

Sample Name: FO 095371
 Lab Code: K0902522-001
 Extraction Method: EPA 3535
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	2.5	2.1	5	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	2.5	0.70	5	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	Ui	39	39	5	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	2.5	0.55	5	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	2.5	1.3	5	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	Ui	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	2.5	1.9	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	ND	Ui	2.5	2.0	5	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	2.5	1.8	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	2.5	0.85	5	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	130	45	5	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	60	10-121	04/02/09	Acceptable
Decachlorobiphenyl	74	17-150	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Organochlorine Pesticides

Sample Name: FO 095372
Lab Code: K0902522-002
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	2.5	2.1	5	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	2.5	0.70	5	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	2.5	0.90	5	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	2.5	0.55	5	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	2.5	1.3	5	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	2.5	1.9	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	ND	Ui	2.5	0.98	5	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	2.5	1.8	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	Ui	2.5	2.2	5	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	Ui	3.7	3.7	5	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	130	45	5	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	55	10-121	04/02/09	Acceptable
Decachlorobiphenyl	67	17-150	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Organochlorine Pesticides

Sample Name: FO 095373
Lab Code: K0902522-003
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	2.5	2.1	5	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	2.5	0.70	5	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	2.5	0.90	5	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	Ui	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	2.5	1.3	5	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	2.5	1.9	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	1.7	JPD	2.5	0.95	5	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	2.5	1.8	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	2.5	0.85	5	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	130	45	5	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	73	10-121	04/02/09	Acceptable
Decachlorobiphenyl	78	17-150	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Organochlorine Pesticides

Sample Name: FO 095374
Lab Code: K0902522-004

Units: ng/L

Basis: NA

Extraction Method: EPA 3535

Level: Low

Analysis Method: 8081A

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	2.5	2.1	5	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	2.5	0.70	5	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	2.5	0.90	5	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	2.5	0.55	5	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	2.5	1.3	5	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	2.5	1.9	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	ND	U	2.5	0.95	5	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	2.5	1.8	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	2.5	0.85	5	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	130	45	5	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	64	10-121	04/02/09	Acceptable
Decachlorobiphenyl	78	17-150	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0902494-3
Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	0.49	0.41	1	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	0.49	0.14	1	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	0.49	0.18	1	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	0.49	0.11	1	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	0.49	0.31	1	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	0.49	0.25	1	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	U	0.49	0.27	1	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	0.49	0.37	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	ND	U	0.49	0.19	1	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	0.49	0.49	1	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	0.49	0.35	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	0.49	0.28	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	0.49	0.17	1	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	0.49	0.32	1	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	0.49	0.28	1	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	25	9.0	1	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	51	10-121	04/02/09	Acceptable
Decachlorobiphenyl	76	17-150	04/02/09	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.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 095371	K0902522-001	60 D	74 D
FO 095372	K0902522-002	55 D	67 D
FO 095373	K0902522-003	73 D	78 D
FO 095374	K0902522-004	64 D	78 D
FO 095375	K0902522-005	55 D	74 D
FO 095376	K0902522-006	44 D	45 D
FO 095377	K0902522-007	59	77
Method Blank	KWG0902494-3	51	76
Lab Control Sample	KWG0902494-1	52	77
Duplicate Lab Control Sample	KWG0902494-2	50	79

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	10-121
Sur2 = Decachlorobiphenyl	17-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Extracted: 03/25/2009
Date Analyzed: 04/02/2009

**Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides**

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG0902494

Analyte Name	Lab Control Sample KWG0902494-1 Lab Control Spike			Duplicate Lab Control Sample KWG0902494-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	8.49	10.0	85	8.02	10.0	80	43-127	6	30
beta-BHC	9.34	10.0	93	9.22	10.0	92	41-129	1	30
gamma-BHC (Lindane)	8.82	10.0	88	8.08	10.0	81	42-128	9	30
delta-BHC	8.66	10.0	87	8.57	10.0	86	47-141	1	30
Heptachlor	8.65	10.0	86	8.25	10.0	83	34-126	5	30
Aldrin	7.35	10.0	74	6.96	10.0	70	10-125	5	30
Heptachlor Epoxide	8.17	10.0	82	7.96	10.0	80	45-124	3	30
gamma-Chlordane	8.72	10.0	87	8.35	10.0	84	48-119	4	30
Endosulfan I	7.96	10.0	80	7.64	10.0	76	30-115	4	30
alpha-Chlordane	8.43	10.0	84	7.97	10.0	80	48-119	6	30
Dieldrin	8.86	10.0	89	8.50	10.0	85	50-120	4	30
4,4'-DDE	9.89	10.0	99	9.45	10.0	95	36-137	4	30
Endrin	9.57	10.0	96	9.42	10.0	94	53-132	2	30
Endosulfan II	8.38	10.0	84	8.57	10.0	86	32-123	2	30
4,4'-DDD	9.93	10.0	99	9.82	10.0	98	38-140	1	30
Endrin Aldehyde	7.39	10.0	74	7.22	10.0	72	30-114	2	30
Endosulfan Sulfate	9.00	10.0	90	8.80	10.0	88	46-120	2	30
4,4'-DDT	10.3	10.0	103	9.96	10.0	100	45-146	3	30
Endrin Ketone	9.00	10.0	90	8.71	10.0	87	45-127	3	30
Methoxychlor	11.4	10.0	114	11.0	10.0	110	48-140	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095371
Lab Code: K0902522-001
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.60		0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.50	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	0.52		0.50	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	0.19	J	0.50	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.50	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	0.20	J	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	3.0	J	5.0	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	0.092	J	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095371
Lab Code: K0902522-001
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	1.0	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	0.23		0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	1.0	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	ND	U	1.0	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	ND	U	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	0.090	J	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	0.15	J	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	2.0		1.0	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095371
Lab Code: K0902522-001

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	72	21-119	04/02/09	Acceptable
Phenol-d6	80	31-121	04/02/09	Acceptable
Nitrobenzene-d5	79	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	83	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	119	30-131	04/02/09	Acceptable
Terphenyl-d14	62	20-140	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095372
Lab Code: K0902522-002
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.32	J	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.50	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	0.35	J	0.50	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.50	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.50	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	3.3	J	5.0	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	ND	U	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	0.062	J	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095372
Lab Code: K0902522-002
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	1.0	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	2.2		0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	1.0	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	0.58	J	1.0	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	ND	U	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	ND	U	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	1.4		1.0	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095372
Lab Code: K0902522-002

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	74	21-119	04/02/09	Acceptable
Phenol-d6	70	31-121	04/02/09	Acceptable
Nitrobenzene-d5	79	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	73	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	97	30-131	04/02/09	Acceptable
Terphenyl-d14	63	20-140	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095373
Lab Code: K0902522-003
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.23	J	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.50	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.50	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.50	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.50	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	0.11	J	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	2.0	J	5.0	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	0.067	J	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095373
Lab Code: K0902522-003
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	1.0	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	0.077	J	0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	1.0	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	0.57	J	1.0	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	0.12	J	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	0.15	J	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	0.16	J	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	0.26		0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	0.85	J	1.0	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	0.058	J	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095373
Lab Code: K0902522-003

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	67	21-119	04/02/09	Acceptable
Phenol-d6	71	31-121	04/02/09	Acceptable
Nitrobenzene-d5	73	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	58	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	88	30-131	04/02/09	Acceptable
Terphenyl-d14	33	20-140	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095374
Lab Code: K0902522-004
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.94		0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.49	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.49	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	0.27	J	0.49	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	0.37	J	0.49	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	3.9	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.49	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	7.5		4.9	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	0.080	J	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.49	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	0.98	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.49	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.49	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	ND	U	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	0.095	J	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095374
Lab Code: K0902522-004
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	0.98	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	3.9	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	12		0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	0.98	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	0.67	J	0.98	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	0.078	J	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	ND	U	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	0.096	J	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	3.2		0.98	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095374
Lab Code: K0902522-004

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	21-119	04/02/09	Acceptable
Phenol-d6	87	31-121	04/02/09	Acceptable
Nitrobenzene-d5	87	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	72	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	96	30-131	04/02/09	Acceptable
Terphenyl-d14	55	20-140	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095375
Lab Code: K0902522-005
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.54		0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.49	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.49	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.49	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.49	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.28	0.28	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	3.9	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.49	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	2.3	J	4.9	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.49	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	0.98	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.49	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.49	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	0.10	J	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	0.075	J	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095375
Lab Code: K0902522-005
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	0.98	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	3.9	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	0.12	J	0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	0.98	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	0.70	J	0.98	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	0.092	J	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	ND	U	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	0.13	J	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	0.13	J	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	3.1		0.98	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095375
Lab Code: K0902522-005

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	62	21-119	04/02/09	Acceptable
Phenol-d6	66	31-121	04/02/09	Acceptable
Nitrobenzene-d5	70	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	68	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	93	30-131	04/02/09	Acceptable
Terphenyl-d14	51	20-140	04/02/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095376
Lab Code: K0902522-006
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: µg/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.76		0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.50	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.50	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.50	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.50	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	2.7	J	5.0	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	ND	U	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	0.097	J	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095376
Lab Code: K0902522-006
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	1.0	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	0.23		0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	1.0	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	0.86	J	1.0	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	ND	U	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	ND	U	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	1.1		1.0	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095376
Lab Code: K0902522-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	69	21-119	04/02/09	Acceptable
Phenol-d6	71	31-121	04/02/09	Acceptable
Nitrobenzene-d5	75	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	64	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	91	30-131	04/02/09	Acceptable
Terphenyl-d14	16	20-140	04/02/09	Outside Control Limits

† 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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095377
Lab Code: K0902522-007
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.037	1	03/30/09	04/08/09	KWG0902636	
Phenol	ND	U	0.53	0.066	1	03/30/09	04/08/09	KWG0902636	
2-Chlorophenol	ND	U	0.53	0.057	1	03/30/09	04/08/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	03/30/09	04/08/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.21	0.031	1	03/30/09	04/08/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
Benzyl Alcohol	ND	U	0.53	0.077	1	03/30/09	04/08/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
2-Methylphenol	ND	U	0.53	0.12	1	03/30/09	04/08/09	KWG0902636	
Hexachloroethane	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.039	1	03/30/09	04/08/09	KWG0902636	
4-Methylphenol†	ND	U	0.53	0.13	1	03/30/09	04/08/09	KWG0902636	
Nitrobenzene	ND	U	0.21	0.030	1	03/30/09	04/08/09	KWG0902636	
Isophorone	ND	U	0.21	0.017	1	03/30/09	04/08/09	KWG0902636	
2-Nitrophenol	ND	U	0.53	0.066	1	03/30/09	04/08/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.2	2.3	1	03/30/09	04/08/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.53	0.049	1	03/30/09	04/08/09	KWG0902636	
Benzoic Acid	ND	U	5.3	1.2	1	03/30/09	04/08/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	03/30/09	04/08/09	KWG0902636	
Naphthalene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
4-Chloroaniline	ND	U	0.21	0.027	1	03/30/09	04/08/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.21	0.029	1	03/30/09	04/08/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.53	0.039	1	03/30/09	04/08/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	03/30/09	04/08/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.53	0.061	1	03/30/09	04/08/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.53	0.033	1	03/30/09	04/08/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.21	0.043	1	03/30/09	04/08/09	KWG0902636	
2-Nitroaniline	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
Acenaphthylene	ND	U	0.21	0.016	1	03/30/09	04/08/09	KWG0902636	
Dimethyl Phthalate	ND	U	0.21	0.022	1	03/30/09	04/08/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.21	0.035	1	03/30/09	04/08/09	KWG0902636	
Acenaphthene	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095377
Lab Code: K0902522-007
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	1.1	0.031	1	03/30/09	04/08/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.2	0.18	1	03/30/09	04/08/09	KWG0902636	
Dibenzofuran	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
4-Nitrophenol	ND	U	2.1	0.30	1	03/30/09	04/08/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
Fluorene	ND	U	0.21	0.029	1	03/30/09	04/08/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.029	1	03/30/09	04/08/09	KWG0902636	
Diethyl Phthalate	0.041	J	0.21	0.013	1	03/30/09	04/08/09	KWG0902636	
4-Nitroaniline	ND	U	1.1	0.020	1	03/30/09	04/08/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.1	0.027	1	03/30/09	04/08/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.21	0.050	1	03/30/09	04/08/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
Hexachlorobenzene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
Pentachlorophenol	ND	U	1.1	0.36	1	03/30/09	04/08/09	KWG0902636	
Phenanthrene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
Anthracene	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
Di-n-butyl Phthalate	0.034	J	0.21	0.024	1	03/30/09	04/08/09	KWG0902636	
Fluoranthene	ND	U	0.21	0.021	1	03/30/09	04/08/09	KWG0902636	
Pyrene	ND	U	0.21	0.020	1	03/30/09	04/08/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.1	0.45	1	03/30/09	04/08/09	KWG0902636	
Benz(a)anthracene	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
Chrysene	ND	U	0.21	0.030	1	03/30/09	04/08/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	03/30/09	04/08/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	03/30/09	04/08/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.21	0.033	1	03/30/09	04/08/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	03/30/09	04/08/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	03/30/09	04/08/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	03/30/09	04/08/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095377
Lab Code: K0902522-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	04/08/09	Acceptable
Phenol-d6	75	31-121	04/08/09	Acceptable
Nitrobenzene-d5	92	29-121	04/08/09	Acceptable
2-Fluorobiphenyl	80	25-109	04/08/09	Acceptable
2,4,6-Tribromophenol	80	30-131	04/08/09	Acceptable
Terphenyl-d14	99	20-140	04/08/09	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 Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0902636-3
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	
Phenol	0.27	J	0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.49	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.49	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.49	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.49	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	3.9	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.49	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	ND	U	4.9	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.49	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	0.98	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.49	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.49	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	ND	U	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0902636-3
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	0.98	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	3.9	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	ND	U	0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	0.98	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	ND	U	0.98	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	0.025	J	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	ND	U	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	ND	U	0.98	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0902636-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	21-119	04/02/09	Acceptable
Phenol-d6	77	31-121	04/02/09	Acceptable
Nitrobenzene-d5	84	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	79	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	88	30-131	04/02/09	Acceptable
Terphenyl-d14	104	20-140	04/02/09	Acceptable

† Analyte Comments

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

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 095371	K0902522-001	72	80	79	83	119	62
FO 095372	K0902522-002	74	70	79	73	97	63
FO 095373	K0902522-003	67	71	73	58	88	33
FO 095374	K0902522-004	79	87	87	72	96	55
FO 095375	K0902522-005	62	66	70	68	93	51
FO 095376	K0902522-006	69	71	75	64	91	16 *
FO 095377	K0902522-007	68	75	92	80	80	99
Method Blank	KWG0902636-3	79	77	84	79	88	104
Lab Control Sample	KWG0902636-1	72	75	80	76	92	99
Duplicate Lab Control Sample	KWG0902636-2	75	75	79	78	94	101

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Extracted: 03/30/2009
Date Analyzed: 04/02/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0902636

Analyte Name	Lab Control Sample KWG0902636-1 Lab Control Spike			Duplicate Lab Control Sample KWG0902636-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	3.80	5.00	76	3.79	5.00	76	39-115	0	30
Phenol	3.89	5.00	78	3.95	5.00	79	39-117	2	30
2-Chlorophenol	4.00	5.00	80	3.93	5.00	79	40-113	2	30
1,3-Dichlorobenzene	2.41	5.00	48	2.42	5.00	48	18-71	1	30
1,4-Dichlorobenzene	2.39	5.00	48	2.44	5.00	49	19-73	2	30
1,2-Dichlorobenzene	2.59	5.00	52	2.52	5.00	50	22-78	3	30
Benzyl Alcohol	4.41	5.00	88	4.28	5.00	86	37-119	3	30
Bis(2-chloroisopropyl) Ether	3.43	5.00	69	3.29	5.00	66	35-113	4	30
2-Methylphenol	3.88	5.00	78	3.50	5.00	70	26-113	10	30
Hexachloroethane	1.77	5.00	35	2.02	5.00	40	11-62	13	30
N-Nitrosodi-n-propylamine	4.06	5.00	81	3.83	5.00	77	32-117	6	30
4-Methylphenol	3.88	5.00	78	3.72	5.00	74	25-118	4	30
Nitrobenzene	3.97	5.00	79	3.82	5.00	76	37-116	4	30
Isophorone	4.07	5.00	81	3.95	5.00	79	39-112	3	30
2-Nitrophenol	4.48	5.00	90	4.50	5.00	90	42-116	0	30
2,4-Dimethylphenol	3.67	5.00	73	2.85	5.00	57	10-113	25	30
Bis(2-chloroethoxy)methane	4.07	5.00	81	3.92	5.00	78	40-113	4	30
2,4-Dichlorophenol	4.66	5.00	93	4.49	5.00	90	39-115	4	30
Benzoic Acid	7.99	15.0	53	6.74	15.0	45	10-102	17	30
1,2,4-Trichlorobenzene	2.81	5.00	56	2.84	5.00	57	21-78	1	30
Naphthalene	3.55	5.00	71	3.46	5.00	69	33-98	3	30
4-Chloroaniline	4.08	5.00	82	4.02	5.00	80	10-119	1	30
Hexachlorobutadiene	2.05	5.00	41	2.14	5.00	43	10-61	4	30
4-Chloro-3-methylphenol	4.19	5.00	84	4.18	5.00	84	37-119	0	30
2-Methylnaphthalene	3.57	5.00	71	3.45	5.00	69	32-95	4	30
Hexachlorocyclopentadiene	1.01	5.00	20	0.998	5.00	20	10-39	1	30
2,4,6-Trichlorophenol	4.40	5.00	88	4.51	5.00	90	40-117	3	30
2,4,5-Trichlorophenol	4.53	5.00	91	4.52	5.00	90	44-116	0	30
2-Chloronaphthalene	3.56	5.00	71	3.46	5.00	69	21-115	3	30
2-Nitroaniline	4.06	5.00	81	4.22	5.00	84	43-124	4	30
Acenaphthylene	4.02	5.00	80	4.19	5.00	84	41-114	4	30
Dimethyl Phthalate	4.27	5.00	85	4.52	5.00	90	47-117	6	30
2,6-Dinitrotoluene	4.54	5.00	91	4.59	5.00	92	45-120	1	30
Acenaphthene	3.93	5.00	79	4.14	5.00	83	38-106	5	30
3-Nitroaniline	4.30	5.00	86	4.61	5.00	92	31-125	7	30
2,4-Dinitrophenol	2.82	5.00	56	2.61	5.00	52	10-121	8	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Extracted: 03/30/2009
Date Analyzed: 04/02/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0902636

Analyte Name	Lab Control Sample KWG0902636-1 Lab Control Spike			Duplicate Lab Control Sample KWG0902636-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Dibenzofuran	3.84	5.00	77	4.10	5.00	82	40-107	6	30
4-Nitrophenol	4.19	5.00	84	4.43	5.00	89	43-133	6	30
2,4-Dinitrotoluene	4.39	5.00	88	4.67	5.00	93	47-125	6	30
Fluorene	4.07	5.00	81	4.35	5.00	87	40-112	7	30
4-Chlorophenyl Phenyl Ether	3.83	5.00	77	3.97	5.00	79	39-108	4	30
Diethyl Phthalate	4.44	5.00	89	4.49	5.00	90	47-120	1	30
4-Nitroaniline	4.33	5.00	87	4.53	5.00	91	36-128	5	30
2-Methyl-4,6-dinitrophenol	3.72	5.00	74	3.46	5.00	69	19-127	7	30
N-Nitrosodiphenylamine	4.12	5.00	82	4.30	5.00	86	36-114	4	30
4-Bromophenyl Phenyl Ether	4.33	5.00	87	4.21	5.00	84	43-110	3	30
Hexachlorobenzene	4.15	5.00	83	4.18	5.00	84	42-107	1	30
Pentachlorophenol	4.37	5.00	87	4.33	5.00	87	28-114	1	30
Phenanthrene	4.07	5.00	81	4.11	5.00	82	43-110	1	30
Anthracene	4.10	5.00	82	4.16	5.00	83	40-110	2	30
Di-n-butyl Phthalate	4.44	5.00	89	4.49	5.00	90	45-135	1	30
Fluoranthene	4.36	5.00	87	4.43	5.00	89	42-119	2	30
Pyrene	4.15	5.00	83	4.21	5.00	84	43-118	2	30
Butyl Benzyl Phthalate	4.30	5.00	86	4.29	5.00	86	48-124	0	30
3,3'-Dichlorobenzidine	4.10	5.00	82	3.99	5.00	80	15-108	3	30
Benz(a)anthracene	4.15	5.00	83	4.19	5.00	84	45-112	1	30
Chrysene	4.03	5.00	81	4.12	5.00	82	47-112	2	30
Bis(2-ethylhexyl) Phthalate	4.27	5.00	85	4.27	5.00	85	32-149	0	30
Di-n-octyl Phthalate	4.20	5.00	84	4.22	5.00	84	49-127	1	30
Benzo(b)fluoranthene	4.16	5.00	83	4.22	5.00	84	45-115	1	30
Benzo(k)fluoranthene	3.97	5.00	79	4.18	5.00	84	46-115	5	30
Benzo(a)pyrene	3.86	5.00	77	3.92	5.00	78	40-117	1	30
Indeno(1,2,3-cd)pyrene	4.24	5.00	85	4.31	5.00	86	44-119	1	30
Dibenz(a,h)anthracene	4.13	5.00	83	4.13	5.00	83	45-118	0	30
Benzo(g,h,i)perylene	4.07	5.00	81	4.16	5.00	83	45-116	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 SR#: K0402522
COC # _____

PROJECT NAME <u>Portland Harbor Stormwater</u> PROJECT NUMBER _____ PROJECT MANAGER <u>Jennifer Shackelford</u> COMPANY ADDRESS <u>City of Portland</u> CITY/STATE/ZIP _____ E-MAIL ADDRESS _____ PHONE # _____ FAX# _____ SAMPLER'S SIGNATURE _____						
SAMPLE I.D. FO 095371 FO 095372 FO 095373 FO 095374 FO 095375 FO 095376 FO 095377	DATE 3/23/09 _____ _____ _____ _____ _____ _____	TIME 1348 1330 1459 1322 1402 1414 1432	LAB I.D. W2 W2 W2 W2 W2 W2 W2	MATRIX 2 2 2 2 2 2 2	NUMBER OF CONTAINERS Semivolatile Organics by GC/MS <input checked="" type="checkbox"/> 625 <input type="checkbox"/> 8270 <input type="checkbox"/> 8270LL <input checked="" type="checkbox"/> Volatile Organics <input type="checkbox"/> 624 <input type="checkbox"/> 8260 <input type="checkbox"/> 8021 <input type="checkbox"/> BTEX <input type="checkbox"/> Hydrocarbons (*see below) <input type="checkbox"/> Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Oil <input type="checkbox"/> Fuel Fingerprint (FIQ) <input type="checkbox"/> NW-HCID Screen <input type="checkbox"/> Oil & Grease/TRPH <input type="checkbox"/> 1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/> PCB's <input type="checkbox"/> Aroclors <input type="checkbox"/> Congeners <input type="checkbox"/> Pesticides/Herbicides - <u>low level</u> <input checked="" type="checkbox"/> 608 <input type="checkbox"/> 8081A <input type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/> Chlorophenolics - 8151M <input type="checkbox"/> Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PCP <input type="checkbox"/> PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/> Metals, Total or Dissolved (See list below) <input type="checkbox"/> Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/> pH, Cond., Cl, SO ₄ , PO ₄ , F, NO ₂ , NO ₃ , BOD, TSS, TDS (circle) <input type="checkbox"/> NH ₃ -N, COD, Total-P, TKN, TOC, DOC (circle) NO ₂ +NO ₃ <input type="checkbox"/> TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/> REMARKS	
REPORT REQUIREMENTS <input checked="" type="checkbox"/> I. Routine Report: Method Blank, Surrogate, as required <input type="checkbox"/> II. Report Dup., MS, MSD as required <input type="checkbox"/> III. Data Validation Report (includes all raw data) <input type="checkbox"/> IV. CLP Deliverable Report <input type="checkbox"/> V. EDD						
INVOICE INFORMATION P.O. # _____ Bill To: _____ TURNAROUND REQUIREMENTS 24 hr. _____ 48 hr. _____ 5 Day _____ Standard (10-15 working days) <input checked="" type="checkbox"/> Provide FAX Results _____ Requested Report Date _____						
RELINQUISHED BY: Signature <u>Kens Klueh</u> Date/Time <u>3/24/09 1110</u> Printed Name <u>Kens Klueh</u> Firm <u>RES</u>						
RECEIVED BY: Signature <u>[Signature]</u> Date/Time <u>3/24/09 1110</u> Printed Name <u>[Name]</u> Firm <u>RES</u>						
RELINQUISHED BY: Signature <u>[Signature]</u> Date/Time <u>3/24/09 1100</u> Printed Name <u>[Name]</u> Firm _____						
RECEIVED BY: Signature <u>[Signature]</u> Date/Time <u>3/24/09 1300</u> Printed Name <u>[Name]</u> Firm <u>RES</u>						
Circle which metals are to be analyzed: Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg *INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE) SPECIAL INSTRUCTIONS/COMMENTS: <p style="font-size: 1.2em;">Please run low-level 8270 + 8081 analysis.</p> <p style="font-size: 1.2em;">Thanks.</p>						

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC P.D

Client / Project: City of Portland Service Request K09 02522

Received: 3-24-09 Opened: 3-24-09 By: bu

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): 8.0

Temperature Blank (°C): 6.7

Thermometer ID: _____

6. If applicable, list Chain of Custody Numbers: _____

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____

8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N

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.)? NA Y N

11. Did all sample labels and tags agree with custody papers? *Indicate in the table below* NA Y N

12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N

13. Were the pH-preserved bottles tested* received at the appropriate pH? *Indicate in the table below* NA Y N

14. Were VOA vials and 1631 Mercury bottles received without headspace? *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
<u>All Samples</u>			<u> </u>							<u>bu</u>

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: left a VM to the client re: temp @ 9:30AM 03/25/09

April 17, 2009

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 03/24/09 12:30.
The following list is a summary of the Work Orders contained in this report, generated on 04/17/09 16:45.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSC0751	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

04/17/09 16:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095371	PSC0751-01	Water	03/23/09 13:48	03/24/09 12:30
FO095372	PSC0751-02	Water	03/23/09 13:30	03/24/09 12:30
FO095373	PSC0751-03	Water	03/23/09 14:59	03/24/09 12:30
FO095374	PSC0751-04	Water	03/23/09 13:22	03/24/09 12:30
FO095375	PSC0751-05	Water	03/23/09 14:02	03/24/09 12:30
FO095376	PSC0751-06	Water	03/23/09 14:14	03/24/09 12:30
FO095377	PSC0751-07	Water	03/23/09 14:32	03/24/09 12:30
FO095378	PSC0751-08	Water	03/23/09 00:00	03/24/09 12:30

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

04/17/09 16:45

Analytical Case Narrative

TestAmerica - Portland, OR

PSC0751

8270 SIM PDX-UIC

Naphthalene was detected in the Method Blank at a level $> 1/2$ the MRL. The save vial was analyzed with a similar result. There was no additional sample to re-extract. The data was flagged and reported.

For sample PSC0751-04 the surrgate recoveries were all above the acceptance limits. Evidence indicates that the sample was accidentlally double spiked. There was no additional sample to re-extract. The data was flagged and reported.

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSC0751-01 (FO095371)				Water			Sampled: 03/23/09 13:48			
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.78	0.506	0.962	ug/l	1x	9030837	03/26/09 11:55	04/02/09 23:17	
Butyl benzyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Diethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Acenaphthene	"	ND	0.0192	0.0192	"	"	"	"	04/04/09 14:41	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	0.0103	0.00962	0.00962	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0141	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0225	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0104	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	0.0411	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	0.0633	0.0192	0.0192	"	"	"	"	"	
Fluorene	"	ND	0.0192	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0103	0.00962	0.00962	"	"	"	"	"	
Naphthalene	"	ND	0.0288	0.0288	"	"	"	"	"	RL1
Phenanthrene	"	0.0538	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	0.0746	0.0192	0.0192	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10			73.5%			25 - 125 %	"			"
Pyrene-d10			65.4%			23 - 150 %	"			"
Benzo (a) pyrene-d12			64.6%			10 - 125 %	"			"

PSC0751-02 (FO095372)

Water

Sampled: 03/23/09 13:30

Bis(2-ethylhexyl)phthalate	EPA 8270m	1.18	0.506	0.962	ug/l	1x	9030837	03/26/09 11:55	03/31/09 01:50	
Butyl benzyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Diethyl phthalate	"	1.82	0.506	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Acenaphthene	"	ND	0.0192	0.0192	"	"	"	"	04/04/09 06:19	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSC0751-02 (FO095372)		Water				Sampled: 03/23/09 13:30				
Benzo (a) anthracene	EPA 8270m	ND	0.00962	0.00962	ug/l	1x	9030837	03/26/09 11:55	04/04/09 06:19	
Benzo (a) pyrene	"	ND	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	0.0142	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	ND	0.0288	0.0288	"	"	"	"	"	RL1
Fluorene	"	ND	0.0192	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00962	0.00962	"	"	"	"	"	
Naphthalene	"	0.0312	0.0192	0.0192	"	"	"	"	"	B, N1
Phenanthrene	"	0.0214	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	0.0295	0.0192	0.0192	"	"	"	"	"	
<hr/>										
Surrogate(s):	Fluorene-d10			84.3%		25 - 125 %	"			"
	Pyrene-d10			80.9%		23 - 150 %	"			"
	Benzo (a) pyrene-d12			76.5%		10 - 125 %	"			"
<hr/>										
PSC0751-03 (FO095373)		Water				Sampled: 03/23/09 14:59				
Bis(2-ethylhexyl)phthalate	EPA 8270m	0.872	0.506	0.962	ug/l	1x	9030837	03/26/09 11:55	03/31/09 02:27	J
Butyl benzyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Diethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Acenaphthene	"	ND	0.0192	0.0192	"	"	"	"	04/04/09 06:48	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	0.0279	0.00962	0.00962	"	"	"	"	"	
Benzo (a) pyrene	"	0.0267	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0234	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0402	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0212	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	0.0573	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	0.138	0.0192	0.0192	"	"	"	"	"	
Fluorene	"	ND	0.0192	0.0192	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSC0751-03 (FO095373)			Water			Sampled: 03/23/09 14:59					
Indeno (1,2,3-cd) pyrene		EPA 8270m	0.0214	0.00962	0.00962	ug/l	1x	9030837	03/26/09 11:55	04/04/09 06:48	B, N1
Naphthalene		"	0.0352	0.0192	0.0192	"	"	"	"	"	
Phenanthrene		"	0.103	0.0192	0.0192	"	"	"	"	"	
Pyrene		"	0.188	0.0192	0.0192	"	"	"	"	"	
Surrogate(s): Fluorene-d10				77.1%		25 - 125 %	"			"	
Pyrene-d10				60.0%		23 - 150 %	"			"	
Benzo (a) pyrene-d12				66.7%		10 - 125 %	"			"	
PSC0751-04 (FO095374)			Water			Sampled: 03/23/09 13:22					
Bis(2-ethylhexyl)phthalate		EPA 8270m	2.48	0.501	0.952	ug/l	1x	9030837	03/26/09 11:55	03/31/09 03:03	N1
Butyl benzyl phthalate		"	ND	0.501	0.952	"	"	"	"	"	
Di-n-butyl phthalate		"	ND	0.501	0.952	"	"	"	"	"	
Di-n-octyl phthalate		"	ND	0.501	0.952	"	"	"	"	"	
Diethyl phthalate		"	ND	0.501	0.952	"	"	"	"	"	
Dimethyl phthalate		"	ND	0.501	0.952	"	"	"	"	"	
Acenaphthene		"	ND	0.0190	0.0190	"	"	"	"	04/04/09 07:17	
Acenaphthylene		"	ND	0.0190	0.0190	"	"	"	"	"	
Anthracene		"	ND	0.0190	0.0190	"	"	"	"	"	
Benzo (a) anthracene		"	ND	0.00952	0.00952	"	"	"	"	"	
Benzo (a) pyrene		"	ND	0.00952	0.00952	"	"	"	"	"	
Benzo (b) fluoranthene		"	ND	0.00952	0.00952	"	"	"	"	"	
Benzo (ghi) perylene		"	ND	0.0190	0.0190	"	"	"	"	"	
Benzo (k) fluoranthene		"	ND	0.00952	0.00952	"	"	"	"	"	
Chrysene		"	0.0224	0.00952	0.00952	"	"	"	"	"	
Dibenzo (a,h) anthracene		"	ND	0.00952	0.00952	"	"	"	"	"	
Fluoranthene		"	0.0289	0.0190	0.0190	"	"	"	"	"	
Fluorene		"	ND	0.0190	0.0190	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene		"	ND	0.00952	0.00952	"	"	"	"	"	
Naphthalene		"	0.0673	0.0190	0.0190	"	"	"	"	"	
Phenanthrene		"	0.0249	0.0190	0.0190	"	"	"	"	"	
Pyrene		"	0.0400	0.0190	0.0190	"	"	"	"	"	
Surrogate(s): Fluorene-d10				137%		25 - 125 %	2x			04/04/09 15:40	
Pyrene-d10				136%		23 - 150 %	"			"	
Benzo (a) pyrene-d12				154%		10 - 125 %	1x			04/04/09 07:17	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9030837

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9030837-BLK1)										Extracted: 03/26/09 11:55				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	03/30/09 19:47	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	03/28/09 20:50	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	N1
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 86.0% Limits: 25-125% "</i>														
<i>Pyrene-d10 98.3% 23-150% "</i>														
<i>Benzo (a) pyrene-d12 97.8% 10-125% "</i>														

LCS (9030837-BS1)

Extracted: 03/26/09 11:55

Bis(2-ethylhexyl)phthalate	EPA 8270m	4.75	0.526	1.00	ug/l	1x	--	4.00	119%	(20-150)	--	--	03/30/09 20:23	
Butyl benzyl phthalate	"	4.53	0.526	1.00	"	"	--	"	113%	"	--	--	"	
Di-n-butyl phthalate	"	3.59	0.526	1.00	"	"	--	"	89.9%	"	--	--	"	
Di-n-octyl phthalate	"	5.23	0.526	1.00	"	"	--	"	131%	"	--	--	"	
Diethyl phthalate	"	3.25	0.526	1.00	"	"	--	"	81.3%	"	--	--	"	
Dimethyl phthalate	"	3.27	0.526	1.00	"	"	--	"	81.8%	"	--	--	"	
Acenaphthene	"	2.54	0.0200	0.0200	"	"	--	2.50	102%	(35-120)	--	--	03/28/09 21:20	
Acenaphthylene	"	2.53	0.0200	0.0200	"	"	--	"	101%	(34-116)	--	--	"	
Anthracene	"	2.42	0.0200	0.0200	"	"	--	"	96.9%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.53	0.0100	0.0100	"	"	--	"	101%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.41	0.0100	0.0100	"	"	--	"	96.3%	(37-131)	--	--	"	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9030837

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9030837-BS1)										Extracted: 03/26/09 11:55				
Benzo (ghi) perylene	EPA 8270m	2.48	0.0200	0.0200	ug/l	1x	--	2.50	99.4%	(26-126)	--	--	03/28/09 21:20	
Benzo (k) fluoranthene	"	2.31	0.0100	0.0100	"	"	--	"	92.6%	(18-145)	--	--	"	
Chrysene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.67	0.0100	0.0100	"	"	--	"	107%	(20-141)	--	--	"	
Fluoranthene	"	2.41	0.0200	0.0200	"	"	--	"	96.5%	(31-125)	--	--	"	
Fluorene	"	2.47	0.0200	0.0200	"	"	--	"	98.9%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.60	0.0100	0.0100	"	"	--	"	104%	(30-135)	--	--	"	
Naphthalene	"	2.45	0.0200	0.0200	"	"	--	"	97.8%	(30-113)	--	--	"	B1
Phenanthrene	"	2.45	0.0200	0.0200	"	"	--	"	98.1%	(34-126)	--	--	"	
Pyrene	"	2.68	0.0200	0.0200	"	"	--	"	107%	(21-141)	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 92.6% Limits: 25-125% "</i>														
<i>Pyrene-d10 109% 23-150% "</i>														
<i>Benzo (a) pyrene-d12 105% 10-125% "</i>														

Matrix Spike (9030837-MS1)

QC Source: PSC0752-03

Extracted: 03/26/09 11:55

Bis(2-ethylhexyl)phthalate	EPA 8270m	5.77	2.53	4.81	ug/l	5x	1.15	3.85	120%	(10-150)	--	--	03/30/09 20:59	
Butyl benzyl phthalate	"	4.82	2.53	4.81	"	"	ND	"	125%	"	--	--	"	
Di-n-butyl phthalate	"	3.64	2.53	4.81	"	"	ND	"	94.6%	"	--	--	"	J
Di-n-octyl phthalate	"	5.51	2.53	4.81	"	"	ND	"	143%	"	--	--	"	
Diethyl phthalate	"	3.25	2.53	4.81	"	"	ND	"	84.5%	"	--	--	"	J
Dimethyl phthalate	"	3.12	2.53	4.81	"	"	ND	"	81.0%	"	--	--	"	J
Acenaphthene	"	2.08	0.0962	0.0962	"	"	ND	2.40	86.5%	(35-120)	--	--	04/04/09 04:47	
Acenaphthylene	"	2.13	0.0962	0.0962	"	"	ND	"	88.7%	(34-116)	--	--	"	
Anthracene	"	2.15	0.0962	0.0962	"	"	ND	"	89.4%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.86	0.0481	0.0481	"	"	ND	"	77.2%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.40	0.0481	0.0481	"	"	ND	"	58.3%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.51	0.0481	0.0481	"	"	ND	"	62.9%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	1.42	0.0962	0.0962	"	"	ND	"	59.1%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.45	0.0481	0.0481	"	"	ND	"	60.4%	(0-145)	--	--	"	
Chrysene	"	1.92	0.0481	0.0481	"	"	0.0137	"	79.3%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.39	0.0481	0.0481	"	"	ND	"	57.9%	(0-141)	--	--	"	
Fluoranthene	"	2.03	0.0962	0.0962	"	"	ND	"	84.5%	(30-125)	--	--	"	
Fluorene	"	2.21	0.0962	0.0962	"	"	ND	"	91.9%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.37	0.0481	0.0481	"	"	ND	"	57.0%	(0-135)	--	--	"	
Naphthalene	"	2.15	0.0962	0.0962	"	"	ND	"	89.5%	(30-126)	--	--	"	B1
Phenanthrene	"	2.24	0.0962	0.0962	"	"	ND	"	93.2%	(34-126)	--	--	"	
Pyrene	"	2.80	0.0962	0.0962	"	"	0.0242	"	115%	(14-168)	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 87.2% Limits: 25-125% "</i>														
<i>Pyrene-d10 119% 23-150% "</i>														

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: **36238**
Project Manager: **Jennifer Shackelford**

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: **9030837**

Water Preparation Method: **3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Matrix Spike (9030837-MS1)

QC Source: **PSC0752-03**

Extracted: **03/26/09 11:55**

Surrogate(s): *Benzo (a) pyrene-d12*

Recovery: *84.9%*

Limits: *10-125% 5x*

04/04/09 04:47

Matrix Spike Dup (9030837-MSD1)

QC Source: **PSC0752-03**

Extracted: **03/26/09 11:55**

Bis(2-ethylhexyl)phthalate	EPA 8270m	5.92	2.53	4.81	ug/l	5x	1.15	3.85	124%	(10-150)	3.10% (50)	03/30/09 21:36	
Butyl benzyl phthalate	"	4.90	2.53	4.81	"	"	ND	"	127%	"	1.65% "	"	
Di-n-butyl phthalate	"	3.69	2.53	4.81	"	"	ND	"	96.0%	"	1.48% "	"	J
Di-n-octyl phthalate	"	5.57	2.53	4.81	"	"	ND	"	145%	"	1.10% "	"	
Diethyl phthalate	"	3.24	2.53	4.81	"	"	ND	"	84.3%	"	0.280% "	"	J
Dimethyl phthalate	"	3.12	2.53	4.81	"	"	ND	"	81.0%	"	0.0262% "	"	J
Acenaphthene	"	2.05	0.0962	0.0962	"	"	ND	2.40	85.3%	(35-120)	1.37% (45)	04/04/09 05:16	
Acenaphthylene	"	2.03	0.0962	0.0962	"	"	ND	"	84.5%	(34-116)	4.90% "	"	
Anthracene	"	2.14	0.0962	0.0962	"	"	ND	"	89.0%	(24-119)	0.473% "	"	
Benzo (a) anthracene	"	1.87	0.0481	0.0481	"	"	ND	"	77.8%	(22-129)	0.748% "	"	
Benzo (a) pyrene	"	1.36	0.0481	0.0481	"	"	ND	"	56.8%	(4-112)	2.67% "	"	
Benzo (b) fluoranthene	"	1.49	0.0481	0.0481	"	"	ND	"	62.2%	(0-136)	1.15% "	"	
Benzo (ghi) perylene	"	1.37	0.0962	0.0962	"	"	ND	"	56.9%	(0-126)	3.92% "	"	
Benzo (k) fluoranthene	"	1.43	0.0481	0.0481	"	"	ND	"	59.3%	(0-145)	1.83% "	"	
Chrysene	"	1.93	0.0481	0.0481	"	"	0.0137	"	79.7%	(7-137)	0.516% "	"	
Dibenzo (a,h) anthracene	"	1.30	0.0481	0.0481	"	"	ND	"	54.2%	(0-141)	6.65% "	"	
Fluoranthene	"	1.93	0.0962	0.0962	"	"	ND	"	80.4%	(30-125)	4.97% "	"	
Fluorene	"	2.21	0.0962	0.0962	"	"	ND	"	92.0%	(27-124)	0.0849% "	"	
Indeno (1,2,3-cd) pyrene	"	1.30	0.0481	0.0481	"	"	ND	"	54.0%	(0-135)	5.34% "	"	
Naphthalene	"	2.05	0.0962	0.0962	"	"	ND	"	85.4%	(30-126)	4.80% "	"	B1
Phenanthrene	"	2.22	0.0962	0.0962	"	"	ND	"	92.3%	(34-126)	0.925% "	"	
Pyrene	"	2.49	0.0962	0.0962	"	"	0.0242	"	103%	(14-168)	11.7% "	"	

Surrogate(s): *Fluorene-d10*

Recovery: *87.3%*

Limits: *25-125% "*

04/04/09 05:16

Pyrene-d10

108%

23-150% "

"

Benzo (a) pyrene-d12

82.8%

10-125% "

"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

04/17/09 16:45

Notes and Definitions

Report Specific Notes:

- B - Analyte was detected in the associated Method Blank.
- B1 - Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.
- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- N1 - See case narrative.
- RL1 - Reporting limit raised due to sample matrix effects.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Howard Holmes, Project Manager

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave. Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSC0751**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.				
REPORT TO: Jennifer Shackelford		P.O. NUMBER: 36238						
ADDRESS:		PRESERVATIVE						
PHONE:		REQUESTED ANALYSES						
FAX:								
PROJECT NAME: Portland Harbor								
PROJECT NUMBER:								
SAMPLED BY: Stormwater Samp								
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCBs-209 Congeners *	PAH-SIM-NIC *	Phthalates *	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	IA WO ID
1 F0095371	3/23/09 1348	X	X		W	2		
2 F0095372	1330	X	X		W	2		
3 F0095373	1459	X	X		W	2		
4 F0095374	1322	X	X		W	2		
5 F0095375	1402	X	X		W	2	(*) (*) (*)	
6 F0095376	1414	X	X		W	2		
7 F0095377	1432	X	X		W	2		
8 F0095378	—	X			W	1	*	
9								
10								
RELEASED BY: Rona Kluch		DATE: 3/24/09		RECEIVED BY: Bob		DATE: 3/24/09		
PRINT NAME: Rona Kluch		FIRM: City of Portland		PRINT NAME: Bob		FIRM: TAP		
RELEASED BY: Bob		DATE: 3/24/09		RECEIVED BY: Janica		DATE: 3/24/09		
PRINT NAME: Bob		FIRM: TAP		PRINT NAME: Janica		FIRM: TAP		
TIME: 12:30		TIME: 12:30		TIME: 12:30		TIME: 12:30		
ADDITIONAL REMARKS: * PCB-209 Congeners to Pace Analytical. Thanks. * * Please use custom NIC analyte list w/ low MRLs. * * * Please use bottle marked "PCB" for PCB analysis. Thanks.								TEMP: 23 PAGE 1 OF 1

TAL-1000(0408)

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSC0751 Date/Time Received: 3/24/09 12:30
Client Name and Project: City of Portland / Portland Harbor

PM to Complete This Section: Yes No
Residual Chlorine Check Required: ☐ ☐ Quarantined: ☐ ☐
Quote #:
Special Instructions:

Time Zone:
☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☐ PDT/PST ☐ OTHER

Unpacking Checks:

Cooler #(s): 1 1 1 1
Temperatures: 23 07 28 09
Digi #1 Digi #2 IR Gun
☐ ☐ ☒ (☐ Plastic ☒ Glass)

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
Other: _____

N/A Yes No

Initials: K

- ☒ ☐ ☐ 1. If ESI client, were temp blanks received? If no, document on NOD.
- ☒ ☐ ☐ 2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
- ☒ ☐ ☐ 3. Chain of Custody present? If no, document on NOD.
- ☒ ☐ ☐ 4. Bottles received intact? If no, document on NOD.
- ☒ ☐ ☐ 5. Sample is not multiphasic? If no, document on NOD.
- ☒ ☐ ☐ 6. Proper Container and preservatives used? If no, document on NOD.
- ☒ ☐ ☐ 7. pH of all samples checked and meet requirements? If no, document on NOD.
- ☒ ☐ ☐ 8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
- ☒ ☐ ☐ 9. HF Dilution required?
- ☒ ☐ ☐ 10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
- ☒ ☐ ☐ 11. Did chain of custody agree with samples received? If no, document on NOD.
- ☒ ☐ ☐ 12. Were VOA/Oil Syringe samples without headspace?
- ☒ ☐ ☐ 13. Were VOA vials preserved? ☐ HCL ☐ Sodium Thiosulfate ☐ Ascorbic Acid
- ☐ ☒ ☐ 14. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 17. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
- ☒ ☐ ☐ 18. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 19. Was Standard Turn Around (TAT) requested?
- ☒ ☐ ☐ 20. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSC0751

Login Checks:

Initials: pm

- | N/A | Yes | No | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 21. Sufficient volume provided for all analysis? If no, document on NOD & contact PM. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 22. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM. |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 23. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 24. Were special log in instructions read and followed? |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 25. Were tests logged checked against the COC? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 26. Were rush notices printed and delivered? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 27. Were short hold notices printed and delivered? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 28. Were subcontract COCs printed? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 29. Was HF dilution logged? |

Labeling and Storage Checks:

Initials: PS

- | N/A | Yes | No | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 30. Were the subcontracted samples/containers put in Sx fridge? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 31. Were sample bottles and COC double checked for dissolved/filtered metals? |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 32. Did the sample ID, Date, and Time from label match what was logged? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 33. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 34. Were HF stickers affixed to each container, and containers stored in Sx fridge? |
- Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

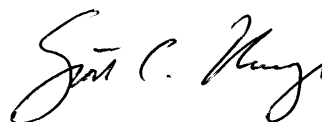
Pace Project #: 1091808
Sample Receipt Date: 03/26/2009
Client Project #: PSC0751
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:

April 15, 2009



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for sample volume. The samples were received within the temperature range specified in the method.

All of the internal standards for this project were recovered within the acceptable ranges for Method 1668A with the exception of three congeners in LCS-19531. Since the quantification of the native PCB congeners was based on internal standards/isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of contaminants at the reporting limits.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native congeners in the lab spikes were recovered at 91-129% with relative percent differences of 1.0-16.4%. These results indicate high degrees of accuracy and precision for these congeners. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

1129

SUBCONTRACT ORDER

1091808

TestAmerica Portland

PSC0751

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone: (612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: 1.4 °C Ice: (Y) / N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSC0751-01	Water		Sampled: 03/23/09 13:48	1091808001
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:48	***209 Congeners*** to Pace
Containers Supplied:				FO 095371
1L Amber - Unpres. (A)				
Sample ID: PSC0751-02	Water		Sampled: 03/23/09 13:30	002
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:30	***209 Congeners*** to Pace
Containers Supplied:				FO 095372
1L Amber - Unpres. (A)				
Sample ID: PSC0751-03	Water		Sampled: 03/23/09 14:59	003
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:59	***209 Congeners*** to Pace
Containers Supplied:				FO 095373
1L Amber - Unpres. (A)				
Sample ID: PSC0751-04	Water		Sampled: 03/23/09 13:22	004
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:22	***209 Congeners*** to Pace
Containers Supplied:				FO 095374
1L Amber - Unpres. (A)				
Sample ID: PSC0751-05	Water		Sampled: 03/23/09 14:02	005
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:02	***209 Congeners*** to Pace
Containers Supplied:				FO 095375
1L Amber - Unpres. (A)				
Sample ID: PSC0751-06	Water		Sampled: 03/23/09 14:14	006
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:14	***209 Congeners*** to Pace
Containers Supplied:				FO 095376
1L Amber - Unpres. (A)				

Amia Mja
Released By

3/25/09
Date/Time

S/E Pace T=1.4°C 3-24-09 9:22
Received By Date/Time

SUBCONTRACT ORDER

1091808

TestAmerica Portland

PSC0751

Analysis	Units	Due	Expires	Comments
Sample ID: PSC0751-07	Water		Sampled: 03/23/09 14:32	1091808007
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:32	***209 Congeners*** to Pace
Containers Supplied:				FO 095377
1L Amber - Unpres. (A)				
Sample ID: PSC0751-08	Water		Sampled: 03/23/09 00:00	008
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				FO 095378
1L Amber - Unpres. (A)				

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 1091808

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 9796 8712 2655

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used 86344042 179425

Type of Ice: Wet Blue None

Temp Blank: Yes ☒ No

Cooler Temperature 1.4°C

Biological Tissue is Frozen: Yes No

☐ Samples on ice, cooling process has begun

Temp should be above freezing to 6°C

Comments:

Date and initials of person examining contents: 3-26-09

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Field Data Required? Y / N

Comments/ Resolution: _____

Project Manager Review: _____

Date: 03/26/09

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSC0751-01;FO 095371		
Lab Sample ID	1091808001		
Filename	U90405A_12		
Injected By	BAL		
Total Amount Extracted	1000 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/23/2009
ICAL ID	U90405A02	Received	03/26/2009
CCal Filename(s)	U90405A_01	Extracted	04/03/2009
Method Blank ID	BLANK-19530	Analyzed	04/06/2009 01:24

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.576	3.19	2.0	0.938	47
13C-4-MoCB	3	9.451	3.31	2.0	1.11	56
13C-2,2'-DiCB	4	9.762	1.63	2.0	0.995	50
13C-4,4'-DiCB	15	17.693	1.59	2.0	1.71	86
13C-2,2',6-TrCB	19	14.027	1.04	2.0	1.18	59
13C-3,4,4'-TrCB	37	26.225	1.08	2.0	2.43	121
13C-2,2',6,6'-TeCB	54	17.992	0.80	2.0	1.32	66
13C-3,4,4',5-TeCB	81	33.870	0.80	2.0	2.28	114
13C-3,3',4,4'-TeCB	77	34.474	0.80	2.0	2.25	112
13C-2,2',4,6,6'-PeCB	104	24.749	1.55	2.0	1.60	80
13C-2,3,3',4,4'-PeCB	105	38.263	1.64	2.0	2.31	116
13C-2,3,4,4',5-PeCB	114	37.575	1.63	2.0	2.41	120
13C-2,3',4,4',5-PeCB	118	37.039	1.62	2.0	2.38	119
13C-2,3',4,4',5'-PeCB	123	36.687	1.60	2.0	2.42	121
13C-3,3',4,4',5-PeCB	126	41.649	1.61	2.0	2.21	111
13C-2,2',4,4',6,6'-HxCB	155	31.288	1.27	2.0	1.82	91
13C-HxCB (156/157)	156/157	44.852	1.26	4.0	4.36	109
13C-2,3',4,4',5,5'-HxCB	167	43.661	1.26	2.0	2.29	114
13C-3,3',4,4',5,5'-HxCB	169	48.339	1.24	2.0	2.05	103
13C-2,2',3,4',5,6,6'-HpCB	188	37.558	1.04	2.0	2.35	117
13C-2,3,3',4,4',5,5'-HpCB	189	50.985	1.08	2.0	2.71	135
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.326	0.92	2.0	2.24	112
13C-2,3,3',4,4',5,5',6-OxCB	205	53.701	0.90	2.0	1.94	97
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.489	0.75	2.0	1.84	92
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.403	0.79	2.0	2.10	105
13C--DeCB	209	57.149	0.69	2.0	1.69	84
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.497	1.03	2.0	2.30	115
13C-2,3,3',5,5'-PeCB	111	34.591	1.55	2.0	1.96	98
13C-2,2',3,3',5,5',6-HpCB	178	40.878	1.02	2.0	1.89	94
Recovery Standards						
13C-2,5-DiCB	9	12.541	1.62	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.693	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.573	1.52	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.375	1.33	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.183	0.93	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-01;FO 095371
Lab Sample ID 1091808001
Filename U90405A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.249
2		---	---	ND	---	0.249
3		---	---	ND	---	0.249
4		---	---	ND	---	0.249
5		---	---	ND	---	0.249
6		---	---	ND	---	0.249
7		---	---	ND	---	0.249
8		---	---	ND	---	0.249
9		---	---	ND	---	0.249
10		---	---	ND	---	0.249
11		---	---	ND	---	1.49
12	12/13	---	---	ND	---	0.498
13	12/13	---	---	ND	---	0.498
14		---	---	ND	---	0.249
15		---	---	ND	---	0.249
16		---	---	ND	---	0.249
17		---	---	ND	---	0.249
18	18/30	---	---	ND	---	0.498
19		---	---	ND	---	0.249
20	20/28	---	---	ND	---	0.498
21	21/33	---	---	ND	---	0.498
22		---	---	ND	---	0.249
23		---	---	ND	---	0.249
24		---	---	ND	---	0.249
25		---	---	ND	---	0.249
26	26/29	---	---	ND	---	0.498
27		---	---	ND	---	0.249
28	20/28	---	---	ND	---	0.498
29	26/29	---	---	ND	---	0.498
30	18/30	---	---	ND	---	0.498
31		---	---	ND	---	0.249
32		---	---	ND	---	0.249
33	21/33	---	---	ND	---	0.498
34		---	---	ND	---	0.249
35		---	---	ND	---	0.249
36		---	---	ND	---	0.249
37		---	---	ND	---	0.249
38		---	---	ND	---	0.249
39		---	---	ND	---	0.249
40	40/41/71	---	---	ND	---	1.49
41	40/41/71	---	---	ND	---	1.49
42		---	---	ND	---	0.498
43		---	---	ND	---	0.498
44	44/47/65	---	---	ND	---	1.49
45	45/51	---	---	ND	---	0.996
46		---	---	ND	---	0.498
47	44/47/65	---	---	ND	---	1.49
48		---	---	ND	---	0.498

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*= See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-01;FO 095371
Lab Sample ID 1091808001
Filename U90405A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.996
50	50/53	---	---	ND	---	0.996
51	45/51	---	---	ND	---	0.996
52		---	---	ND	---	0.498
53	50/53	---	---	ND	---	0.996
54		---	---	ND	---	0.498
55		---	---	ND	---	0.498
56		---	---	ND	---	0.498
57		---	---	ND	---	0.498
58		---	---	ND	---	0.498
59	59/62/75	---	---	ND	---	1.49
60		---	---	ND	---	0.498
61	61/70/74/76	---	---	ND	---	1.99
62	59/62/75	---	---	ND	---	1.49
63		---	---	ND	---	0.498
64		---	---	ND	---	0.498
65	44/47/65	---	---	ND	---	1.49
66		---	---	ND	---	0.498
67		---	---	ND	---	0.498
68		---	---	ND	---	0.498
69	49/69	---	---	ND	---	0.996
70	61/70/74/76	---	---	ND	---	1.99
71	40/41/71	---	---	ND	---	1.49
72		---	---	ND	---	0.498
73		---	---	ND	---	0.498
74	61/70/74/76	---	---	ND	---	1.99
75	59/62/75	---	---	ND	---	1.49
76	61/70/74/76	---	---	ND	---	1.99
77		---	---	ND	---	0.498
78		---	---	ND	---	0.498
79		---	---	ND	---	0.498
80		---	---	ND	---	0.498
81		---	---	ND	---	0.498
82		---	---	ND	---	0.498
83		---	---	ND	---	0.498
84		---	---	ND	---	0.498
85	85/116/117	---	---	ND	---	1.49
86	86/87/97/108/119/125	---	---	ND	---	2.99
87	86/87/97/108/119/125	---	---	ND	---	2.99
88	88/91	---	---	ND	---	0.996
89		---	---	ND	---	0.498
90	90/101/113	---	---	ND	---	1.49
91	88/91	---	---	ND	---	0.996
92		---	---	ND	---	0.498
93	93/98/100/102	---	---	ND	---	1.99
94		---	---	ND	---	0.498
95		---	---	ND	---	0.498
96		---	---	ND	---	0.498

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*= See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-01;FO 095371
Lab Sample ID 1091808001
Filename U90405A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	2.99
98	93/98/100/102	---	---	ND	---	1.99
99		---	---	ND	---	0.498
100	93/98/100/102	---	---	ND	---	1.99
101	90/101/113	---	---	ND	---	1.49
102	93/98/100/102	---	---	ND	---	1.99
103		---	---	ND	---	0.498
104		---	---	ND	---	0.498
105		---	---	ND	---	0.498
106		---	---	ND	---	0.498
107	107/124	---	---	ND	---	0.996
108	86/87/97/108/119/125	---	---	ND	---	2.99
109		---	---	ND	---	0.498
110	110/115	33.736	1.58	1.03	---	0.996
111		---	---	ND	---	0.498
112		---	---	ND	---	0.498
113	90/101/113	---	---	ND	---	1.49
114		---	---	ND	---	0.498
115	110/115	33.736	1.58	(1.03)	---	0.996
116	85/116/117	---	---	ND	---	1.49
117	85/116/117	---	---	ND	---	1.49
118		37.072	1.56	0.923	---	0.498
119	86/87/97/108/119/125	---	---	ND	---	2.99
120		---	---	ND	---	0.498
121		---	---	ND	---	0.498
122		---	---	ND	---	0.498
123		---	---	ND	---	0.498
124	107/124	---	---	ND	---	0.996
125	86/87/97/108/119/125	---	---	ND	---	2.99
126		---	---	ND	---	0.498
127		---	---	ND	---	0.498
128	128/166	---	---	ND	---	0.996
129	129/138/163	---	---	ND	---	1.49
130		---	---	ND	---	0.498
131		---	---	ND	---	0.498
132		---	---	ND	---	0.498
133		---	---	ND	---	0.498
134	134/143	---	---	ND	---	0.996
135	135/151	---	---	ND	---	0.996
136		---	---	ND	---	0.498
137		---	---	ND	---	0.498
138	129/138/163	---	---	ND	---	1.49
139	139/140	---	---	ND	---	0.996
140	139/140	---	---	ND	---	0.996
141		---	---	ND	---	0.498
142		---	---	ND	---	0.498
143	134/143	---	---	ND	---	0.996
144		---	---	ND	---	0.498

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-01;FO 095371
Lab Sample ID 1091808001
Filename U90405A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.498
146		---	---	ND	---	0.498
147	147/149	---	---	ND	---	0.996
148		---	---	ND	---	0.498
149	147/149	---	---	ND	---	0.996
150		---	---	ND	---	0.498
151	135/151	---	---	ND	---	0.996
152		---	---	ND	---	0.498
153	153/168	---	---	ND	---	0.996
154		---	---	ND	---	0.498
155		---	---	ND	---	0.498
156	156/157	---	---	ND	---	0.996
157	156/157	---	---	ND	---	0.996
158		---	---	ND	---	0.498
159		---	---	ND	---	0.498
160		---	---	ND	---	0.498
161		---	---	ND	---	0.498
162		---	---	ND	---	0.498
163	129/138/163	---	---	ND	---	1.49
164		---	---	ND	---	0.498
165		---	---	ND	---	0.498
166	128/166	---	---	ND	---	0.996
167		---	---	ND	---	0.498
168	153/168	---	---	ND	---	0.996
169		---	---	ND	---	0.498
170		---	---	ND	---	0.498
171	171/173	---	---	ND	---	0.996
172		---	---	ND	---	0.498
173	171/173	---	---	ND	---	0.996
174		---	---	ND	---	0.498
175		---	---	ND	---	0.498
176		---	---	ND	---	0.498
177		---	---	ND	---	0.498
178		---	---	ND	---	0.498
179		---	---	ND	---	0.498
180	180/193	---	---	ND	---	0.996
181		---	---	ND	---	0.498
182		---	---	ND	---	0.498
183	183/185	---	---	ND	---	0.996
184		---	---	ND	---	0.498
185	183/185	---	---	ND	---	0.996
186		---	---	ND	---	0.498
187		---	---	ND	---	0.498
188		---	---	ND	---	0.498
189		---	---	ND	---	0.498
190		---	---	ND	---	0.498
191		---	---	ND	---	0.498
192		---	---	ND	---	0.498

Conc = Concentration
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-01;FO 095371
Lab Sample ID 1091808001
Filename U90405A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.996
194		---	---	ND	---	0.747
195		---	---	ND	---	0.747
196		---	---	ND	---	0.747
197	197/200	---	---	ND	---	1.49
198	198/199	---	---	ND	---	1.49
199	198/199	---	---	ND	---	1.49
200	197/200	---	---	ND	---	1.49
201		---	---	ND	---	0.747
202		---	---	ND	---	0.747
203		---	---	ND	---	0.747
204		---	---	ND	---	0.747
205		---	---	ND	---	0.747
206		---	---	ND	---	0.747
207		---	---	ND	---	0.747
208		---	---	ND	---	0.747
209		---	---	ND	---	0.747

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-01;FO 095371
Lab Sample ID 1091808001
Filename U90405A_12

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	1.95
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 1.95

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSC0751-02;FO 095372		
Lab Sample ID	1091808002		
Filename	U90405B_05		
Injected By	BAL		
Total Amount Extracted	969 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/23/2009
ICAL ID	U90405B02	Received	03/26/2009
CCal Filename(s)	U90405B_01	Extracted	04/03/2009
Method Blank ID	BLANK-19530	Analyzed	04/06/2009 07:48

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.564	3.27	2.0	0.877	44
13C-4-MoCB	3	9.427	3.37	2.0	0.977	49
13C-2,2'-DiCB	4	9.738	1.53	2.0	0.910	45
13C-4,4'-DiCB	15	17.669	1.63	2.0	1.40	70
13C-2,2',6-TrCB	19	13.979	0.98	2.0	1.06	53
13C-3,4,4'-TrCB	37	26.174	1.07	2.0	2.00	100
13C-2,2',6,6'-TeCB	54	17.976	0.81	2.0	1.02	51
13C-3,4,4',5-TeCB	81	33.803	0.80	2.0	2.01	101
13C-3,3',4,4'-TeCB	77	34.423	0.80	2.0	2.04	102
13C-2,2',4,6,6'-PeCB	104	24.699	1.60	2.0	1.29	64
13C-2,3,3',4,4'-PeCB	105	38.196	1.59	2.0	2.02	101
13C-2,3,4,4',5-PeCB	114	37.508	1.56	2.0	2.01	101
13C-2,3',4,4',5-PeCB	118	36.972	1.56	2.0	2.02	101
13C-2,3',4,4',5'-PeCB	123	36.620	1.57	2.0	2.08	104
13C-3,3',4,4',5-PeCB	126	41.566	1.59	2.0	1.91	95
13C-2,2',4,4',6,6'-HxCB	155	31.238	1.27	2.0	1.56	78
13C-HxCB (156/157)	156/157	44.768	1.25	4.0	3.80	95
13C-2,3',4,4',5,5'-HxCB	167	43.578	1.26	2.0	1.98	99
13C-3,3',4,4',5,5'-HxCB	169	48.289	1.29	2.0	1.74	87
13C-2,2',3,4',5,6,6'-HpCB	188	37.492	1.04	2.0	2.07	103
13C-2,3,3',4,4',5,5'-HpCB	189	50.921	1.05	2.0	2.38	119
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.242	0.89	2.0	2.09	104
13C-2,3,3',4,4',5,5',6-OxCB	205	53.593	0.96	2.0	1.76	88
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.403	0.79	2.0	1.70	85
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.361	0.79	2.0	1.84	92
13C--DeCB	209	57.063	0.67	2.0	1.56	78
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.446	1.01	2.0	1.91	96
13C-2,3,3',5,5'-PeCB	111	34.524	1.53	2.0	1.66	83
13C-2,2',3,3',5,5',6-HpCB	178	40.811	1.04	2.0	1.65	82
Recovery Standards						
13C-2,5-DiCB	9	12.506	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.643	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.506	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.308	1.31	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.098	0.96	2.0	NA	NA

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-02;FO 095372
Lab Sample ID 1091808002
Filename U90405B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.258
2		---	---	ND	---	0.258
3		---	---	ND	---	0.258
4		---	---	ND	---	0.258
5		---	---	ND	---	0.258
6		---	---	ND	---	0.258
7		---	---	ND	---	0.258
8		---	---	ND	---	0.258
9		---	---	ND	---	0.258
10		---	---	ND	---	0.258
11		---	---	ND	---	1.55
12	12/13	---	---	ND	---	0.516
13	12/13	---	---	ND	---	0.516
14		---	---	ND	---	0.258
15		---	---	ND	---	0.258
16		---	---	ND	---	0.258
17		---	---	ND	---	0.258
18	18/30	---	---	ND	---	0.516
19		---	---	ND	---	0.258
20	20/28	---	---	ND	---	0.516
21	21/33	---	---	ND	---	0.516
22		---	---	ND	---	0.258
23		---	---	ND	---	0.258
24		---	---	ND	---	0.258
25		---	---	ND	---	0.258
26	26/29	---	---	ND	---	0.516
27		---	---	ND	---	0.258
28	20/28	---	---	ND	---	0.516
29	26/29	---	---	ND	---	0.516
30	18/30	---	---	ND	---	0.516
31		---	---	ND	---	0.258
32		---	---	ND	---	0.258
33	21/33	---	---	ND	---	0.516
34		---	---	ND	---	0.258
35		---	---	ND	---	0.258
36		---	---	ND	---	0.258
37		---	---	ND	---	0.258
38		---	---	ND	---	0.258
39		---	---	ND	---	0.258
40	40/41/71	---	---	ND	---	1.55
41	40/41/71	---	---	ND	---	1.55
42		---	---	ND	---	0.516
43		---	---	ND	---	0.516
44	44/47/65	---	---	ND	---	1.55
45	45/51	---	---	ND	---	1.03
46		---	---	ND	---	0.516
47	44/47/65	---	---	ND	---	1.55
48		---	---	ND	---	0.516

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-02;FO 095372
Lab Sample ID 1091808002
Filename U90405B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.03
50	50/53	---	---	ND	---	1.03
51	45/51	---	---	ND	---	1.03
52		---	---	ND	---	0.516
53	50/53	---	---	ND	---	1.03
54		---	---	ND	---	0.516
55		---	---	ND	---	0.516
56		---	---	ND	---	0.516
57		---	---	ND	---	0.516
58		---	---	ND	---	0.516
59	59/62/75	---	---	ND	---	1.55
60		---	---	ND	---	0.516
61	61/70/74/76	---	---	ND	---	2.06
62	59/62/75	---	---	ND	---	1.55
63		---	---	ND	---	0.516
64		---	---	ND	---	0.516
65	44/47/65	---	---	ND	---	1.55
66		---	---	ND	---	0.516
67		---	---	ND	---	0.516
68		---	---	ND	---	0.516
69	49/69	---	---	ND	---	1.03
70	61/70/74/76	---	---	ND	---	2.06
71	40/41/71	---	---	ND	---	1.55
72		---	---	ND	---	0.516
73		---	---	ND	---	0.516
74	61/70/74/76	---	---	ND	---	2.06
75	59/62/75	---	---	ND	---	1.55
76	61/70/74/76	---	---	ND	---	2.06
77		---	---	ND	---	0.516
78		---	---	ND	---	0.516
79		---	---	ND	---	0.516
80		---	---	ND	---	0.516
81		---	---	ND	---	0.516
82		---	---	ND	---	0.516
83		---	---	ND	---	0.516
84		---	---	ND	---	0.516
85	85/116/117	---	---	ND	---	1.55
86	86/87/97/108/119/125	---	---	ND	---	3.10
87	86/87/97/108/119/125	---	---	ND	---	3.10
88	88/91	---	---	ND	---	1.03
89		---	---	ND	---	0.516
90	90/101/113	31.539	1.63	2.01	---	1.55
91	88/91	---	---	ND	---	1.03
92		---	---	ND	---	0.516
93	93/98/100/102	---	---	ND	---	2.06
94		---	---	ND	---	0.516
95		28.169	1.57	1.41	---	0.516
96		---	---	ND	---	0.516

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSC0751-02;FO 095372
Lab Sample ID 1091808002
Filename U90405B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.10
98	93/98/100/102	---	---	ND	---	2.06
99		---	---	ND	---	0.516
100	93/98/100/102	---	---	ND	---	2.06
101	90/101/113	31.539	1.63	(2.01)	---	1.55
102	93/98/100/102	---	---	ND	---	2.06
103		---	---	ND	---	0.516
104		---	---	ND	---	0.516
105		---	---	ND	---	0.516
106		---	---	ND	---	0.516
107	107/124	---	---	ND	---	1.03
108	86/87/97/108/119/125	---	---	ND	---	3.10
109		---	---	ND	---	0.516
110	110/115	33.669	1.58	1.57	---	1.03
111		---	---	ND	---	0.516
112		---	---	ND	---	0.516
113	90/101/113	31.539	1.63	(2.01)	---	1.55
114		---	---	ND	---	0.516
115	110/115	33.669	1.58	(1.57)	---	1.03
116	85/116/117	---	---	ND	---	1.55
117	85/116/117	---	---	ND	---	1.55
118		37.005	1.59	1.18	---	0.516
119	86/87/97/108/119/125	---	---	ND	---	3.10
120		---	---	ND	---	0.516
121		---	---	ND	---	0.516
122		---	---	ND	---	0.516
123		---	---	ND	---	0.516
124	107/124	---	---	ND	---	1.03
125	86/87/97/108/119/125	---	---	ND	---	3.10
126		---	---	ND	---	0.516
127		---	---	ND	---	0.516
128	128/166	---	---	ND	---	1.03
129	129/138/163	40.342	1.28	6.38	---	1.55
130		---	---	ND	---	0.516
131		---	---	ND	---	0.516
132		37.039	1.32	2.10	---	0.516
133		---	---	ND	---	0.516
134	134/143	---	---	ND	---	1.03
135	135/151	34.708	1.24	2.87	---	1.03
136		31.975	1.28	0.910	---	0.516
137		---	---	ND	---	0.516
138	129/138/163	40.342	1.28	(6.38)	---	1.55
139	139/140	---	---	ND	---	1.03
140	139/140	---	---	ND	---	1.03
141		39.218	1.28	1.46	---	0.516
142		---	---	ND	---	0.516
143	134/143	---	---	ND	---	1.03
144		---	---	ND	---	0.516

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-02;FO 095372
Lab Sample ID 1091808002
Filename U90405B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.516
146		38.363	1.27	0.859	---	0.516
147	147/149	35.714	1.30	6.33	---	1.03
148		---	---	ND	---	0.516
149	147/149	35.714	1.30	(6.33)	---	1.03
150		---	---	ND	---	0.516
151	135/151	34.708	1.24	(2.87)	---	1.03
152		---	---	ND	---	0.516
153	153/168	39.034	1.30	6.91	---	1.03
154		---	---	ND	---	0.516
155		---	---	ND	---	0.516
156	156/157	---	---	ND	---	1.03
157	156/157	---	---	ND	---	1.03
158		40.761	1.29	0.550	---	0.516
159		---	---	ND	---	0.516
160		---	---	ND	---	0.516
161		---	---	ND	---	0.516
162		---	---	ND	---	0.516
163	129/138/163	40.342	1.28	(6.38)	---	1.55
164		---	---	ND	---	0.516
165		---	---	ND	---	0.516
166	128/166	---	---	ND	---	1.03
167		---	---	ND	---	0.516
168	153/168	39.034	1.30	(6.91)	---	1.03
169		---	---	ND	---	0.516
170		47.585	1.06	2.33	---	0.516
171	171/173	---	---	ND	---	1.03
172		---	---	ND	---	0.516
173	171/173	---	---	ND	---	1.03
174		42.672	1.07	2.83	---	0.516
175		---	---	ND	---	0.516
176		---	---	ND	---	0.516
177		43.142	1.06	1.55	---	0.516
178		40.828	1.06	0.541	---	0.516
179		37.844	1.04	1.17	---	0.516
180	180/193	46.277	1.06	5.25	---	1.03
181		---	---	ND	---	0.516
182		---	---	ND	---	0.516
183	183/185	42.471	1.05	1.93	---	1.03
184		---	---	ND	---	0.516
185	183/185	42.471	1.05	(1.93)	---	1.03
186		---	---	ND	---	0.516
187		41.800	1.06	3.20	---	0.516
188		---	---	ND	---	0.516
189		---	---	ND	---	0.516
190		---	---	ND	---	0.516
191		---	---	ND	---	0.516
192		---	---	ND	---	0.516

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-02;FO 095372
Lab Sample ID 1091808002
Filename U90405B_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.277	1.06	(5.25)	---	1.03
194		---	---	ND	---	0.774
195		---	---	ND	---	0.774
196		---	---	ND	---	0.774
197	197/200	---	---	ND	---	1.55
198	198/199	---	---	ND	---	1.55
199	198/199	---	---	ND	---	1.55
200	197/200	---	---	ND	---	1.55
201		---	---	ND	---	0.774
202		---	---	ND	---	0.774
203		---	---	ND	---	0.774
204		---	---	ND	---	0.774
205		---	---	ND	---	0.774
206		---	---	ND	---	0.774
207		---	---	ND	---	0.774
208		---	---	ND	---	0.774
209		---	---	ND	---	0.774

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
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*= See Discussion
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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-02;FO 095372
Lab Sample ID 1091808002
Filename U90405B_05

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	6.16
Total Hexachloro Biphenyls	28.4
Total Heptachloro Biphenyls	18.8
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	53.3

ND = Not Detected

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSC0751-03;FO 095373		
Lab Sample ID	1091808003		
Filename	U90405B_06		
Injected By	BAL		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/23/2009
ICAL ID	U90405B02	Received	03/26/2009
CCal Filename(s)	U90405B_01	Extracted	04/03/2009
Method Blank ID	BLANK-19530	Analyzed	04/06/2009 08:52

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.564	3.26	2.0	0.863	43
13C-4-MoCB	3	9.427	3.28	2.0	1.03	51
13C-2,2'-DiCB	4	9.750	1.56	2.0	0.928	46
13C-4,4'-DiCB	15	17.669	1.57	2.0	1.55	77
13C-2,2',6-TrCB	19	14.027	1.08	2.0	1.06	53
13C-3,4,4'-TrCB	37	26.191	1.06	2.0	2.05	102
13C-2,2',6,6'-TeCB	54	17.976	0.82	2.0	1.05	53
13C-3,4,4',5-TeCB	81	33.819	0.80	2.0	1.94	97
13C-3,3',4,4'-TeCB	77	34.440	0.79	2.0	1.93	96
13C-2,2',4,6,6'-PeCB	104	24.716	1.59	2.0	1.38	69
13C-2,3,3',4,4'-PeCB	105	38.229	1.60	2.0	1.90	95
13C-2,3,4,4',5-PeCB	114	37.541	1.59	2.0	1.90	95
13C-2,3',4,4',5-PeCB	118	36.988	1.58	2.0	1.93	97
13C-2,3',4,4',5'-PeCB	123	36.636	1.56	2.0	1.99	99
13C-3,3',4,4',5-PeCB	126	41.599	1.58	2.0	1.75	88
13C-2,2',4,4',6,6'-HxCB	155	31.254	1.26	2.0	1.63	82
13C-HxCB (156/157)	156/157	44.801	1.27	4.0	3.65	91
13C-2,3',4,4',5,5'-HxCB	167	43.611	1.27	2.0	1.91	96
13C-3,3',4,4',5,5'-HxCB	169	48.305	1.25	2.0	1.71	86
13C-2,2',3,4',5,6,6'-HpCB	188	37.525	1.04	2.0	2.05	103
13C-2,3,3',4,4',5,5'-HpCB	189	50.942	1.05	2.0	2.19	109
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.275	0.91	2.0	2.00	100
13C-2,3,3',4,4',5,5',6-OxCB	205	53.657	0.88	2.0	1.64	82
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.446	0.78	2.0	1.57	79
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.382	0.78	2.0	1.75	87
13C--DeCB	209	57.105	0.70	2.0	1.46	73
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.446	1.00	2.0	2.01	101
13C-2,3,3',5,5'-PeCB	111	34.540	1.58	2.0	1.72	86
13C-2,2',3,3',5,5',6-HpCB	178	40.828	1.05	2.0	1.72	86
Recovery Standards						
13C-2,5-DiCB	9	12.518	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.659	0.82	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.523	1.61	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.325	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.140	0.92	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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ND = Not Detected
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-03;FO 095373
Lab Sample ID 1091808003
Filename U90405B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.243
2		---	---	ND	---	0.243
3		---	---	ND	---	0.243
4		---	---	ND	---	0.243
5		---	---	ND	---	0.243
6		---	---	ND	---	0.243
7		---	---	ND	---	0.243
8		---	---	ND	---	0.243
9		---	---	ND	---	0.243
10		---	---	ND	---	0.243
11		---	---	ND	---	1.46
12	12/13	---	---	ND	---	0.486
13	12/13	---	---	ND	---	0.486
14		---	---	ND	---	0.243
15		---	---	ND	---	0.243
16		---	---	ND	---	0.243
17		---	---	ND	---	0.243
18	18/30	---	---	ND	---	0.486
19		---	---	ND	---	0.243
20	20/28	---	---	ND	---	0.486
21	21/33	---	---	ND	---	0.486
22		---	---	ND	---	0.243
23		---	---	ND	---	0.243
24		---	---	ND	---	0.243
25		---	---	ND	---	0.243
26	26/29	---	---	ND	---	0.486
27		---	---	ND	---	0.243
28	20/28	---	---	ND	---	0.486
29	26/29	---	---	ND	---	0.486
30	18/30	---	---	ND	---	0.486
31		---	---	ND	---	0.243
32		---	---	ND	---	0.243
33	21/33	---	---	ND	---	0.486
34		---	---	ND	---	0.243
35		---	---	ND	---	0.243
36		---	---	ND	---	0.243
37		---	---	ND	---	0.243
38		---	---	ND	---	0.243
39		---	---	ND	---	0.243
40	40/41/71	---	---	ND	---	1.46
41	40/41/71	---	---	ND	---	1.46
42		---	---	ND	---	0.486
43		---	---	ND	---	0.486
44	44/47/65	---	---	ND	---	1.46
45	45/51	---	---	ND	---	0.973
46		---	---	ND	---	0.486
47	44/47/65	---	---	ND	---	1.46
48		---	---	ND	---	0.486

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-03;FO 095373
Lab Sample ID 1091808003
Filename U90405B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.973
50	50/53	---	---	ND	---	0.973
51	45/51	---	---	ND	---	0.973
52		---	---	ND	---	0.486
53	50/53	---	---	ND	---	0.973
54		---	---	ND	---	0.486
55		---	---	ND	---	0.486
56		---	---	ND	---	0.486
57		---	---	ND	---	0.486
58		---	---	ND	---	0.486
59	59/62/75	---	---	ND	---	1.46
60		---	---	ND	---	0.486
61	61/70/74/76	---	---	ND	---	1.95
62	59/62/75	---	---	ND	---	1.46
63		---	---	ND	---	0.486
64		---	---	ND	---	0.486
65	44/47/65	---	---	ND	---	1.46
66		---	---	ND	---	0.486
67		---	---	ND	---	0.486
68		---	---	ND	---	0.486
69	49/69	---	---	ND	---	0.973
70	61/70/74/76	---	---	ND	---	1.95
71	40/41/71	---	---	ND	---	1.46
72		---	---	ND	---	0.486
73		---	---	ND	---	0.486
74	61/70/74/76	---	---	ND	---	1.95
75	59/62/75	---	---	ND	---	1.46
76	61/70/74/76	---	---	ND	---	1.95
77		---	---	ND	---	0.486
78		---	---	ND	---	0.486
79		---	---	ND	---	0.486
80		---	---	ND	---	0.486
81		---	---	ND	---	0.486
82		---	---	ND	---	0.486
83		---	---	ND	---	0.486
84		---	---	ND	---	0.486
85	85/116/117	---	---	ND	---	1.46
86	86/87/97/108/119/125	---	---	ND	---	2.92
87	86/87/97/108/119/125	---	---	ND	---	2.92
88	88/91	---	---	ND	---	0.973
89		---	---	ND	---	0.486
90	90/101/113	31.556	1.60	1.57	---	1.46
91	88/91	---	---	ND	---	0.973
92		---	---	ND	---	0.486
93	93/98/100/102	---	---	ND	---	1.95
94		---	---	ND	---	0.486
95		28.186	1.60	1.07	---	0.486
96		---	---	ND	---	0.486

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSC0751-03;FO 095373
Lab Sample ID 1091808003
Filename U90405B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	2.92
98	93/98/100/102	---	---	ND	---	1.95
99		---	---	ND	---	0.486
100	93/98/100/102	---	---	ND	---	1.95
101	90/101/113	31.556	1.60	(1.57)	---	1.46
102	93/98/100/102	---	---	ND	---	1.95
103		---	---	ND	---	0.486
104		---	---	ND	---	0.486
105		38.262	1.47	0.534	---	0.486
106		---	---	ND	---	0.486
107	107/124	---	---	ND	---	0.973
108	86/87/97/108/119/125	---	---	ND	---	2.92
109		---	---	ND	---	0.486
110	110/115	33.702	1.60	1.87	---	0.973
111		---	---	ND	---	0.486
112		---	---	ND	---	0.486
113	90/101/113	31.556	1.60	(1.57)	---	1.46
114		---	---	ND	---	0.486
115	110/115	33.702	1.60	(1.87)	---	0.973
116	85/116/117	---	---	ND	---	1.46
117	85/116/117	---	---	ND	---	1.46
118		37.022	1.53	1.34	---	0.486
119	86/87/97/108/119/125	---	---	ND	---	2.92
120		---	---	ND	---	0.486
121		---	---	ND	---	0.486
122		---	---	ND	---	0.486
123		---	---	ND	---	0.486
124	107/124	---	---	ND	---	0.973
125	86/87/97/108/119/125	---	---	ND	---	2.92
126		---	---	ND	---	0.486
127		---	---	ND	---	0.486
128	128/166	---	---	ND	---	0.973
129	129/138/163	40.375	1.31	5.68	---	1.46
130		---	---	ND	---	0.486
131		---	---	ND	---	0.486
132		37.055	1.27	1.70	---	0.486
133		---	---	ND	---	0.486
134	134/143	---	---	ND	---	0.973
135	135/151	34.725	1.29	2.39	---	0.973
136		31.992	1.24	0.701	---	0.486
137		---	---	ND	---	0.486
138	129/138/163	40.375	1.31	(5.68)	---	1.46
139	139/140	---	---	ND	---	0.973
140	139/140	---	---	ND	---	0.973
141		39.252	1.28	1.16	---	0.486
142		---	---	ND	---	0.486
143	134/143	---	---	ND	---	0.973
144		---	---	ND	---	0.486

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-03;FO 095373
Lab Sample ID 1091808003
Filename U90405B_06

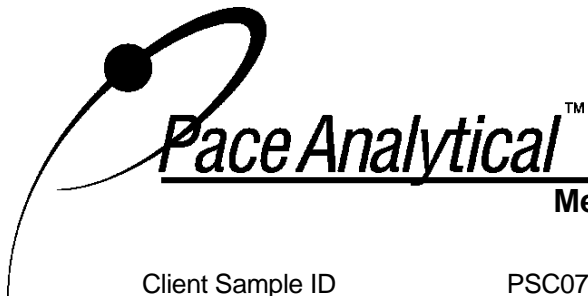
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.486
146		38.397	1.25	0.709	---	0.486
147	147/149	35.731	1.32	5.14	---	0.973
148		---	---	ND	---	0.486
149	147/149	35.731	1.32	(5.14)	---	0.973
150		---	---	ND	---	0.486
151	135/151	34.725	1.29	(2.39)	---	0.973
152		---	---	ND	---	0.486
153	153/168	39.067	1.29	5.75	---	0.973
154		---	---	ND	---	0.486
155		---	---	ND	---	0.486
156	156/157	---	---	ND	---	0.973
157	156/157	---	---	ND	---	0.973
158		40.794	1.34	0.488	---	0.486
159		---	---	ND	---	0.486
160		---	---	ND	---	0.486
161		---	---	ND	---	0.486
162		---	---	ND	---	0.486
163	129/138/163	40.375	1.31	(5.68)	---	1.46
164		---	---	ND	---	0.486
165		---	---	ND	---	0.486
166	128/166	---	---	ND	---	0.973
167		---	---	ND	---	0.486
168	153/168	39.067	1.29	(5.75)	---	0.973
169		---	---	ND	---	0.486
170		47.618	1.07	2.16	---	0.486
171	171/173	---	---	ND	---	0.973
172		---	---	ND	---	0.486
173	171/173	---	---	ND	---	0.973
174		42.705	1.04	2.75	---	0.486
175		---	---	ND	---	0.486
176		---	---	ND	---	0.486
177		43.175	1.04	1.45	---	0.486
178		40.861	1.03	0.539	---	0.486
179		37.877	1.01	1.08	---	0.486
180	180/193	46.310	1.04	5.38	---	0.973
181		---	---	ND	---	0.486
182		---	---	ND	---	0.486
183	183/185	42.504	1.06	1.73	---	0.973
184		---	---	ND	---	0.486
185	183/185	42.504	1.06	(1.73)	---	0.973
186		---	---	ND	---	0.486
187		41.834	1.03	3.19	---	0.486
188		---	---	ND	---	0.486
189		---	---	ND	---	0.486
190		---	---	ND	---	0.486
191		---	---	ND	---	0.486
192		---	---	ND	---	0.486

Conc = Concentration
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSC0751-03;FO 095373
Lab Sample ID 1091808003
Filename U90405B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.310	1.04	(5.38)	---	0.973
194		53.183	0.87	0.983	---	0.729
195		---	---	ND	---	0.729
196		---	---	ND	---	0.729
197	197/200	---	---	ND	---	1.46
198	198/199	---	---	ND	---	1.46
199	198/199	---	---	ND	---	1.46
200	197/200	---	---	ND	---	1.46
201		---	---	ND	---	0.729
202		---	---	ND	---	0.729
203		49.277	0.88	0.739	---	0.729
204		---	---	ND	---	0.729
205		---	---	ND	---	0.729
206		---	---	ND	---	0.729
207		---	---	ND	---	0.729
208		---	---	ND	---	0.729
209		---	---	ND	---	0.729

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-03;FO 095373
Lab Sample ID 1091808003
Filename U90405B_06

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	6.38
Total Hexachloro Biphenyls	23.7
Total Heptachloro Biphenyls	18.3
Total Octachloro Biphenyls	1.72
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	50.1

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSC0751-04;FO 095374		
Lab Sample ID	1091808004		
Filename	U90405B_07		
Injected By	BAL		
Total Amount Extracted	991 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/23/2009
ICAL ID	U90405B02	Received	03/26/2009
CCal Filename(s)	U90405B_01	Extracted	04/03/2009
Method Blank ID	BLANK-19530	Analyzed	04/06/2009 09:57

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.576	3.28	2.0	0.772	39
13C-4-MoCB	3	9.451	3.49	2.0	0.887	44
13C-2,2'-DiCB	4	9.762	1.55	2.0	0.836	42
13C-4,4'-DiCB	15	17.681	1.57	2.0	1.36	68
13C-2,2',6-TrCB	19	13.991	1.05	2.0	1.02	51
13C-3,4,4'-TrCB	37	26.191	1.05	2.0	1.94	97
13C-2,2',6,6'-TeCB	54	17.993	0.84	2.0	1.06	53
13C-3,4,4',5-TeCB	81	33.820	0.79	2.0	2.04	102
13C-3,3',4,4'-TeCB	77	34.440	0.79	2.0	2.06	103
13C-2,2',4,6,6'-PeCB	104	24.716	1.61	2.0	1.30	65
13C-2,3,3',4,4'-PeCB	105	38.212	1.57	2.0	2.09	105
13C-2,3,4,4',5-PeCB	114	37.525	1.58	2.0	2.07	104
13C-2,3',4,4',5-PeCB	118	36.988	1.59	2.0	2.10	105
13C-2,3',4,4',5'-PeCB	123	36.620	1.58	2.0	2.13	106
13C-3,3',4,4',5-PeCB	126	41.582	1.56	2.0	2.07	104
13C-2,2',4,4',6,6'-HxCB	155	31.255	1.30	2.0	1.51	76
13C-HxCB (156/157)	156/157	44.785	1.27	4.0	3.94	98
13C-2,3',4,4',5,5'-HxCB	167	43.577	1.27	2.0	2.07	103
13C-3,3',4,4',5,5'-HxCB	169	48.255	1.24	2.0	1.90	95
13C-2,2',3,4',5,6,6'-HpCB	188	37.508	1.05	2.0	1.89	95
13C-2,3,3',4,4',5,5'-HpCB	189	50.899	1.07	2.0	2.32	116
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.259	0.91	2.0	1.91	96
13C-2,3,3',4,4',5,5',6-OxCB	205	53.593	0.93	2.0	1.79	89
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.403	0.77	2.0	1.61	80
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.339	0.80	2.0	1.80	90
13C--DeCB	209	57.063	0.70	2.0	1.53	77
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.463	1.00	2.0	1.80	90
13C-2,3,3',5,5'-PeCB	111	34.541	1.55	2.0	1.73	87
13C-2,2',3,3',5,5',6-HpCB	178	40.811	1.04	2.0	1.69	84
Recovery Standards						
13C-2,5-DiCB	9	12.530	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.660	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.523	1.58	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.308	1.31	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.097	0.93	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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P = Recovery outside of Method 1668A control limits
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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-04;FO 095374
Lab Sample ID 1091808004
Filename U90405B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.252
2		---	---	ND	---	0.252
3		---	---	ND	---	0.252
4		---	---	ND	---	0.252
5		---	---	ND	---	0.252
6		---	---	ND	---	0.252
7		---	---	ND	---	0.252
8		---	---	ND	---	0.252
9		---	---	ND	---	0.252
10		---	---	ND	---	0.252
11		---	---	ND	---	1.51
12	12/13	---	---	ND	---	0.505
13	12/13	---	---	ND	---	0.505
14		---	---	ND	---	0.252
15		---	---	ND	---	0.252
16		---	---	ND	---	0.252
17		---	---	ND	---	0.252
18	18/30	---	---	ND	---	0.505
19		---	---	ND	---	0.252
20	20/28	---	---	ND	---	0.505
21	21/33	---	---	ND	---	0.505
22		---	---	ND	---	0.252
23		---	---	ND	---	0.252
24		---	---	ND	---	0.252
25		---	---	ND	---	0.252
26	26/29	---	---	ND	---	0.505
27		---	---	ND	---	0.252
28	20/28	---	---	ND	---	0.505
29	26/29	---	---	ND	---	0.505
30	18/30	---	---	ND	---	0.505
31		---	---	ND	---	0.252
32		---	---	ND	---	0.252
33	21/33	---	---	ND	---	0.505
34		---	---	ND	---	0.252
35		---	---	ND	---	0.252
36		---	---	ND	---	0.252
37		---	---	ND	---	0.252
38		---	---	ND	---	0.252
39		---	---	ND	---	0.252
40	40/41/71	---	---	ND	---	1.51
41	40/41/71	---	---	ND	---	1.51
42		---	---	ND	---	0.505
43		---	---	ND	---	0.505
44	44/47/65	---	---	ND	---	1.51
45	45/51	---	---	ND	---	1.01
46		---	---	ND	---	0.505
47	44/47/65	---	---	ND	---	1.51
48		---	---	ND	---	0.505

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-04;FO 095374
Lab Sample ID 1091808004
Filename U90405B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.01
50	50/53	---	---	ND	---	1.01
51	45/51	---	---	ND	---	1.01
52		---	---	ND	---	0.505
53	50/53	---	---	ND	---	1.01
54		---	---	ND	---	0.505
55		---	---	ND	---	0.505
56		---	---	ND	---	0.505
57		---	---	ND	---	0.505
58		---	---	ND	---	0.505
59	59/62/75	---	---	ND	---	1.51
60		---	---	ND	---	0.505
61	61/70/74/76	---	---	ND	---	2.02
62	59/62/75	---	---	ND	---	1.51
63		---	---	ND	---	0.505
64		---	---	ND	---	0.505
65	44/47/65	---	---	ND	---	1.51
66		---	---	ND	---	0.505
67		---	---	ND	---	0.505
68		---	---	ND	---	0.505
69	49/69	---	---	ND	---	1.01
70	61/70/74/76	---	---	ND	---	2.02
71	40/41/71	---	---	ND	---	1.51
72		---	---	ND	---	0.505
73		---	---	ND	---	0.505
74	61/70/74/76	---	---	ND	---	2.02
75	59/62/75	---	---	ND	---	1.51
76	61/70/74/76	---	---	ND	---	2.02
77		---	---	ND	---	0.505
78		---	---	ND	---	0.505
79		---	---	ND	---	0.505
80		---	---	ND	---	0.505
81		---	---	ND	---	0.505
82		---	---	ND	---	0.505
83		---	---	ND	---	0.505
84		---	---	ND	---	0.505
85	85/116/117	---	---	ND	---	1.51
86	86/87/97/108/119/125	---	---	ND	---	3.03
87	86/87/97/108/119/125	---	---	ND	---	3.03
88	88/91	---	---	ND	---	1.01
89		---	---	ND	---	0.505
90	90/101/113	---	---	ND	---	1.51
91	88/91	---	---	ND	---	1.01
92		---	---	ND	---	0.505
93	93/98/100/102	---	---	ND	---	2.02
94		---	---	ND	---	0.505
95		---	---	ND	---	0.505
96		---	---	ND	---	0.505

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-04;FO 095374
Lab Sample ID 1091808004
Filename U90405B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.03
98	93/98/100/102	---	---	ND	---	2.02
99		---	---	ND	---	0.505
100	93/98/100/102	---	---	ND	---	2.02
101	90/101/113	---	---	ND	---	1.51
102	93/98/100/102	---	---	ND	---	2.02
103		---	---	ND	---	0.505
104		---	---	ND	---	0.505
105		---	---	ND	---	0.505
106		---	---	ND	---	0.505
107	107/124	---	---	ND	---	1.01
108	86/87/97/108/119/125	---	---	ND	---	3.03
109		---	---	ND	---	0.505
110	110/115	---	---	ND	---	1.01
111		---	---	ND	---	0.505
112		---	---	ND	---	0.505
113	90/101/113	---	---	ND	---	1.51
114		---	---	ND	---	0.505
115	110/115	---	---	ND	---	1.01
116	85/116/117	---	---	ND	---	1.51
117	85/116/117	---	---	ND	---	1.51
118		---	---	ND	---	0.505
119	86/87/97/108/119/125	---	---	ND	---	3.03
120		---	---	ND	---	0.505
121		---	---	ND	---	0.505
122		---	---	ND	---	0.505
123		---	---	ND	---	0.505
124	107/124	---	---	ND	---	1.01
125	86/87/97/108/119/125	---	---	ND	---	3.03
126		---	---	ND	---	0.505
127		---	---	ND	---	0.505
128	128/166	---	---	ND	---	1.01
129	129/138/163	---	---	ND	---	1.51
130		---	---	ND	---	0.505
131		---	---	ND	---	0.505
132		---	---	ND	---	0.505
133		---	---	ND	---	0.505
134	134/143	---	---	ND	---	1.01
135	135/151	---	---	ND	---	1.01
136		---	---	ND	---	0.505
137		---	---	ND	---	0.505
138	129/138/163	---	---	ND	---	1.51
139	139/140	---	---	ND	---	1.01
140	139/140	---	---	ND	---	1.01
141		---	---	ND	---	0.505
142		---	---	ND	---	0.505
143	134/143	---	---	ND	---	1.01
144		---	---	ND	---	0.505

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-04;FO 095374
Lab Sample ID 1091808004
Filename U90405B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.505
146		---	---	ND	---	0.505
147	147/149	35.731	1.33	1.45	---	1.01
148		---	---	ND	---	0.505
149	147/149	35.731	1.33	(1.45)	---	1.01
150		---	---	ND	---	0.505
151	135/151	---	---	ND	---	1.01
152		---	---	ND	---	0.505
153	153/168	39.051	1.28	1.40	---	1.01
154		---	---	ND	---	0.505
155		---	---	ND	---	0.505
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		---	---	ND	---	0.505
159		---	---	ND	---	0.505
160		---	---	ND	---	0.505
161		---	---	ND	---	0.505
162		---	---	ND	---	0.505
163	129/138/163	---	---	ND	---	1.51
164		---	---	ND	---	0.505
165		---	---	ND	---	0.505
166	128/166	---	---	ND	---	1.01
167		---	---	ND	---	0.505
168	153/168	39.051	1.28	(1.40)	---	1.01
169		---	---	ND	---	0.505
170		47.585	1.07	0.555	---	0.505
171	171/173	---	---	ND	---	1.01
172		---	---	ND	---	0.505
173	171/173	---	---	ND	---	1.01
174		42.689	1.07	0.733	---	0.505
175		---	---	ND	---	0.505
176		---	---	ND	---	0.505
177		---	---	ND	---	0.505
178		---	---	ND	---	0.505
179		---	---	ND	---	0.505
180	180/193	46.277	1.08	1.36	---	1.01
181		---	---	ND	---	0.505
182		---	---	ND	---	0.505
183	183/185	---	---	ND	---	1.01
184		---	---	ND	---	0.505
185	183/185	---	---	ND	---	1.01
186		---	---	ND	---	0.505
187		41.817	1.03	0.855	---	0.505
188		---	---	ND	---	0.505
189		---	---	ND	---	0.505
190		---	---	ND	---	0.505
191		---	---	ND	---	0.505
192		---	---	ND	---	0.505

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-04;FO 095374
Lab Sample ID 1091808004
Filename U90405B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.277	1.08	(1.36)	---	1.01
194		---	---	ND	---	0.757
195		---	---	ND	---	0.757
196		---	---	ND	---	0.757
197	197/200	---	---	ND	---	1.51
198	198/199	---	---	ND	---	1.51
199	198/199	---	---	ND	---	1.51
200	197/200	---	---	ND	---	1.51
201		---	---	ND	---	0.757
202		---	---	ND	---	0.757
203		---	---	ND	---	0.757
204		---	---	ND	---	0.757
205		---	---	ND	---	0.757
206		---	---	ND	---	0.757
207		---	---	ND	---	0.757
208		---	---	ND	---	0.757
209		---	---	ND	---	0.757

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-04;FO 095374
Lab Sample ID 1091808004
Filename U90405B_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	2.86
Total Heptachloro Biphenyls	3.51
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	6.36

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-19530		
Filename	U90405A_06		
Injected By	BAL	Matrix	Water
Total Amount Extracted	1040 mL	Extracted	04/03/2009
ICAL ID	U90405A02	Analyzed	04/05/2009 19:00
CCal Filename(s)	U90405A_01	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	6.564	3.23	2.0	0.684	34
13C-4-MoCB	3	9.439	3.16	2.0	0.756	38
13C-2,2'-DiCB	4	9.750	1.58	2.0	0.682	34
13C-4,4'-DiCB	15	17.669	1.57	2.0	1.13	57
13C-2,2',6-TrCB	19	13.979	1.15	2.0	0.819	41
13C-3,4,4'-TrCB	37	26.174	1.06	2.0	1.69	85
13C-2,2',6,6'-TeCB	54	17.976	0.79	2.0	0.860	43
13C-3,4,4',5-TeCB	81	33.786	0.81	2.0	1.80	90
13C-3,3',4,4'-TeCB	77	34.406	0.80	2.0	1.87	93
13C-2,2',4,6,6'-PeCB	104	24.699	1.63	2.0	1.14	57
13C-2,3,3',4,4'-PeCB	105	38.179	1.58	2.0	2.03	101
13C-2,3,4,4',5-PeCB	114	37.491	1.57	2.0	2.00	100
13C-2,3',4,4',5-PeCB	118	36.955	1.56	2.0	1.93	97
13C-2,3',4,4',5'-PeCB	123	36.603	1.60	2.0	1.98	99
13C-3,3',4,4',5-PeCB	126	41.548	1.56	2.0	1.96	98
13C-2,2',4,4',6,6'-HxCB	155	31.221	1.28	2.0	1.31	66
13C-HxCB (156/157)	156/157	44.734	1.27	4.0	3.95	99
13C-2,3',4,4',5,5'-HxCB	167	43.544	1.26	2.0	2.02	101
13C-3,3',4,4',5,5'-HxCB	169	48.205	1.29	2.0	1.86	93
13C-2,2',3,4',5,6,6'-HpCB	188	37.474	1.06	2.0	1.67	83
13C-2,3,3',4,4',5,5'-HpCB	189	50.856	1.03	2.0	2.34	117
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.225	0.93	2.0	1.76	88
13C-2,3,3',4,4',5,5',6-OxCB	205	53.550	0.93	2.0	1.61	81
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.360	0.79	2.0	1.47	73
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.295	0.80	2.0	1.67	84
13C--DeCB	209	57.019	0.68	2.0	1.30	65

Cleanup Standards

13C-2,4,4'-TrCB	28	21.446	1.02	2.0	1.70	85
13C-2,3,3',5,5'-PeCB	111	34.507	1.55	2.0	1.55	77
13C-2,2',3,3',5,5',6-HpCB	178	40.777	1.06	2.0	1.51	75

Recovery Standards

13C-2,5-DiCB	9	12.518	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.643	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.506	1.64	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.274	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.054	0.94	2.0	NA	NA

Conc = Concentration
EML = Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.240
2		---	---	ND	---	0.240
3		---	---	ND	---	0.240
4		---	---	ND	---	0.240
5		---	---	ND	---	0.240
6		---	---	ND	---	0.240
7		---	---	ND	---	0.240
8		---	---	ND	---	0.240
9		---	---	ND	---	0.240
10		---	---	ND	---	0.240
11		---	---	ND	---	1.44
12	12/13	---	---	ND	---	0.481
13	12/13	---	---	ND	---	0.481
14		---	---	ND	---	0.240
15		---	---	ND	---	0.240
16		---	---	ND	---	0.240
17		---	---	ND	---	0.240
18	18/30	---	---	ND	---	0.481
19		---	---	ND	---	0.240
20	20/28	---	---	ND	---	0.481
21	21/33	---	---	ND	---	0.481
22		---	---	ND	---	0.240
23		---	---	ND	---	0.240
24		---	---	ND	---	0.240
25		---	---	ND	---	0.240
26	26/29	---	---	ND	---	0.481
27		---	---	ND	---	0.240
28	20/28	---	---	ND	---	0.481
29	26/29	---	---	ND	---	0.481
30	18/30	---	---	ND	---	0.481
31		---	---	ND	---	0.240
32		---	---	ND	---	0.240
33	21/33	---	---	ND	---	0.481
34		---	---	ND	---	0.240
35		---	---	ND	---	0.240
36		---	---	ND	---	0.240
37		---	---	ND	---	0.240
38		---	---	ND	---	0.240
39		---	---	ND	---	0.240
40	40/41/71	---	---	ND	---	1.44
41	40/41/71	---	---	ND	---	1.44
42		---	---	ND	---	0.481
43		---	---	ND	---	0.481
44	44/47/65	---	---	ND	---	1.44
45	45/51	---	---	ND	---	0.961

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.481
47	44/47/65	---	---	ND	---	1.44
48		---	---	ND	---	0.481
49	49/69	---	---	ND	---	0.961
50	50/53	---	---	ND	---	0.961
51	45/51	---	---	ND	---	0.961
52		---	---	ND	---	0.481
53	50/53	---	---	ND	---	0.961
54		---	---	ND	---	0.481
55		---	---	ND	---	0.481
56		---	---	ND	---	0.481
57		---	---	ND	---	0.481
58		---	---	ND	---	0.481
59	59/62/75	---	---	ND	---	1.44
60		---	---	ND	---	0.481
61	61/70/74/76	---	---	ND	---	1.92
62	59/62/75	---	---	ND	---	1.44
63		---	---	ND	---	0.481
64		---	---	ND	---	0.481
65	44/47/65	---	---	ND	---	1.44
66		---	---	ND	---	0.481
67		---	---	ND	---	0.481
68		---	---	ND	---	0.481
69	49/69	---	---	ND	---	0.961
70	61/70/74/76	---	---	ND	---	1.92
71	40/41/71	---	---	ND	---	1.44
72		---	---	ND	---	0.481
73		---	---	ND	---	0.481
74	61/70/74/76	---	---	ND	---	1.92
75	59/62/75	---	---	ND	---	1.44
76	61/70/74/76	---	---	ND	---	1.92
77		---	---	ND	---	0.481
78		---	---	ND	---	0.481
79		---	---	ND	---	0.481
80		---	---	ND	---	0.481
81		---	---	ND	---	0.481
82		---	---	ND	---	0.481
83		---	---	ND	---	0.481
84		---	---	ND	---	0.481
85	85/116/117	---	---	ND	---	1.44
86	86/87/97/108/119/125	---	---	ND	---	2.88
87	86/87/97/108/119/125	---	---	ND	---	2.88
88	88/91	---	---	ND	---	0.961
89		---	---	ND	---	0.481
90	90/101/113	---	---	ND	---	1.44

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.961
92		---	---	ND	---	0.481
93	93/98/100/102	---	---	ND	---	1.92
94		---	---	ND	---	0.481
95		---	---	ND	---	0.481
96		---	---	ND	---	0.481
97	86/87/97/108/119/125	---	---	ND	---	2.88
98	93/98/100/102	---	---	ND	---	1.92
99		---	---	ND	---	0.481
100	93/98/100/102	---	---	ND	---	1.92
101	90/101/113	---	---	ND	---	1.44
102	93/98/100/102	---	---	ND	---	1.92
103		---	---	ND	---	0.481
104		---	---	ND	---	0.481
105		---	---	ND	---	0.481
106		---	---	ND	---	0.481
107	107/124	---	---	ND	---	0.961
108	86/87/97/108/119/125	---	---	ND	---	2.88
109		---	---	ND	---	0.481
110	110/115	---	---	ND	---	0.961
111		---	---	ND	---	0.481
112		---	---	ND	---	0.481
113	90/101/113	---	---	ND	---	1.44
114		---	---	ND	---	0.481
115	110/115	---	---	ND	---	0.961
116	85/116/117	---	---	ND	---	1.44
117	85/116/117	---	---	ND	---	1.44
118		---	---	ND	---	0.481
119	86/87/97/108/119/125	---	---	ND	---	2.88
120		---	---	ND	---	0.481
121		---	---	ND	---	0.481
122		---	---	ND	---	0.481
123		---	---	ND	---	0.481
124	107/124	---	---	ND	---	0.961
125	86/87/97/108/119/125	---	---	ND	---	2.88
126		---	---	ND	---	0.481
127		---	---	ND	---	0.481
128	128/166	---	---	ND	---	0.961
129	129/138/163	---	---	ND	---	1.44
130		---	---	ND	---	0.481
131		---	---	ND	---	0.481
132		---	---	ND	---	0.481
133		---	---	ND	---	0.481
134	134/143	---	---	ND	---	0.961
135	135/151	---	---	ND	---	0.961

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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! = Outside QC Limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-19530
U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.481
137		---	---	ND	---	0.481
138	129/138/163	---	---	ND	---	1.44
139	139/140	---	---	ND	---	0.961
140	139/140	---	---	ND	---	0.961
141		---	---	ND	---	0.481
142		---	---	ND	---	0.481
143	134/143	---	---	ND	---	0.961
144		---	---	ND	---	0.481
145		---	---	ND	---	0.481
146		---	---	ND	---	0.481
147	147/149	---	---	ND	---	0.961
148		---	---	ND	---	0.481
149	147/149	---	---	ND	---	0.961
150		---	---	ND	---	0.481
151	135/151	---	---	ND	---	0.961
152		---	---	ND	---	0.481
153	153/168	---	---	ND	---	0.961
154		---	---	ND	---	0.481
155		---	---	ND	---	0.481
156	156/157	---	---	ND	---	0.961
157	156/157	---	---	ND	---	0.961
158		---	---	ND	---	0.481
159		---	---	ND	---	0.481
160		---	---	ND	---	0.481
161		---	---	ND	---	0.481
162		---	---	ND	---	0.481
163	129/138/163	---	---	ND	---	1.44
164		---	---	ND	---	0.481
165		---	---	ND	---	0.481
166	128/166	---	---	ND	---	0.961
167		---	---	ND	---	0.481
168	153/168	---	---	ND	---	0.961
169		---	---	ND	---	0.481
170		---	---	ND	---	0.481
171	171/173	---	---	ND	---	0.961
172		---	---	ND	---	0.481
173	171/173	---	---	ND	---	0.961
174		---	---	ND	---	0.481
175		---	---	ND	---	0.481
176		---	---	ND	---	0.481
177		---	---	ND	---	0.481
178		---	---	ND	---	0.481
179		---	---	ND	---	0.481
180	180/193	---	---	ND	---	0.961

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.481
182		---	---	ND	---	0.481
183	183/185	---	---	ND	---	0.961
184		---	---	ND	---	0.481
185	183/185	---	---	ND	---	0.961
186		---	---	ND	---	0.481
187		---	---	ND	---	0.481
188		---	---	ND	---	0.481
189		---	---	ND	---	0.481
190		---	---	ND	---	0.481
191		---	---	ND	---	0.481
192		---	---	ND	---	0.481
193	180/193	---	---	ND	---	0.961
194		---	---	ND	---	0.721
195		---	---	ND	---	0.721
196		---	---	ND	---	0.721
197	197/200	---	---	ND	---	1.44
198	198/199	---	---	ND	---	1.44
199	198/199	---	---	ND	---	1.44
200	197/200	---	---	ND	---	1.44
201		---	---	ND	---	0.721
202		---	---	ND	---	0.721
203		---	---	ND	---	0.721
204		---	---	ND	---	0.721
205		---	---	ND	---	0.721
206		---	---	ND	---	0.721
207		---	---	ND	---	0.721
208		---	---	ND	---	0.721
209		---	---	ND	---	0.721

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKNE
Lab Sample ID BLANK-19530
Filename U90405A_06

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 ND

ND = Not Detected

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-19531	
Filename	U90406A_03	Matrix
Total Amount Extracted	1030 mL	Dilution
ICAL ID	U90406A02	Extracted
CCal Filename(s)	U90406A_01	Analyzed
Method Blank ID	BLANK-19530	Injected By
		Water
		NA
		04/03/2009
		04/07/2009 12:38
		SMT

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.23	123	2.0	0.517	26	P
3	1.0	1.29	129	2.0	0.560	28	P
4	1.0	1.21	121	2.0	0.477	24	P
15	1.0	1.01	101	2.0	0.827	41	
19	1.0	0.979	98	2.0	0.633	32	
37	1.0	1.04	104	2.0	1.29	64	
54	1.0	1.03	103	2.0	0.768	38	
81	1.0	1.07	107	2.0	1.30	65	
77	1.0	1.03	103	2.0	1.40	70	
104	1.0	1.10	110	2.0	0.922	46	
105	1.0	1.11	111	2.0	1.49	75	
114	1.0	1.11	111	2.0	1.55	78	
118	1.0	1.15	115	2.0	1.48	74	
123	1.0	1.14	114	2.0	1.49	75	
126	1.0	0.996	100	2.0	1.53	76	
155	1.0	1.12	112	2.0	1.01	51	
156/157	2.0	2.03	101	4.0	3.23	81	
167	1.0	1.21	121	2.0	1.63	81	
169	1.0	0.986	99	2.0	1.54	77	
188	1.0	1.05	105	2.0	1.21	61	
189	1.0	0.920	92	2.0	1.80	90	
202	1.0	1.06	106	2.0	1.29	65	
205	1.0	1.03	103	2.0	1.30	65	
206	1.0	1.01	101	2.0	1.21	61	
208	1.0	1.01	101	2.0	1.32	66	
209	1.0	0.953	95	2.0	1.07	54	

P = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
! = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-19532	
Filename	U90406A_04	Matrix
Total Amount Extracted	1040 mL	Water
ICAL ID	U90406A02	Dilution
CCal Filename(s)	U90406A_01	Extracted
Method Blank ID	BLANK-19530	Analyzed
		04/03/2009 13:42
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.15	115	2.0	0.833	42
3	1.0	1.11	111	2.0	0.919	46
4	1.0	1.11	111	2.0	0.781	39
15	1.0	1.07	107	2.0	1.30	65
19	1.0	0.942	94	2.0	1.00	50
37	1.0	0.950	95	2.0	1.92	96
54	1.0	0.991	99	2.0	1.14	57
81	1.0	1.01	101	2.0	1.74	87
77	1.0	1.02	102	2.0	1.79	89
104	1.0	1.02	102	2.0	1.30	65
105	1.0	0.972	97	2.0	2.02	101
114	1.0	1.01	101	2.0	2.06	103
118	1.0	1.05	105	2.0	1.96	98
123	1.0	0.968	97	2.0	2.10	105
126	1.0	0.939	94	2.0	2.03	101
155	1.0	0.945	95	2.0	1.43	72
156/157	2.0	1.87	94	4.0	4.26	106
167	1.0	1.10	110	2.0	2.17	109
169	1.0	0.925	92	2.0	2.05	102
188	1.0	0.973	97	2.0	1.51	76
189	1.0	0.898	90	2.0	2.29	114
202	1.0	0.978	98	2.0	1.57	79
205	1.0	0.965	96	2.0	1.64	82
206	1.0	0.979	98	2.0	1.49	75
208	1.0	0.948	95	2.0	1.64	82
209	1.0	0.915	91	2.0	1.43	71

P = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
! = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-19531
Spike 1 Filename U90406A_03

Spike 2 ID LCSD-19532
Spike 2 Filename U90406A_04

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	123	115	6.7
4-MoCB	3	129	111	15.0
2,2'-DiCB	4	121	111	8.6
4,4'-DiCB	15	101	107	5.8
2,2',6-TrCB	19	98	94	4.2
3,4,4'-TrCB	37	104	95	9.0
2,2',6,6'-TeCB	54	103	99	4.0
3,3,4,4'-TeCB	77	103	102	1.0
3,4,4',5-TeCB	81	107	101	5.8
2,2',4,6,6'-PeCB	104	110	102	7.5
2,3,3',4,4'-PeCB	105	111	97	13.5
2,3,4,4',5-PeCB	114	111	101	9.4
2,3',4,4',5-PeCB	118	115	105	9.1
2,3,4,4',5'-PeCB	123	114	97	16.1
3,3',4,4',5-PeCB	126	100	94	6.2
2,2',4,4',6,6'-HxCB	155	112	95	16.4
(156/157)	156/157	101	94	7.2
2,3',4,4',5,5'-HxCB	167	121	110	9.5
3,3',4,4',5,5'-HxCB	169	99	92	7.3
2,2',3,4',5,6,6'-HpCB	188	105	97	7.9
2,3,3',4,4',5,5'-HpCB	189	92	90	2.2
2,2',3,3',5,5',6,6'-OcCB	202	106	98	7.8
2,3,3',4,4',5,5',6-OcCB	205	103	96	7.0
2,2',3,3',4,4',5,5',6-NoCB	206	101	98	3.0
2,2',3,3',4,5,5',6,6'-NoCB	208	101	95	6.1
Decachlorobiphenyl	209	95	91	4.3

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, Inc.

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Laboratory Data QA/QC Review Upland Source Control Investigation Outfall Basins 43, 44, and 44A

To: File
From: Erin Carroll, GSI
Date: August 12, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the winter and spring 2008/2009. Six solids samples were collected from sediment traps in Outfall Basins 43, 44, and 44A and submitted for analyses. A field duplicate (FO095677) from Outfall Basin 44A also was submitted for analysis.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
 - Total Solids – SM 2540 G
 - Metals – EPA 6020
 - Polychlorinated Biphenyl (PCB) Aroclors – EPA 8082
- Analytical Resources, Incorporated (ARI)
 - Grain Size – ASTM D421/422
- Columbia Analytical Services (CAS)
 - Organochlorine Pesticides – EPA 8081A
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) and Phthalates – EPA 8270M-SIM
 - Total Organic Carbon (TOC) – EPA 9060 MOD

- Pace Analytical Services (Pace)
 - PCB Congeners – EPA 1668A

The WPCL summary reports and the subcontracted laboratory's data reports are attached for all analyses associated with these source control program samples. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review is based on the available laboratory documentation and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample recoveries within laboratory control limits

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the recommended method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analysis of PAHs, phthalates, organochlorine pesticides, TOC, and PCB congeners. There are no reported detections of PAHs, phthalates, pesticides, and TOC in the associated method blanks.

PCB congener 31 was detected in the Pace method blank. One field sample from Outfall Basin 43 (FO095659) had a result that was less than 10 times greater than the detection in the associated method blank and is flagged with a "B". The total PCB congener concentration should be considered slightly biased high.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, phthalates, and organochlorine pesticides. The phthalate samples required dilution which resulted in surrogate concentrations below the reporting limits and the surrogate recovery information is not applicable. All PAH and pesticide surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) were processed during the laboratory analysis of TOC and SVOCs. The MS/MSD recoveries and relative percent difference (RPD) were within laboratory control limits.

Laboratory Control Samples/Duplicate Laboratory Control Samples

Laboratory control samples (LCS) were processed during the laboratory analysis of PAHs, phthalates, TOC, and PCB Congeners. The LCS recoveries were within the laboratory control limits. LCS and duplicate laboratory control samples (DLCS) were processed during the laboratory analysis of organochlorine pesticides. The LCS/DLCS recoveries were within the laboratory control limits.

Other

The laboratory reports for PAHs, phthalates, and organochlorine pesticides indicate that the method reporting limits were elevated in a number of samples due to sample matrix effects and non-target background components.

Some organochlorine pesticide compounds are reported as estimated (“P”) because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD. WPCL has flagged these results as estimates (EST) in their summary report.

CAS reports that the presence of PCBs may have interfered with the quantification of pesticide concentrations, which may have resulted in a high bias for some results. WPCL also notes that the presence of PCBs may have affected the reporting limits for the pesticide analysis.

WPCL reports that, given the chlordane detection in sample FO095661, the reported value for Aroclor 1254 may be a high estimate due to interferences from components of chlordane. This result is flagged “EST” in the WPCL report and data tables.

WPCL reports that trace concentrations of Aroclor 1254 were evident at concentrations below the MRL in sample FO095677; the data are reported as not detected at a concentration greater than the MRL.

Some of the PCB Aroclor MRLs are raised due to the low solids content of the samples provided from Outfall Basin 43.

Matrix: SEDIMENT

Requested Analyses

Organics

General

Metals

Comments

Analyses added per customer 6/5/09 ~~PHH~~

Sediment traps removed: 5/27/09 (All Of 43 sites)

volume for additional follow-up analyses.

PCB Con
PCB Aro
PAH + Ph
SVOCs (C
Pestic
Grain Siz
OC
S*
Total Met
Cu, Pb, Ni

Figure 1. The effect of the number of trials on the number of correct responses. The number of correct responses was plotted against the number of trials for each condition. The number of correct responses increased with the number of trials for all conditions. The number of correct responses was highest for the condition with the highest number of trials (10 trials) and lowest for the condition with the lowest number of trials (2 trials).

×	×	×	×
×	×	×	×
×	×	×	×
	×	×	×
	×		
×	×	×	×
●	●	●	●
	×	×	×

TS = 51.6%	198.4 g Total Wet Weight
TS = 44.7%	320.1 g Total Wet Weight
TS = 49.9%	491.9 g Total Wet Weight

(Sample collected downstream from a combined sewer diversion)

[illegible][illegible]

Signature: _____
Time: _____
Signature: _____
Time: _____
Relinquished By: 3. _____
Relinquished By: 4. _____
Witness: _____
Witness: _____

Signature:	Date:
Name:	Time:
Signature:	Date:
Name:	Time:

Date: <u>6/12/05</u> Printed Name: <u>Joseph B. Bowers</u>		Date: <u>6/12/05</u> Printed Name: <u>Joseph B. Bowers</u>	
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Received By: 1.	Received By: 2.	Received By: 3.	Received By: 4.
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Signature: _____
Time: _____

Signature: _____
Time: _____

Received by: _____
Sentences: _____

4.

Printed Name:	Date:	Signature:	IMB:

Printed Name:	Date:	Printed Name:	Date:
_____	_____	_____	_____



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: FO095657

Sample Collected: 05/29/09 12:35
Sample Received: 06/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC290-0509
N RIVER & ALBINA
Sample Point Code: 43_ST1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 3

System ID: AN05756
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	51.6	% W/W	0.01	SM 2540 G	06/03/09
METALS					
ARSENIC	3.03	mg/Kg dry wt	0.50	EPA 6020	06/10/09
CADMIUM	2.20	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	47.5	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	80.4	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	82.3	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.058	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	39.5	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	0.12	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	519	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1254	90	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1260	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	77800	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<1.1	µg/Kg dry wt	1.1	EPA 8081A	06/09/09
4,4'-DDE	<1.1	µg/Kg dry wt	1.1	EPA 8081A	06/09/09
4,4'-DDT	<56	µg/Kg dry wt	56	EPA 8081A	06/09/09
Aldrin	EST 4.8	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Alpha-BHC	<0.95	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Alpha-Chlordane	<1.8	µg/Kg dry wt	1.8	EPA 8081A	06/09/09
Beta-BHC	<0.95	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Delta-BHC	<0.95	µg/Kg dry wt	0.95	EPA 8081A	06/09/09

Report Date: 07/08/09

Validated By:



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: FO095657

Sample Collected: 05/29/09 12:35
Sample Received: 06/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC290-0509
N RIVER & ALBINA
Sample Point Code: 43_ST1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 3

System ID: AN05756
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dieldrin	<5.6	µg/Kg dry wt	5.6	EPA 8081A	06/09/09
Endosulfan I	EST 6.3	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Endosulfan II	<8.5	µg/Kg dry wt	8.5	EPA 8081A	06/09/09
Endosulfan Sulfate	<2.3	µg/Kg dry wt	2.3	EPA 8081A	06/09/09
Endrin	3.3	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Endrin Aldehyde	3.4	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Endrin Ketone	1.1	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	EST 6.1	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Gamma-Chlordane	EST 18	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Heptachlor	65	µg/Kg dry wt	4.8	EPA 8081A	06/09/09
Heptachlor Epoxide	<0.95	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Methoxychlor	2.4	µg/Kg dry wt	0.95	EPA 8081A	06/09/09
Toxaphene	<880	µg/Kg dry wt	880	EPA 8081A	06/09/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Acenaphthylene	<155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Anthracene	<155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	157	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	180	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	253	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	348	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	16500	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Chrysene	429	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Diethyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Fluoranthene	609	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Fluorene	<155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09

Report Date: 07/08/09

Validated By:



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: **FO095657**

Sample Collected: 05/29/09 12:35
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC290-0509
N RIVER & ALBINA
Sample Point Code: 43_ST1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 3

System ID: AN05756
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Indeno(1,2,3-cd)pyrene	<155	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Naphthalene	513	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Phenanthrene	505	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09
Pyrene	517	µg/Kg dry wt	155	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095657

Report Date: 07/08/09

Validated By:



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095658**

Sample Collected: 05/29/09 11:33
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC539-0509
N KERBY & WHEELER
Sample Point Code: 43_ST2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 3

System ID: AN05757
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits. LAB: MRLs are raised for PCB Aroclors because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	44.7	% W/W	0.01	SM 2540 G	06/03/09
METALS					
ARSENIC	9.37	mg/Kg dry wt	0.50	EPA 6020	06/10/09
CADMIUM	106	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	75.2	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	280	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	301	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.141	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	88.3	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	2.98	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	1060	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	06/09/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1248	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1260	173	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	104000	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<3.8	µg/Kg dry wt	3.8	EPA 8081A	06/09/09
4,4'-DDE	<2.4	µg/Kg dry wt	2.4	EPA 8081A	06/09/09
4,4'-DDT	<120	µg/Kg dry wt	120	EPA 8081A	06/09/09
Aldrin	4.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Alpha-BHC	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Alpha-Chlordane	<7.6	µg/Kg dry wt	7.6	EPA 8081A	06/09/09
Beta-BHC	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09

Report Date: 07/08/09

Validated By: 



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: FO095658

Sample Collected: 05/29/09 11:33
Sample Received: 06/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC539-0509
N KERBY & WHEELER
Sample Point Code: 43_ST2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 3

System ID: AN05757
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits. LAB: MRLs are raised for PCB Aroclors because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Delta-BHC	11	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Dieldrin	<4.7	µg/Kg dry wt	4.7	EPA 8081A	06/09/09
Endosulfan I	<1.6	µg/Kg dry wt	1.6	EPA 8081A	06/09/09
Endosulfan II	<16	µg/Kg dry wt	16	EPA 8081A	06/09/09
Endosulfan Sulfate	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Endrin	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Endrin Aldehyde	<1.4	µg/Kg dry wt	1.4	EPA 8081A	06/09/09
Endrin Ketone	<1.4	µg/Kg dry wt	1.4	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	<17	µg/Kg dry wt	17	EPA 8081A	06/09/09
Gamma-Chlordane	<6.5	µg/Kg dry wt	6.5	EPA 8081A	06/09/09
Heptachlor	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Heptachlor Epoxide	EST 3.2	µg/Kg dry wt	1.2	EPA 8081A	06/09/09
Methoxychlor	<13	µg/Kg dry wt	13	EPA 8081A	06/09/09
Toxaphene	<1100	µg/Kg dry wt	1100	EPA 8081A	06/09/09

POLYCHLORINATED BIPHENYL CONGENERS -PACE

Refer to Contract Report Completed ng/Kg dry wt EPA 1668 MOD 06/11/09

POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<586	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Acenaphthylene	<586	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Anthracene	691	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	1560	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	1210	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	1140	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	854	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	1100	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	90400	µg/Kg dry wt	5860	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	6590	µg/Kg dry wt	5860	EPA8270M-SIM	06/09/09
Chrysene	2040	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<586	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Diethyl phthalate	<5860	µg/Kg dry wt	5860	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<5860	µg/Kg dry wt	5860	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<5860	µg/Kg dry wt	5860	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<20500	µg/Kg dry wt	20500	EPA8270M-SIM	06/09/09

Report Date: 07/08/09

Validated By:



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: FO095658

Sample Collected: 05/29/09 11:33
Sample Received: 06/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC539-0509
N KERBY & WHEELER
Sample Point Code: 43_ST2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 3

System ID: AN05757
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits. LAB: MRLs are raised for PCB Aroclors because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluoranthene	3510	µg/Kg dry wt.	586	EPA8270M-SIM	06/09/09
Fluorene	<586	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	645	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Naphthalene	4320	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Phenanthrene	2460	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09
Pyrene	2930	µg/Kg dry wt	586	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095658

Report Date: 07/08/09

Validated By:



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095659**

Sample Collected: 05/29/09 14:28
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC552-0509
N WHEELER PL & KERBY AVE
Sample Point Code: 43_ST3
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 3

System ID: AN05758
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of non-target compounds may have affected pesticide quantitations and reporting limits. LAB: MRLs are raised for PCB Aroclors because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	49.9	% W/W	0.01	SM 2540 G	06/03/09
METALS					
ARSENIC	2.17	mg/Kg dry wt	0.50	EPA 6020	06/10/09
CADMIUM	0.60	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	21.8	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	76.9	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	82.2	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.168	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	17.3	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	0.85	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	303	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	06/09/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1248	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1260	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	62800	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	6.9	Fract %	0.1	ASTM D421/422	06/10/09
Coarse Sand (4750-2000 µm)	1.8	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (150-75 µm)	14.3	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (250-150 µm)	14.2	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (425-250 µm)	18.1	Fract %	0.1	ASTM D421/422	06/10/09
Gravel (>4750 µm)	0.6	Fract %	0.1	ASTM D421/422	06/10/09
Medium Sand (2000-850 µm)	7.0	Fract %	0.1	ASTM D421/422	06/10/09

Report Date: 07/08/09

Validated By:



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: FO095659

Sample Collected: 05/29/09 14:28
Sample Received: 06/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC552-0509
N WHEELER PL & KERBY AVE
Sample Point Code: 43_ST3
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 3

System ID: AN05758
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of non-target compounds may have affected pesticide quantitations and reporting limits. LAB: MRLs are raised for PCB Aroclors because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Medium Sand (850-425 μ m)	15.6	Fract %	0.1	ASTM D421/422	06/10/09
Silt (13-9 μ m)	0.9	Fract %	0.1	ASTM D421/422	06/10/09
Silt (22-13 μ m)	1.8	Fract %	0.1	ASTM D421/422	06/10/09
Silt (32-22 μ m)	1.8	Fract %	0.1	ASTM D421/422	06/10/09
Silt (7-3.2 μ m)	1.4	Fract %	0.1	ASTM D421/422	06/10/09
Silt (75-32 μ m)	14.5	Fract %	0.1	ASTM D421/422	06/10/09
Silt (9-7 μ m)	0.9	Fract %	0.1	ASTM D421/422	06/10/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<1.3	μ g/Kg dry wt	1.3	EPA 8081A	06/09/09
4,4'-DDE	2.6	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
4,4'-DDT	<3.9	μ g/Kg dry wt	3.9	EPA 8081A	06/09/09
Aldrin	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Alpha-BHC	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Alpha-Chlordane	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Beta-BHC	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Delta-BHC	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Dieldrin	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endosulfan I	EST 2.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endosulfan II	<1.4	μ g/Kg dry wt	1.4	EPA 8081A	06/09/09
Endosulfan Sulfate	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin	<1.2	μ g/Kg dry wt	1.2	EPA 8081A	06/09/09
Endrin Aldehyde	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin Ketone	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Gamma-Chlordane	1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Heptachlor	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Heptachlor Epoxide	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Methoxychlor	<1.1	μ g/Kg dry wt	1.1	EPA 8081A	06/09/09
Toxaphene	<50	μ g/Kg dry wt	50	EPA 8081A	06/09/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	06/09/09

Report Date: 07/08/09

Validated By:



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: **FO095659**

Sample Collected: 05/29/09 14:28
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC552-0509
N WHEELER PL & KERBY AVE
Sample Point Code: 43_ST3
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 3

System ID: AN05758
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of non-target compounds may have affected pesticide quantitations and reporting limits. LAB: MRLs are raised for PCB Aroclors because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthylene	<107	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Anthracene	<107	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	213	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	194	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	173	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	158	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	156	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	5030	µg/Kg dry wt	2140	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<2140	µg/Kg dry wt	2140	EPA8270M-SIM	06/09/09
Chrysene	258	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<107	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Diethyl phthalate	<2140	µg/Kg dry wt	2140	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<2140	µg/Kg dry wt	2140	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<2140	µg/Kg dry wt	2140	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<2140	µg/Kg dry wt	2140	EPA8270M-SIM	06/09/09
Fluoranthene	437	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Fluorene	<107	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	131	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Naphthalene	<107	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Phenanthrene	236	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09
Pyrene	313	µg/Kg dry wt	107	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095659

Report Date: 07/08/09

Validated By: 



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095660**

Sample Collected: 06/01/09 11:35
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC500-0609
N TILLAMOOK & KERBY
Sample Point Code: 43_ST4
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AN05759
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	63.9	% W/W	0.01	SM 2540 G	06/03/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1254	125	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1260	324	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	76000	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<209	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Acenaphthylene	<209	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Anthracene	223	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	530	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	468	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	565	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	620	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	425	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	58900	µg/Kg dry wt	4170	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	4310	µg/Kg dry wt	4170	EPA8270M-SIM	06/09/09
Chrysene	956	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<209	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Diethyl phthalate	<4170	µg/Kg dry wt	4170	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<4170	µg/Kg dry wt	4170	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<4170	µg/Kg dry wt	4170	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<12500	µg/Kg dry wt	12500	EPA8270M-SIM	06/09/09
Fluoranthene	1440	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09

Report Date: 07/08/09

Validated By:



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: FO095660

Sample Collected: 06/01/09 11:35
Sample Received: 06/02/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 2

Address/Location: ST-43-ABC500-0609
N TILLAMOOK & KERBY

Sample Point Code: 43_ST4

System ID: AN05759

Sample Type: COMPOSITE

EID File # : 1020.005

Sample Matrix: SEDIMENT

LocCode: PORTHASW

Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluorene	<209	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	347	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Naphthalene	7900	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Phenanthrene	1390	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09
Pyrene	1310	µg/Kg dry wt	209	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095660

Report Date: 07/08/09

Validated By: 



Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 19, 2009

Mr. Howard Holmes
Test America, Inc.
9405 SW Nimbus Ave.
Beaverton, OR 97008

Subject: Project No.: PSF0274
ARI Project No.: PC04

Dear Mr. Holmes,

The following pages provide the information you requested. Please call me to discuss any questions or comments you may have on the data or its presentation.

Best Regards,
Analytical Resources Incorporated

Guenna Smith
Geotechnical Division Manager
206-695-6246
guennas@arilabs.com

Enclosures

cc: File PC04

SUBCONTRACT ORDER

TestAmerica Portland

PSF0274

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone: (206) 621-6490
Fax: 206-621-7523
Project Location: OR - OREGON
Receipt Temperature: 14.1 °C

Ice: Y N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
<hr/>				
Sample ID: PSF0274-03	Other dry	Sampled: 05/29/09 14:28		
Grain Size (ASTM) - SUB	ug/l	06/22/09	11/25/09 14:28	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
<hr/>				
Sample ID: PSF0274-05	Other dry	Sampled: 06/02/09 11:51		
Grain Size (ASTM) - SUB	ug/l	06/22/09	11/29/09 11:51	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
<hr/>				

Please do the best you can with
these two samples, as this is
all the volume they could
get.

Thanks
Howard Holmes
503-906-9231

Murphy Gilly 6/9/09 1400
Released By Date/Time

Mikha Polunby 6/10/09 1020
Received By Date/Time

Released By Date/Time

Received By Date/Time

Page 1 of 1



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Test America, Inc.

ARI Project No.: PC04

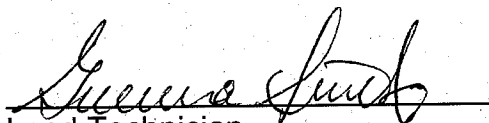
Client Project: PSF0274

Case Narrative

1. Two samples were received on June 10, 2009, and were in good condition.
2. The samples were submitted for grain size distribution, according to ASTM D422. The samples were prepared according to ASTM D421.
3. An assumed specific gravity of 2.65 was used in the calculations.
4. A standard milkshake mixer type device was used to disperse the sample.
5. The data is provided in summary tables and plots.
6. There were no further anomalies in the samples or test method.

Approved by:

Title:


Lead Technician

Date:

6/19/09

Test America, Inc.
PSF0274

Percent Finer (Passing) Than the Indicated Size

Sieve Size (microns)	3"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3
PSF0274-03	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	97.6	90.6	75.0	56.8	42.6	28.3	13.8	12.0	10.1	9.2	8.3	6.9	5.5
PSF0274-05	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.9	95.4	86.1	70.0	55.2	45.3	35.2	21.7	16.8	12.5	9.8	8.1	5.4	5.4

Testing performed according to ASTM D421/D422

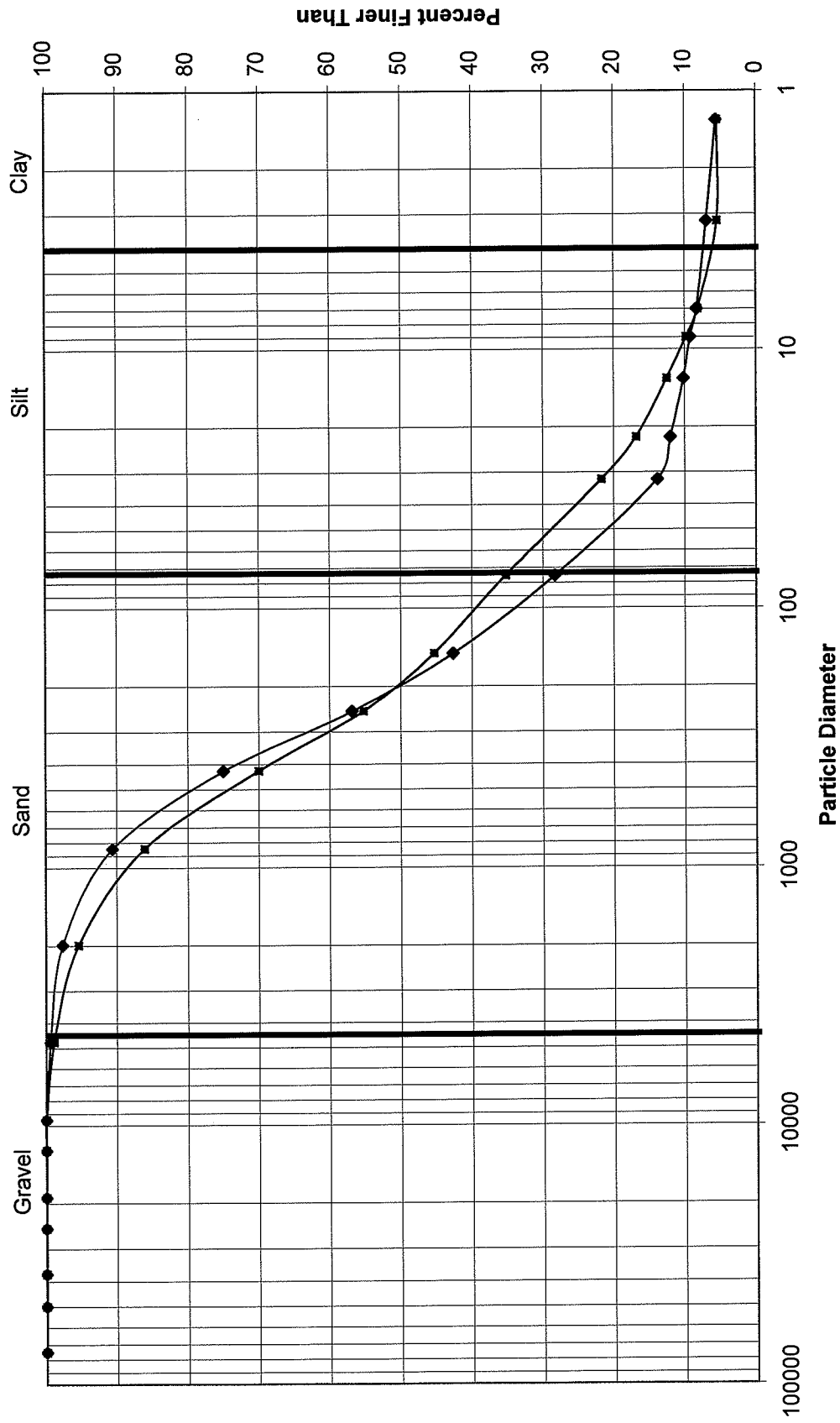
PC04

Test America, Inc.
PSF0274

Percent Retained in Each Size Fraction

Description	%Coarse Gravel				% Gravel			% Coarse Sand	% Medium Sand		% Fine Sand			% Very Coarse Silt	% Coarse Silt	% Medium Silt	% Fine Silt	% Very Fine Silt	% Clay
	3-2"	2-1 1/2"	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4/750		4750-2000	2000-850	850-425	425-250	250-150						
Particle Size (microns)																			
PSF0274-03	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.8	7.0	15.6	18.1	14.2	14.3	14.5	1.8	1.8	0.9	1.4	6.9
PSF0274-05	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.5	9.4	16.1	14.8	10.0	10.1	13.5	4.9	4.3	2.7	2.7	5.4

Grain Size Distribution by Hydrometer



June 23, 2009

Analytical Report for Service Request No: K0905119

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: Portland Harbor Stormwater Samp

Dear Jennifer:

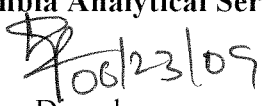
Enclosed are the results of the samples submitted to our laboratory on June 08, 2009. For your reference, these analyses have been assigned our service request number K0905119.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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 PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/lg

Page 1 of 19

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: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Sediment

Service Request No.: K0905119
Date Received: 06/08/09

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 II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Five sediment samples were received for analysis at Columbia Analytical Services on 06/08/09. 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.

Organochlorine Pesticides by EPA Method 8081A – LL

Sample Confirmation Notes:

The confirmation comparison criteria of 40% difference for at least one analyte was exceeded in some samples. The higher of the two values was reported when no evidence of a matrix interference was observed. The lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

Elevated Detection Limits:

The detection limit was elevated several analytes in all samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

Few samples required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

Sample Notes and Discussion:

Most samples appeared to have one or more Aroclor patterns present, in varying concentrations, which are known to interfere with several target compounds in the pesticide analysis. Some analytes may have a high bias because of this interference.

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



06/23/09

Approved by _____ Date _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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

Service Request : K0905119
Date Collected : 06/01/09
Date Received : 06/08/09

Carbon, Total Organic (TOC)

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

Units : Percent
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
FO 095661	K0905119-004	0.05	0.02	1	6/16/2009	06/18/09	8.35	
Method Blank	K0905119-MB	0.05	0.02	1	NA	06/18/09	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request : K0905119
Date Collected : NA
Date Received : NA
Date Prepared : NA
Date Analyzed : 06/18/09

Duplicate Summary Inorganic Parameters

Sample Name : Batch QC
Lab Code : K0904541-001DUP
Test Notes :

Units : Percent
Basis : NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.05	6.26	6.28	6.27	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request : K0905119
Date Collected : NA
Date Received : NA
Date Prepared : NA
Date Analyzed : 06/18/09

**Matrix Spike Summary
Inorganic Parameters**

Sample Name : Batch QC
Lab Code : K0904541-001MS
Test Notes :

Units : Percent
Basis : NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery	Result Notes
								Acceptance Limits	
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.05	12.8	6.26	18.5	96	75-114	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request : K0905119
Date Collected : NA
Date Received : NA
Date Prepared : NA
Date Analyzed : 06/18/09

Laboratory Control Sample Summary Inorganic Parameters

Sample Name : Lab Control Sample
Lab Code : K0905119-LCS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS	Result Notes
						Percent Recovery Acceptance Limits	
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.42	0.46	110	74-123	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

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

Service Request: K0905119
 Date Collected: 05/29/2009
 Date Received: 06/08/2009

Organochlorine Pesticides

Sample Name: FO 095657
 Lab Code: K0905119-001
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.95	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND	Ui	0.95	0.95	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	6.1	P	0.95	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND	Ui	0.95	0.95	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	65	D	4.8	0.60	5	06/09/09	06/19/09	KWG0904936	
Aldrin	4.8	P	0.95	0.16	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	0.57	J	0.95	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	18	P	0.95	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	6.3	P	0.95	0.063	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND	Ui	1.8	1.8	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND	Ui	5.6	5.6	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND	Ui	1.1	1.1	1	06/09/09	06/19/09	KWG0904936	
Endrin	3.3		0.95	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND	Ui	8.5	8.5	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND	Ui	1.1	1.1	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	3.4		0.95	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND	Ui	2.3	2.3	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND	Ui	56	56	5	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	1.1		0.95	0.093	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	2.4		0.95	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND	Ui	880	880	5	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	25-125	06/19/09	Acceptable
Decachlorobiphenyl	71	22-142	06/19/09	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 Stormwater Samp
 Sample Matrix: Sediment

Service Request: K0905119
 Date Collected: 05/29/2009
 Date Received: 06/08/2009

Organochlorine Pesticides

Sample Name: FO 095658
 Lab Code: K0905119-002
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.2	0.47	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND	U	1.2	0.21	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND	Ui	17	17	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	11		1.2	0.083	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND	Ui	1.2	1.2	1	06/09/09	06/19/09	KWG0904936	
Aldrin	4.2		1.2	0.18	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	3.2	P	1.2	0.094	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND	Ui	6.5	6.5	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND	Ui	1.6	1.6	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND	Ui	7.6	7.6	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND	Ui	4.7	4.7	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND	Ui	2.4	2.4	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND	Ui	1.2	1.2	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND	Ui	16	16	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND	Ui	3.8	3.8	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND	Ui	1.4	1.4	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND	Ui	1.2	0.42	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND	Ui	120	120	5	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND	Ui	1.4	1.4	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND	Ui	13	13	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND	Ui	1100	1100	5	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	71	25-125	06/19/09	Acceptable
Decachlorobiphenyl	59	22-142	06/19/09	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 Stormwater Samp
 Sample Matrix: Sediment

Service Request: K0905119
 Date Collected: 05/29/2009
 Date Received: 06/08/2009

Organochlorine Pesticides

Sample Name: FO 095659
 Lab Code: K0905119-003
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.25	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND	Ui	1.0	0.81	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND	U	1.0	0.074	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND	U	1.0	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	1.0		1.0	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	2.0	P	1.0	0.063	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	0.91	J	1.0	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	2.6		1.0	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND	Ui	1.2	1.2	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND	Ui	1.4	1.4	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND	Ui	1.3	1.3	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND	Ui	3.9	3.9	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND	Ui	1.0	0.21	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND	Ui	1.1	1.1	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND	Ui	50	32	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	71	25-125	06/19/09	Acceptable
Decachlorobiphenyl	87	22-142	06/19/09	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 Stormwater Samp
 Sample Matrix: Sediment

Service Request: K0905119
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG0904936-5
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND	U	0.50	0.18	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND	U	0.50	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND	U	0.50	0.074	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND	U	0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND	U	0.50	0.16	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	ND	U	0.50	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND	U	0.50	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND	U	0.50	0.063	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND	U	0.50	0.10	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND	U	0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND	U	0.50	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND	U	0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND	U	0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND	U	0.50	0.17	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND	U	0.50	0.093	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND	U	0.50	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND	U	25	4.8	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	25-125	06/19/09	Acceptable
Decachlorobiphenyl	85	22-142	06/19/09	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.

QA/QC Report

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

Service Request: K0905119

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3541
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 095657	K0905119-001	74	71
FO 095658	K0905119-002	71	59
FO 095659	K0905119-003	71	87
FO 095661	K0905119-004	80	67
FO 095662	K0905119-005	69	72
Method Blank	KWG0904936-5	82	85
Lab Control Sample	KWG0904936-1	81	81
Duplicate Lab Control Sample	KWG0904936-2	85	86

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	25-125
Sur2 = Decachlorobiphenyl	22-142

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request: K0905119
 Date Extracted: 06/09/2009
 Date Analyzed: 06/19/2009

**Lab Control Spike/Duplicate Lab Control Spike Summary
 Organochlorine Pesticides**

Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG0904936

Analyte Name	Lab Control Sample KWG0904936-1 Lab Control Spike			Duplicate Lab Control Sample KWG0904936-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	19.4	20.0	97	21.2	20.0	106	45-150	9	40
beta-BHC	19.8	20.0	99	20.9	20.0	105	47-149	6	40
gamma-BHC (Lindane)	19.5	20.0	97	21.2	20.0	106	48-146	9	40
delta-BHC	21.1	20.0	106	23.1	20.0	116	59-162	9	40
Heptachlor	18.6	20.0	93	20.2	20.0	101	47-142	8	40
Aldrin	17.4	20.0	87	19.0	20.0	95	43-141	9	40
Heptachlor Epoxide	16.8	20.0	84	18.5	20.0	93	48-140	10	40
gamma-Chlordane	18.7	20.0	93	20.4	20.0	102	42-145	9	40
Endosulfan I	12.5	20.0	62	13.5	20.0	67	36-124	8	40
alpha-Chlordane	18.2	20.0	91	20.4	20.0	102	42-145	11	40
Dieldrin	18.9	20.0	94	20.9	20.0	105	50-142	10	40
4,4'-DDE	18.9	20.0	95	21.3	20.0	107	51-149	12	40
Endrin	21.3	20.0	106	23.5	20.0	118	54-155	10	40
Endosulfan II	15.1	20.0	75	16.3	20.0	82	42-130	8	40
4,4'-DDD	20.4	20.0	102	22.3	20.0	112	51-152	9	40
Endrin Aldehyde	6.52	20.0	33	8.50	20.0	43	31-139	26	40
Endosulfan Sulfate	18.8	20.0	94	20.9	20.0	105	48-143	11	40
4,4'-DDT	20.2	20.0	101	22.5	20.0	112	59-151	11	40
Endrin Ketone	17.5	20.0	88	19.5	20.0	97	41-158	11	40
Methoxychlor	20.9	20.0	105	23.6	20.0	118	55-153	12	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



CHAIN OF CUSTODY

SR#: ND405119

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: <u>Portland Harbor Stormwater Samp</u>				CITY/STATE/ZIP: <u> </u>	
PROJECT NUMBER: <u> </u>				E-MAIL ADDRESS: <u> </u>	
PROJECT MANAGER: <u>Jennifer Shackelford</u>				PHONE # <u> </u> FAX# <u> </u>	
COMPANY ADDRESS: <u> </u>				SAMPLER'S SIGNATURE: <u> </u>	
NUMBER OF CONTAINERS: <u> </u>				SPECIAL INSTRUCTIONS/COMMENTS: <u>Please run low-level pesticides 8081. Limited sample size - TS results provided above.</u>	
SAMPLE I.D.		DATE	TIME	LAB I.D.	MATRIX
F0095657		5/29/09	1235		Sediment
5658		5/29/09	1133		
5659		5/29/09	1428		
5661		6/1/09	1450		
5662		6/2/09	1151		
INVOICE INFORMATION					
P.O. # <u> </u> Bill To: <u> </u>					
TURNAROUND 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					
Requested Report Date <u> </u>					
REPORT REQUIREMENTS		INVOICE INFORMATION			
I. Routine Report: Method Blank, Surrogate, as required		P.O. # <u> </u> Bill To: <u> </u>			
II. Report Dup., MS, MSD as required		TURNAROUND REQUIREMENTS			
III. Data Validation Report (includes all raw data)		24 hr. <u> </u> 48 hr. <u> </u>			
IV. CLP Deliverable Report		5 Day <u> </u> Standard (10-15 working days)			
V. EDD		Provide FAX Results <u> </u>			
Requested Report Date <u> </u>		Requested Report Date <u> </u>			
RELINQUISHED BY:		RECEIVED BY:			
Signature <u> </u> Date/Time <u> </u>		Signature <u> </u> Date/Time <u> </u>			
Printed Name <u> </u> Firm <u> </u>		Printed Name <u> </u> Firm <u> </u>			
RELINQUISHED BY:		RECEIVED BY:			
Signature <u> </u> Date/Time <u> </u>		Signature <u> </u> Date/Time <u> </u>			
Printed Name <u> </u> Firm <u> </u>		Printed Name <u> </u> Firm <u> </u>			

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request **K09** 05119

Received: 6-8-09 Opened: 6-8-09 By: [Signature]

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): _____

Thermometer ID: _____

6. If applicable, list Chain of Custody Numbers: _____

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____

8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N

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.)? NA Y N

11. Did all sample labels and tags agree with custody papers? Indicate in the table below. NA Y N

12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N

13. Were the pH-preserved bottles tested* received at the appropriate pH? Indicate in the table below. NA Y N

14. Were VOA vials received without headspace? 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	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: _____

June 30, 2009

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 06/08/09 17:00.
The following list is a summary of the Work Orders contained in this report, generated on 06/30/09 12:12.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSF0274	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

06/30/09 12:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095657	PSF0274-01	Other dry	05/29/09 12:35	06/08/09 17:00
FO095658	PSF0274-02	Other dry	05/29/09 11:33	06/08/09 17:00
FO095659	PSF0274-03	Other dry	05/29/09 14:28	06/08/09 17:00
FO095660	PSF0274-04	Other dry	06/01/09 11:35	06/08/09 17:00
FO095662	PSF0274-05	Other dry	06/02/09 11:51	06/08/09 17:00
FO095677	PSF0274-06	Other dry	06/02/09 11:51	06/08/09 17:00

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-01 (FO095657)				Other dry			Sampled: 05/29/09 12:35			RL3
Acenaphthene	EPA 8270m	ND	----	155	ug/kg dry	3x	9060313	06/09/09 12:00	06/15/09 17:37	
Acenaphthylene	"	ND	----	155	"	"	"	"	"	
Anthracene	"	ND	----	155	"	"	"	"	"	
Benzo (a) anthracene	"	157	----	155	"	"	"	"	"	
Benzo (a) pyrene	"	180	----	155	"	"	"	"	"	
Benzo (b) fluoranthene	"	253	----	155	"	"	"	"	"	
Benzo (ghi) perylene	"	348	----	155	"	"	"	"	"	
Benzo (k) fluoranthene	"	155	----	155	"	"	"	"	"	
Chrysene	"	429	----	155	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	155	"	"	"	"	"	
Fluoranthene	"	609	----	155	"	"	"	"	"	
Fluorene	"	ND	----	155	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	----	155	"	"	"	"	"	
Naphthalene	"	513	----	155	"	"	"	"	"	
Phenanthrene	"	505	----	155	"	"	"	"	"	
Pyrene	"	517	----	155	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				82.3%		24 - 125 %	"			"
<i>Pyrene-d10</i>				64.0%		41 - 141 %	"			"
<i>Benzo (a) pyrene-d12</i>				75.6%		38 - 143 %	"			"

PSF0274-02 (FO095658)				Other dry			Sampled: 05/29/09 11:33			RL3
Acenaphthene	EPA 8270m	ND	----	586	ug/kg dry	10x	9060313	06/09/09 12:00	06/15/09 18:11	
Acenaphthylene	"	ND	----	586	"	"	"	"	"	
Anthracene	"	691	----	586	"	"	"	"	"	
Benzo (a) anthracene	"	1560	----	586	"	"	"	"	"	
Benzo (a) pyrene	"	1210	----	586	"	"	"	"	"	
Benzo (b) fluoranthene	"	1140	----	586	"	"	"	"	"	
Benzo (ghi) perylene	"	854	----	586	"	"	"	"	"	
Benzo (k) fluoranthene	"	1100	----	586	"	"	"	"	"	
Chrysene	"	2040	----	586	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	586	"	"	"	"	"	
Fluoranthene	"	3510	----	586	"	"	"	"	"	
Fluorene	"	ND	----	586	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	645	----	586	"	"	"	"	"	
Naphthalene	"	4320	----	586	"	"	"	"	"	
Phenanthrene	"	2460	----	586	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-02 (FO095658)				Other dry			Sampled: 05/29/09 11:33			RL3
Pyrene	EPA 8270m	2930	----	586	ug/kg dry	10x	9060313	06/09/09 12:00	06/15/09 18:11	
Surrogate(s): Fluorene-d10				84.8%		24 - 125 %	"			"
Pyrene-d10				65.9%		41 - 141 %	"			"
Benzo (a) pyrene-d12				84.8%		38 - 143 %	"			"
PSF0274-03 (FO095659)				Other dry			Sampled: 05/29/09 14:28			RL3
Acenaphthene	EPA 8270m	ND	----	107	ug/kg dry	2x	9060313	06/09/09 12:00	06/15/09 18:46	
Acenaphthylene	"	ND	----	107	"	"	"	"	"	
Anthracene	"	ND	----	107	"	"	"	"	"	
Benzo (a) anthracene	"	213	----	107	"	"	"	"	"	
Benzo (a) pyrene	"	194	----	107	"	"	"	"	"	
Benzo (b) fluoranthene	"	173	----	107	"	"	"	"	"	
Benzo (ghi) perylene	"	158	----	107	"	"	"	"	"	
Benzo (k) fluoranthene	"	156	----	107	"	"	"	"	"	
Chrysene	"	258	----	107	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	107	"	"	"	"	"	
Fluoranthene	"	437	----	107	"	"	"	"	"	
Fluorene	"	ND	----	107	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	131	----	107	"	"	"	"	"	
Naphthalene	"	ND	----	107	"	"	"	"	"	
Phenanthrene	"	236	----	107	"	"	"	"	"	
Pyrene	"	313	----	107	"	"	"	"	"	
Surrogate(s): Fluorene-d10				68.9%		24 - 125 %	"			"
Pyrene-d10				56.6%		41 - 141 %	"			"
Benzo (a) pyrene-d12				63.7%		38 - 143 %	"			"
PSF0274-04 (FO095660)				Other dry			Sampled: 06/01/09 11:35			RL7
Acenaphthene	EPA 8270m	ND	----	209	ug/kg dry	5x	9060313	06/09/09 12:00	06/15/09 19:21	
Acenaphthylene	"	ND	----	209	"	"	"	"	"	
Anthracene	"	223	----	209	"	"	"	"	"	
Benzo (a) anthracene	"	530	----	209	"	"	"	"	"	
Benzo (a) pyrene	"	468	----	209	"	"	"	"	"	
Benzo (b) fluoranthene	"	565	----	209	"	"	"	"	"	
Benzo (ghi) perylene	"	620	----	209	"	"	"	"	"	
Benzo (k) fluoranthene	"	425	----	209	"	"	"	"	"	
Chrysene	"	956	----	209	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-04 (FO095660)		Other dry			Sampled: 06/01/09 11:35					RL7
Dibenzo (a,h) anthracene	EPA 8270m	ND	----	209	ug/kg dry	5x	9060313	06/09/09 12:00	06/15/09 19:21	
Fluoranthene	"	1440	----	209	"	"	"	"	"	
Fluorene	"	ND	----	209	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	347	----	209	"	"	"	"	"	
Naphthalene	"	7900	----	209	"	"	"	"	"	
Phenanthrene	"	1390	----	209	"	"	"	"	"	
Pyrene	"	1310	----	209	"	"	"	"	"	
<hr/>										
<i>Surrogate(s): Fluorene-d10</i>				87.9%		24 - 125 %	"			"
<i>Pyrene-d10</i>				68.2%		41 - 141 %	"			"
<i>Benzo (a) pyrene-d12</i>				80.4%		38 - 143 %	"			"
<hr/>										
PSF0274-05 (FO095662)		Other dry			Sampled: 06/02/09 11:51					RL7
Acenaphthene	EPA 8270m	ND	----	103	ug/kg dry	2x	9060313	06/09/09 12:00	06/15/09 19:58	
Acenaphthylene	"	ND	----	103	"	"	"	"	"	
Anthracene	"	ND	----	103	"	"	"	"	"	
Benzo (a) anthracene	"	159	----	103	"	"	"	"	"	
Benzo (a) pyrene	"	175	----	103	"	"	"	"	"	
Benzo (b) fluoranthene	"	254	----	103	"	"	"	"	"	
Benzo (ghi) perylene	"	283	----	103	"	"	"	"	"	
Benzo (k) fluoranthene	"	165	----	103	"	"	"	"	"	
Chrysene	"	355	----	103	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	103	"	"	"	"	"	
Fluoranthene	"	532	----	103	"	"	"	"	"	
Fluorene	"	ND	----	103	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	161	----	103	"	"	"	"	"	
Naphthalene	"	8240	----	2580	"	50x	"	"	06/11/09 23:19	
Phenanthrene	"	285	----	103	"	2x	"	"	06/15/09 19:58	
Pyrene	"	400	----	103	"	"	"	"	"	
<hr/>										
<i>Surrogate(s): Fluorene-d10</i>				82.5%		24 - 125 %	"			"
<i>Pyrene-d10</i>				61.7%		41 - 141 %	"			"
<i>Benzo (a) pyrene-d12</i>				77.0%		38 - 143 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-01 (FO095657)		Other dry			Sampled: 05/29/09 12:35				RL3	
Dimethyl phthalate	EPA 8270m	ND	----	5160	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 02:24	
Diethyl phthalate	"	ND	----	5160	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	5160	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	5160	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	16500	----	5160	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	5160	"	"	"	"	"	
<i>Surrogate(s): 2-Fluorobiphenyl</i>				NR		10 - 150 %	"		"	Z3
<i>p-Terphenyl-d14</i>				NR		10 - 150 %	"		"	Z3
PSF0274-02 (FO095658)		Other dry			Sampled: 05/29/09 11:33				RL3	
Dimethyl phthalate	EPA 8270m	ND	----	5860	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 03:01	
Diethyl phthalate	"	ND	----	5860	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	5860	"	"	"	"	"	
Butyl benzyl phthalate	"	6590	----	5860	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	90400	----	5860	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	20500	"	"	"	"	"	RL1
<i>Surrogate(s): 2-Fluorobiphenyl</i>				NR		10 - 150 %	"		"	Z3
<i>p-Terphenyl-d14</i>				NR		10 - 150 %	"		"	Z3
PSF0274-03 (FO095659)		Other dry			Sampled: 05/29/09 14:28				RL3	
Dimethyl phthalate	EPA 8270m	ND	----	2140	ug/kg dry	20x	9060313	06/09/09 12:00	06/25/09 03:37	
Diethyl phthalate	"	ND	----	2140	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	2140	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	2140	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	5030	----	2140	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	2140	"	"	"	"	"	
<i>Surrogate(s): 2-Fluorobiphenyl</i>				68.0%		10 - 150 %	"		"	Z3
<i>p-Terphenyl-d14</i>				110%		10 - 150 %	"		"	Z3
PSF0274-04 (FO095660)		Other dry			Sampled: 06/01/09 11:35				RL3	
Dimethyl phthalate	EPA 8270m	ND	----	4170	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 04:13	
Diethyl phthalate	"	ND	----	4170	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	4170	"	"	"	"	"	
Butyl benzyl phthalate	"	4310	----	4170	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	58900	----	4170	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	12500	"	"	"	"	"	RL1

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-04 (FO095660)				Other dry			Sampled: 06/01/09 11:35			RL3
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			" Z3
p-Terphenyl-d14				NR		10 - 150 %	"			" Z3
PSF0274-05 (FO095662)				Other dry			Sampled: 06/02/09 11:51			RL3
Dimethyl phthalate	EPA 8270m	ND	----	5160	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 04:49	
Diethyl phthalate	"	ND	----	5160	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	5160	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	5160	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	26600	----	5160	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	7740	"	"	"	"	"	RL1
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			" Z3
p-Terphenyl-d14				NR		10 - 150 %	"			" Z3
PSF0274-06 (FO095677)				Other dry			Sampled: 06/02/09 11:51			RL3
Dimethyl phthalate	EPA 8270m	ND	----	5200	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 05:25	
Diethyl phthalate	"	ND	----	5200	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	5200	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	5200	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	19700	----	5200	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	5200	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			" Z3
p-Terphenyl-d14				NR		10 - 150 %	"			" Z3

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Percent Dry Weight (Solids) per ASTM D2216-80
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-01 (FO095657)					Other dry			Sampled: 05/29/09 12:35		
% Solids	NCA SOP	51.6	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-02 (FO095658)					Other dry			Sampled: 05/29/09 11:33		
% Solids	NCA SOP	44.7	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-03 (FO095659)					Other dry			Sampled: 05/29/09 14:28		
% Solids	NCA SOP	49.9	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-04 (FO095660)					Other dry			Sampled: 06/01/09 11:35		
% Solids	NCA SOP	63.9	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-05 (FO095662)					Other dry			Sampled: 06/02/09 11:51		
% Solids	NCA SOP	51.3	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-06 (FO095677)					Other dry			Sampled: 06/02/09 11:51		
% Solids	NCA SOP	51.3	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Organic Carbon, Total (TOC)
TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-01 (FO095657)										
										Other dry
										Sampled: 05/29/09 12:35
Total Organic Carbon - Duplicates	9060	77800	10.4	100	mg/Kg	1x	28522	06/22/09 13:50	06/22/09 13:50	
PSF0274-02 (FO095658)										
										Other dry
										Sampled: 05/29/09 11:33
Total Organic Carbon - Duplicates	9060	104000	10.4	100	mg/Kg	1x	28522	06/22/09 14:05	06/22/09 14:05	
PSF0274-03 (FO095659)										
										Other dry
										Sampled: 05/29/09 14:28
Total Organic Carbon - Duplicates	9060	62800	10.4	100	mg/Kg	1x	28522	06/22/09 14:19	06/22/09 14:19	
PSF0274-04 (FO095660)										
										Other dry
										Sampled: 06/01/09 11:35
Total Organic Carbon - Duplicates	9060	76000	10.4	100	mg/Kg	1x	28522	06/22/09 14:34	06/22/09 14:34	
PSF0274-05 (FO095662)										
										Other dry
										Sampled: 06/02/09 11:51
Total Organic Carbon - Duplicates	9060	68000	10.4	100	mg/Kg	1x	28522	06/22/09 15:02	06/22/09 15:02	
PSF0274-06 (FO095677)										
										Other dry
										Sampled: 06/02/09 11:51
Total Organic Carbon - Duplicates	9060	74000	10.4	100	mg/Kg	1x	28522	06/22/09 15:37	06/22/09 15:37	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9060313

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9060313-BLK1)

Extracted: 06/09/09 12:00

Acenaphthene	EPA 8270m	ND	---	13.4	ug/kg wet	1x	--	--	--	--	--	--	06/10/09 17:49	
Acenaphthylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	93.1%	Limits:	24-125%	"							06/10/09 17:49	
Pyrene-d10			86.1%		41-141%	"							"	
Benzo (a) pyrene-d12			89.7%		38-143%	"							"	

LCS (9060313-BS1)

Extracted: 06/09/09 12:00

Acenaphthene	EPA 8270m	162	---	13.3	ug/kg wet	1x	--	165	98.1%	(33-139)	--	--	06/10/09 17:18	
Benzo (a) pyrene	"	160	---	13.3	"	"	--	"	96.8%	(45-149)	--	--	"	
Pyrene	"	146	---	13.3	"	"	--	"	88.2%	(39-138)	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	102%	Limits:	24-125%	"							06/10/09 17:18	
Pyrene-d10			92.4%		41-141%	"							"	
Benzo (a) pyrene-d12			100%		38-143%	"							"	

Matrix Spike (9060313-MS1)

QC Source: PSF0201-01

Extracted: 06/09/09 12:00

Acenaphthene	EPA 8270m	221	---	105	ug/kg dry	5x	5.24	260	82.8%	(33-139)	--	--	06/10/09 16:15	
Benzo (a) pyrene	"	219	---	105	"	"	23.7	"	75.1%	(45-149)	--	--	"	
Pyrene	"	193	---	105	"	"	55.4	"	52.7%	(39-138)	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	87.1%	Limits:	24-125%	"							06/10/09 16:15	
Pyrene-d10			72.6%		41-141%	"							"	
Benzo (a) pyrene-d12			84.9%		38-143%	"							"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9060313

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (9060313-MSD1)			QC Source: PSF0201-01					Extracted: 06/09/09 12:00						
Acenaphthene	EPA 8270m	226	---	103	ug/kg dry	5x	5.24	257	85.9%	(33-139)	2.54%	(60)	06/10/09 16:46	
Benzo (a) pyrene	"	234	---	103	"	"	23.7	"	81.9%	(45-149)	6.79%	"	"	
Pyrene	"	231	---	103	"	"	55.4	"	68.1%	(39-138)	18.0%	"	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	85.7%	Limits:	24-125%	"							06/10/09 16:46	
Pyrene-d10			76.8%		41-141%	"							"	
Benzo (a) pyrene-d12			86.7%		38-143%	"							"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9060313

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9060313-BLK1)

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	ND	---	26.8	ug/kg wet	1x	--	--	--	--	--	--	06/10/09 15:58	
Diethyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Butyl benzyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery:	88.1%	Limits:	10-150%	"							06/10/09 15:58	
p-Terphenyl-d14			105%		10-150%	"							"	

LCS (9060313-BS1)

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	116	---	26.6	ug/kg wet	1x	--	132	88.0%	(20-150)	--	--	06/24/09 20:23	
Diethyl phthalate	"	128	---	26.6	"	"	--	"	96.9%	"	--	--	"	
Di-n-butyl phthalate	"	142	---	26.6	"	"	--	"	108%	"	--	--	"	
Butyl benzyl phthalate	"	155	---	26.6	"	"	--	"	117%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	136	---	26.6	"	"	--	"	103%	"	--	--	"	
Di-n-octyl phthalate	"	121	---	26.6	"	"	--	"	91.7%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery:	85.0%	Limits:	10-150%	"							06/24/09 20:23	
p-Terphenyl-d14			91.3%		10-150%	"							"	

Matrix Spike (9060313-MS1)

QC Source: PSF0201-01

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	189	---	209	ug/kg dry	5x	ND	208	90.8%	(10-150)	--	--	06/25/09 19:43	
Diethyl phthalate	"	196	---	209	"	"	ND	"	94.0%	"	--	--	"	
Di-n-butyl phthalate	"	205	---	209	"	"	ND	"	98.4%	"	--	--	"	
Butyl benzyl phthalate	"	231	---	209	"	"	ND	"	111%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	301	---	209	"	"	68.9	"	112%	"	--	--	"	
Di-n-octyl phthalate	"	194	---	209	"	"	ND	"	93.1%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery:	65.6%	Limits:	10-150%	"							06/25/09 19:43	
p-Terphenyl-d14			87.3%		10-150%	"							"	

Matrix Spike Dup (9060313-MSD1)

QC Source: PSF0201-01

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	181	---	207	ug/kg dry	5x	ND	206	88.0%	(10-150)	4.21% (50)		06/25/09 20:19	
Diethyl phthalate	"	194	---	207	"	"	ND	"	94.3%	"	0.833%	"	"	
Di-n-butyl phthalate	"	203	---	207	"	"	ND	"	98.7%	"	0.810%	"	"	
Butyl benzyl phthalate	"	208	---	207	"	"	ND	"	101%	"	10.5%	"	"	
Bis(2-ethylhexyl)phthalate	"	284	---	207	"	"	68.9	"	104%	"	6.05%	"	"	
Di-n-octyl phthalate	"	184	---	207	"	"	ND	"	89.5%	"	5.01%	"	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery:	66.4%	Limits:	10-150%	"							06/25/09 20:19	
p-Terphenyl-d14			87.7%		10-150%	"							"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 28522

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-28522-6)			QC Source:					Extracted: 06/22/09 13:36						
Total Organic Carbon - Duplicates	9060	4028	10.4	100	mg/Kg	1x	--	3530	114%	(28-172)	--	--	06/22/09 13:36	
Blank (220-28522-7)			QC Source:					Extracted: 06/22/09 13:43						
Total Organic Carbon - Duplicates	9060	ND	10.4	100	mg/Kg	1x	--	--	--	--	--	--	06/22/09 13:43	
Matrix Spike (93055S)			QC Source: PSF0274-05					Extracted: 06/22/09 15:30						
Total Organic Carbon - Duplicates	9060	192400	10.4	100	mg/Kg	1x	68000	127000	98%	(75-125)	--	--	06/22/09 15:30	
Duplicate (93055X)			QC Source: PSF0274-05					Extracted: 06/22/09 15:16						
Total Organic Carbon - Duplicates	9060	68320	10.4	100	mg/Kg	1x	68000	--	--	--	0%	(20)	06/22/09 15:16	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Notes and Definitions

Report Specific Notes:

- RL1 - Reporting limit raised due to sample matrix effects.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- RL7 - Sample required dilution due to high concentrations of target analyte.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Howard Holmes, Project Manager

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TAI-1000/0408

ⓧⓧ Please run PAH + phthalates, 8270-SIM as for UIC project w/ low detection limits.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSFO274 Date/Time Received: 6/18/09 1700
Client Name and Project: City of Portland
Portland Harbor

Time Zone:

☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☐ PDT/PST ☐ AK ☐ OTHER

Unpacking Checks:

Cooler #(s): 1
Temperatures: 4.6 C
Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☐ Plastic ☒ Glass)

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
Other: _____

N/A Yes No

Initials: BLE

- ☒ ☐ ☐ 1. If ESI client, were temp blanks received? If no, document on NOD.
- ☒ ☐ ☐ 2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
- ☒ ☐ ☐ 3. Chain of Custody present? If no, document on NOD.
- ☒ ☐ ☐ 4. Bottles received intact? If no, document on NOD.
- ☒ ☐ ☐ 5. Sample is not multiphasic? If no, document on NOD.
- ☒ ☐ ☐ 6. Proper Container and preservatives used? If no, document on NOD.
- ☒ ☐ ☐ 7. pH of all samples checked and meet requirements? If no, document on NOD.
- ☒ ☐ ☐ 8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
- ☒ ☐ ☐ 9. HF Dilution required?
- ☒ ☐ ☐ 10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
- ☒ ☐ ☐ 11. Did chain of custody agree with samples received? If no, document on NOD.
- ☐ ☒ ☐ 12. Is the "Sampled by" section of the COC completed?
- ☒ ☐ ☐ 13. Were VOA/Oil Syringe samples without headspace?
- ☒ ☐ ☐ 14. Were VOA vials preserved? ☐ HCl ☐ Sodium Thiosulfate ☐ Ascorbic Acid
- ☐ ☒ ☐ 15. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 16. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
- ☒ ☐ ☐ 19. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 20. Was Standard Turn Around (TAT) requested?
- ☐ ☒ ☐ 21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

jm

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSFO274

Login Checks:

Initials: jm

N/A Yes No

- ☒ ☒ ☐ 22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
- ☒ ☐ ☐ 23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
- ☐ ☒ ☐ 24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
- ☐ ☒ ☐ 25. Were special log in instructions read and followed?
- ☐ ☒ ☐ 26. Were tests logged checked against the COC?
- ☒ ☐ ☐ 27. Were rush notices printed and delivered?
- ☒ ☐ ☐ 28. Were short hold notices printed and delivered?
- ☒ ☒ ☐ 29. Were subcontract COCs printed?
- ☒ ☐ ☐ 30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: jm

N/A Yes No

- ☐ ☒ ☐ 31. Were the subcontracted samples/containers put in Sx fridge?
- ☒ ☐ ☐ 32. Were sample bottles and COC double checked for dissolved/filtered metals?
- ☐ ☒ ☐ 33. Did the sample ID, Date, and Time from label match what was logged?
- ☒ ☐ ☐ 34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
- ☒ ☐ ☐ 35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
- ☐ ☒ ☐ 36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

June 29, 2009

Report Information:

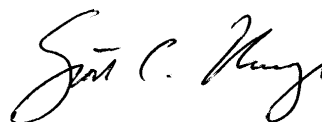
Pace Project #: 1096886
Sample Receipt Date: 06/10/2009
Client Project #: PSF0274
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed and prepared by:



Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 25-75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 39-137%. All of the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard or isotope dilution methods, the data were automatically corrected for variation in recovery and accurate values were obtained. It should be noted that two internal standards and one native analyte exhibited isotope ratios that were outside the target ranges for this method and were flagged "I" on the results tables.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank, with the exception of a low level of congener #31, to be free of PCB congeners at the reporting limits. One sample extract was found to contain a similar level of this congener and was flagged "B" on the results table. In general, levels less than ten times the background are not considered significantly different from the background.

A laboratory spike sample was also prepared with the sample batch using a reference matrix that had been fortified with native standards. The results show that the spiked native compounds in the lab spike were recovered at 91-105%. This indicates a high level of accuracy for this analysis. Matrix spikes were also prepared with the sample batch using a sample from another project in the batch. Results are available upon request.

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PSF0274

1129

1096886

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

503-906-9231

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone: (612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: 3.2 °C

Ice: (Y) / N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSF0274-01	Other dry		Sampled: 05/29/09 12:35	% Solids CoFF ID
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/25/09 12:35	51.6 F0095657 00
Containers Supplied:				
4 oz. jar (B)				
Sample ID: PSF0274-02	Other dry		Sampled: 05/29/09 11:33	44.7 F0095658 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/25/09 11:33	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (B)				
Sample ID: PSF0274-03	Other dry		Sampled: 05/29/09 14:28	49.9 F0095659 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/25/09 14:28	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (C)				
Sample ID: PSF0274-04	Other dry		Sampled: 06/01/09 11:35	63.9 F0095660 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/28/09 11:35	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (B)				
Sample ID: PSF0274-05	Other dry		Sampled: 06/02/09 11:51	51.3 F0095662 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/29/09 11:51	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (C)				
Sample ID: PSF0274-06	Other dry		Sampled: 06/02/09 11:51	51.3 F0095677 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/29/09 11:51	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (B)				

Client would like the 209 PCB list.

Client provided the % Solids data, as there was very limited sample available for analysis. Need results on dry wt. basis

Released By

M. Allen

Date/Time

6/9/09 11:00

Received By

B. Rucob

Date/Time

6/10/09 09:16

Released By

Date/Time

Received By

Date/Time

Page 1 of 1

Report No.....1096886_1668A

Page 4 of 56

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 1096886

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 9796-8712-6087

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other Temp Blank: Yes ☒ No

Thermometer Used 8024462, 179425

Type of Ice: Wet ☒ Blue ☐ None

☐ Samples on ice, cooling process has begun

Cooler Temperature 3.2

Biological Tissue is Frozen: Yes ☐ No ☐

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: 6/16/09

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>SI</u>		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: P

Date: 06/10/09

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Report No.....1096886_1668A

Page 5 of 56

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSF0274-01;F0095657		
Lab Sample ID	1096886001		
Filename	P90623A_05		
Injected By	BAL		
Total Amount Extracted	16.8 g	Matrix	Solid
% Moisture	48.4	Dilution	20
Dry Weight Extracted	8.65 g	Collected	05/29/2009
ICAL ID	P90623A02	Received	06/10/2009
CCal Filename(s)	P90623A_01	Extracted	06/11/2009
Method Blank ID	BLANK-20249	Analyzed	06/23/2009 19:39

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.408	2.86	2.0	0.978	49
13C-4-MoCB	3	7.733	2.51	2.0	1.08	57
13C-2,2'-DiCB	4	7.996	1.55	2.0	0.937	47
13C-4,4'-DiCB	15	15.426	1.53	2.0	1.42	71
13C-2,2',6-TrCB	19	11.939	1.07	2.0	1.13	56
13C-3,4,4'-TrCB	37	23.539	1.06	2.0	1.50	75
13C-2,2',6,6'-TeCB	54	15.707	0.78	2.0	1.31	65
13C-3,4,4',5-TeCB	81	30.850	0.78	2.0	1.38	69
13C-3,3',4,4'-TeCB	77	31.437	0.83	2.0	1.30	65
13C-2,2',4,6,6'-PeCB	104	22.130	1.60	2.0	1.35	68
13C-2,3,3',4,4'-PeCB	105	35.060	1.56	2.0	1.25	62
13C-2,3,4,4',5-PeCB	114	34.406	1.78	2.0	1.15	58
13C-2,3',4,4',5-PeCB	118	33.902	1.65	2.0	1.27	64
13C-2,3',4,4',5'-PeCB	123	33.550	1.59	2.0	1.28	64
13C-3,3',4,4',5-PeCB	126	38.296	1.60	2.0	1.06	53
13C-2,2',4,4',6,6'-HxCB	155	28.402	1.25	2.0	1.55	77
13C-HxCB (156/157)	156/157	41.365	1.23	4.0	2.25	56
13C-2,3',4,4',5,5'-HxCB	167	40.225	1.28	2.0	1.21	60
13C-3,3',4,4',5,5'-HxCB	169	44.702	1.23	2.0	0.947	47
13C-2,2',3,4',5,6,6'-HpCB	188	34.389	1.06	2.0	2.43	122
13C-2,3,3',4,4',5,5'-HpCB	189	47.225	1.02	2.0	1.45	72
13C-2,2',3,3',5,5',6,6'-OxCB	202	39.906	0.89	2.0	2.20	110
13C-2,3,3',4,4',5,5',6-OxCB	205	49.790	0.92	2.0	1.22	61
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.493	0.76	2.0	1.20	60
13C-2,2',3,3',4,4',5,5',6-NoCB	208	46.664	0.80	2.0	1.56	78
13C--DeCB	209	53.066	0.79	2.0	1.07	54
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.027	1.02	2.0	1.51	75
13C-2,3,3',5,5'-PeCB	111	31.555	1.58	2.0	1.40	70
13C-2,2',3,3',5,5',6-HpCB	178	37.575	1.06	2.0	1.46	73
Recovery Standards						
13C-2,5-DiCB	9	10.549	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.140	0.76	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.653	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.089	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	49.316	0.91	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-01;F0095657
Lab Sample ID 1096886001
Filename P90623A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	28.9
2		---	---	ND	---	28.9
3		---	---	ND	---	28.9
4		8.020	1.74	66.6	---	28.9
5		---	---	ND	---	28.9
6		11.076	1.41	39.8	---	28.9
7		---	---	ND	---	28.9
8		11.627	1.60	155	---	28.9
9		---	---	ND	---	28.9
10		---	---	ND	---	28.9
11		14.719	1.59	1370	---	173
12	12/13	---	---	ND	---	57.8
13	12/13	---	---	ND	---	57.8
14		---	---	ND	---	28.9
15		15.450	1.67	220	---	28.9
16		15.330	1.01	237	---	28.9
17		14.827	1.11	201	---	28.9
18	18/30	14.324	1.05	425	---	57.8
19		11.963	1.10	46.2	---	28.9
20	20/28	19.044	1.02	1010	---	57.8
21	21/33	19.295	1.04	439	---	57.8
22		19.748	1.00	394	---	28.9
23		---	---	ND	---	28.9
24		---	---	ND	---	28.9
25		18.356	1.02	62.6	---	28.9
26	26/29	18.088	0.98	158	---	57.8
27		15.078	1.02	35.0	---	28.9
28	20/28	19.044	1.02	(1010)	---	57.8
29	26/29	18.088	0.98	(158)	---	57.8
30	18/30	14.324	1.05	(425)	---	57.8
31		18.708	1.01	866	---	28.9
32		15.992	0.99	153	---	28.9
33	21/33	19.295	1.04	(439)	---	57.8
34		---	---	ND	---	28.9
35		23.119	1.00	93.2	---	28.9
36		---	---	ND	---	28.9
37		23.572	0.97	551	---	28.9
38		---	---	ND	---	28.9
39		---	---	ND	---	28.9
40	40/41/71	23.354	0.79	2150	---	173
41	40/41/71	23.354	0.79	(2150)	---	173
42		22.817	0.80	917	---	57.8
43		21.392	0.87	73.3	---	57.8
44	44/47/65	22.230	0.79	9150	---	173
45	45/51	19.094	0.78	276	---	116
46		19.430	0.75	113	---	57.8
47	44/47/65	22.230	0.79	(9150)	---	173
48		21.996	0.85	461	---	57.8

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-01;F0095657
Lab Sample ID 1096886001
Filename P90623A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.710	0.80	4530	---	116
50	50/53	18.340	0.81	339	---	116
51	45/51	19.094	0.78	(276)	---	116
52		21.157	0.79	18000	---	57.8
53	50/53	18.340	0.81	(339)	---	116
54		---	---	ND	---	57.8
55		---	---	ND	---	57.8
56		27.496	0.76	3350	---	57.8
57		25.383	0.35 I	---	77.8	57.8
58		---	---	ND	---	57.8
59	59/62/75	22.599	0.84	208	---	173
60		27.714	0.74	1250	---	57.8
61	61/70/74/76	26.457	0.76	29800	---	231
62	59/62/75	22.599	0.84	(208)	---	173
63		26.104	0.71	256	---	57.8
64		23.606	0.78	3120	---	57.8
65	44/47/65	22.230	0.79	(9150)	---	173
66		26.809	0.76	7710	---	57.8
67		25.819	0.73	145	---	57.8
68		---	---	ND	---	57.8
69	49/69	21.710	0.80	(4530)	---	116
70	61/70/74/76	26.457	0.76	(29800)	---	231
71	40/41/71	23.354	0.79	(2150)	---	173
72		24.629	0.81	67.7	---	57.8
73		---	---	ND	---	57.8
74	61/70/74/76	26.457	0.76	(29800)	---	231
75	59/62/75	22.599	0.84	(208)	---	173
76	61/70/74/76	26.457	0.76	(29800)	---	231
77		31.454	0.78	3410	---	57.8
78		30.548	0.69	349	---	57.8
79		29.794	0.72	460	---	57.8
80		---	---	ND	---	57.8
81		30.867	0.91 I	---	77.2	57.8
82		31.001	1.60	10600	---	57.8
83		29.140	1.56	3640	---	57.8
84		26.591	1.58	17300	---	57.8
85	85/116/117	30.532	1.58	14300	---	173
86	86/87/97/108/119/125	29.861	1.58	56100	---	347
87	86/87/97/108/119/125	29.861	1.58	(56100)	---	347
88	88/91	26.389	1.59	7400	---	116
89		27.111	1.63	459	---	57.8
90	90/101/113	28.687	1.57	65900	---	173
91	88/91	26.389	1.59	(7400)	---	116
92		28.066	1.59	10600	---	57.8
93	93/98/100/102	25.853	1.59	1430	---	231
94		24.981	1.59	146	---	57.8
95		25.467	1.56	37000	---	57.8
96		22.515	1.60	191	---	57.8

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EMPC = Estimated Maximum Possible Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-01;F0095657
Lab Sample ID 1096886001
Filename P90623A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.861	1.58	(56100)	---	347
98	93/98/100/102	25.853	1.59	(1430)	---	231
99		29.291	1.58	32300	---	57.8
100	93/98/100/102	25.853	1.59	(1430)	---	231
101	90/101/113	28.687	1.57	(65900)	---	173
102	93/98/100/102	25.853	1.59	(1430)	---	231
103		24.780	1.62	177	---	57.8
104		---	---	ND	---	57.8
105		35.093	1.53	37300	---	57.8
106		---	---	ND	---	57.8
107	107/124	33.215	1.53	3220	---	116
108	86/87/97/108/119/125	29.861	1.58	(56100)	---	347
109		33.450	1.54	4500	---	57.8
110	110/115	30.733	1.57	101000	---	116
111		---	---	ND	---	57.8
112		---	---	ND	---	57.8
113	90/101/113	28.687	1.57	(65900)	---	173
114		34.422	1.53	1950	---	57.8
115	110/115	30.733	1.57	(101000)	---	116
116	85/116/117	30.532	1.58	(14300)	---	173
117	85/116/117	30.532	1.58	(14300)	---	173
118		33.919	1.53	84200	---	57.8
119	86/87/97/108/119/125	29.861	1.58	(56100)	---	347
120		32.058	1.60	83.6	---	57.8
121		---	---	ND	---	57.8
122		34.238	1.52	1010	---	57.8
123		33.567	1.53	1510	---	57.8
124	107/124	33.215	1.53	(3220)	---	116
125	86/87/97/108/119/125	29.861	1.58	(56100)	---	347
126		38.346	1.44	2030	---	57.8
127		36.686	1.67	204	---	57.8
128	128/166	38.363	1.26	19500	---	116
129	129/138/163	37.122	1.25	90800	---	173
130		36.451	1.24	6150	---	57.8
131		33.466	1.24	1420	---	57.8
132		33.936	1.26	31900	---	57.8
133		34.573	1.27	777	---	57.8
134	134/143	32.863	1.26	3940	---	116
135	135/151	31.739	1.27	16100	---	116
136		29.089	1.26	6940	---	57.8
137		36.686	1.24	7130	---	57.8
138	129/138/163	37.122	1.25	(90800)	---	173
139	139/140	33.299	1.23	1800	---	116
140	139/140	33.299	1.23	(1800)	---	116
141		36.032	1.25	11800	---	57.8
142		---	---	ND	---	57.8
143	134/143	32.863	1.26	(3940)	---	116
144		32.309	1.24	2330	---	57.8

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Pace AnalyticalTM

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Tel: 612-607-1700
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-01;F0095657
Lab Sample ID 1096886001
Filename P90623A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	57.8
146		35.244	1.25	8170	---	57.8
147	147/149	32.678	1.25	45800	---	116
148		---	---	ND	---	57.8
149	147/149	32.678	1.25	(45800)	---	116
150		---	---	ND	---	57.8
151	135/151	31.739	1.27	(16100)	---	116
152		---	---	ND	---	57.8
153	153/168	35.881	1.25	48100	---	116
154		32.024	1.18	492	---	57.8
155		---	---	ND	---	57.8
156	156/157	41.365	1.23	13200	---	116
157	156/157	41.365	1.23	(13200)	---	116
158		37.525	1.25	10100	---	57.8
159		---	---	ND	---	57.8
160		---	---	ND	---	57.8
161		---	---	ND	---	57.8
162		39.772	1.21	417	---	57.8
163	129/138/163	37.122	1.25	(90800)	---	173
164		36.804	1.26	5220	---	57.8
165		---	---	ND	---	57.8
166	128/166	38.363	1.26	(19500)	---	116
167		40.258	1.23	3920	---	57.8
168	153/168	35.881	1.25	(48100)	---	116
169		---	---	ND	---	57.8
170		44.032	1.04	7200	---	57.8
171	171/173	40.426	1.01	2190	---	116
172		42.153	1.04	964	---	57.8
173	171/173	40.426	1.01	(2190)	---	116
174		39.353	1.03	4530	---	57.8
175		38.246	1.00	253	---	57.8
176		35.630	1.12	655	---	57.8
177		39.789	1.04	2980	---	57.8
178		37.592	1.04	788	---	57.8
179		34.724	1.04	1600	---	57.8
180	180/193	42.807	1.04	10400	---	116
181		40.208	1.01	165	---	57.8
182		---	---	ND	---	57.8
183	183/185	39.151	1.04	3070	---	116
184		---	---	ND	---	57.8
185	183/185	39.151	1.04	(3070)	---	116
186		---	---	ND	---	57.8
187		38.531	1.03	4930	---	57.8
188		---	---	ND	---	57.8
189		47.246	1.01	349	---	57.8
190		44.585	1.03	1170	---	57.8
191		43.176	1.05	255	---	57.8
192		---	---	ND	---	57.8

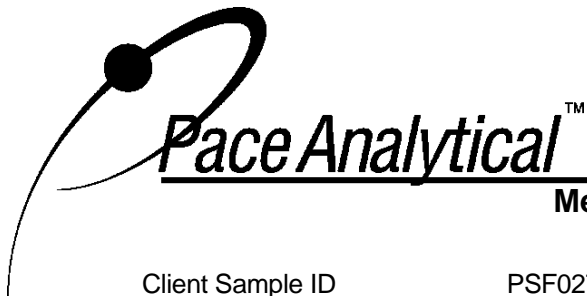
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-01;F0095657
Lab Sample ID 1096886001
Filename P90623A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.807	1.04	(10400)	---	116
194		49.337	0.87	1220	---	86.7
195		46.923	0.94	442	---	86.7
196		45.423	0.89	669	---	86.7
197	197/200	41.835	0.86	199	---	173
198	198/199	44.769	0.89	1380	---	173
199	198/199	44.769	0.89	(1380)	---	173
200	197/200	41.835	0.86	(199)	---	173
201		40.862	0.89	158	---	86.7
202		39.923	0.88	183	---	86.7
203		45.625	0.88	659	---	86.7
204		---	---	ND	---	86.7
205		---	---	ND	---	86.7
206		51.514	0.82	467	---	86.7
207		---	---	ND	---	86.7
208		46.686	0.76	108	---	86.7
209		53.088	0.72	325	---	86.7

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-01;F0095657
Lab Sample ID 1096886001
Filename P90623A_05

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	1850
Total Trichloro Biphenyls	4670
Total Tetrachloro Biphenyls	86100
Total Pentachloro Biphenyls	495000
Total Hexachloro Biphenyls	336000
Total Heptachloro Biphenyls	41500
Total Octachloro Biphenyls	4910
Total Nonachloro Biphenyls	575
Decachloro Biphenyls	325
Total PCBs	971000

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Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSF0274-02;F0095658		
Lab Sample ID	1096886002		
Filename	P90623A_06		
Injected By	BAL		
Total Amount Extracted	16.7 g	Matrix	Solid
% Moisture	55.3	Dilution	20
Dry Weight Extracted	7.45 g	Collected	05/29/2009
ICAL ID	P90623A02	Received	06/10/2009
CCal Filename(s)	P90623A_01	Extracted	06/11/2009
Method Blank ID	BLANK-20249	Analyzed	06/23/2009 20:41

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.408	2.98	2.0	0.970	48
13C-4-MoCB	3	7.744	2.79	2.0	1.12	56
13C-2,2'-DiCB	4	8.008	1.65	2.0	1.09	55
13C-4,4'-DiCB	15	15.462	1.57	2.0	1.32	66
13C-2,2',6-TrCB	19	11.950	1.13	2.0	1.31	65
13C-3,4,4'-TrCB	37	23.588	1.02	2.0	1.41	71
13C-2,2',6,6'-TeCB	54	15.723	0.79	2.0	1.35	67
13C-3,4,4',5-TeCB	81	30.883	0.81	2.0	1.36	68
13C-3,3',4,4'-TeCB	77	31.470	0.80	2.0	1.33	66
13C-2,2',4,6,6'-PeCB	104	22.162	1.62	2.0	1.50	75
13C-2,3,3',4,4'-PeCB	105	35.092	1.61	2.0	1.26	63
13C-2,3,4,4',5-PeCB	114	34.438	1.50	2.0	1.25	62
13C-2,3',4,4',5-PeCB	118	33.918	1.57	2.0	1.34	67
13C-2,3',4,4',5'-PeCB	123	33.583	1.57	2.0	1.35	67
13C-3,3',4,4',5-PeCB	126	38.329	1.63	2.0	1.11	55
13C-2,2',4,4',6,6'-HxCB	155	28.451	1.25	2.0	1.57	78
13C-HxCB (156/157)	156/157	41.381	1.25	4.0	2.25	56
13C-2,3',4,4',5,5'-HxCB	167	40.257	1.24	2.0	1.22	61
13C-3,3',4,4',5,5'-HxCB	169	44.718	1.24	2.0	1.01	50
13C-2,2',3,4',5,6,6'-HpCB	188	34.421	1.04	2.0	2.54	127
13C-2,3,3',4,4',5,5'-HpCB	189	47.245	1.03	2.0	1.41	70
13C-2,2',3,3',5,5',6,6'-OxCB	202	39.922	0.90	2.0	2.28	114
13C-2,3,3',4,4',5,5',6-OxCB	205	49.810	0.90	2.0	1.24	62
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.513	0.79	2.0	1.23	62
13C-2,2',3,3',4,4',5,5',6-NoCB	208	46.685	0.76	2.0	1.52	76
13C--DeCB	209	53.065	0.71	2.0	1.14	57
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.060	1.08	2.0	1.48	74
13C-2,3,3',5,5'-PeCB	111	31.604	1.64	2.0	1.50	75
13C-2,2',3,3',5,5',6-HpCB	178	37.591	1.04	2.0	1.55	77
Recovery Standards						
13C-2,5-DiCB	9	10.572	1.61	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.190	0.81	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.703	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.104	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	49.336	0.94	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-02;F0095658
Lab Sample ID 1096886002
Filename P90623A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		5.408	3.07	36.5	---	33.6
2		---	---	ND	---	33.6
3		---	---	ND	---	33.6
4		8.020	1.57	120	---	33.6
5		---	---	ND	---	33.6
6		11.100	1.33	64.7	---	33.6
7		---	---	ND	---	33.6
8		11.651	1.55	277	---	33.6
9		---	---	ND	---	33.6
10		---	---	ND	---	33.6
11		14.743	1.59	1200	---	201
12	12/13	---	---	ND	---	67.1
13	12/13	---	---	ND	---	67.1
14		---	---	ND	---	33.6
15		15.486	1.55	394	---	33.6
16		15.366	1.07	353	---	33.6
17		14.851	1.06	356	---	33.6
18	18/30	14.347	1.05	602	---	67.1
19		11.975	1.02	72.9	---	33.6
20	20/28	19.093	1.02	1710	---	67.1
21	21/33	19.345	1.00	606	---	67.1
22		19.781	1.00	540	---	33.6
23		---	---	ND	---	33.6
24		---	---	ND	---	33.6
25		18.389	0.96	92.7	---	33.6
26	26/29	18.121	0.98	208	---	67.1
27		15.114	1.06	49.8	---	33.6
28	20/28	19.093	1.02	(1710)	---	67.1
29	26/29	18.121	0.98	(208)	---	67.1
30	18/30	14.347	1.05	(602)	---	67.1
31		18.758	1.03	1130	---	33.6
32		16.025	1.01	588	---	33.6
33	21/33	19.345	1.00	(606)	---	67.1
34		---	---	ND	---	33.6
35		23.169	0.96	57.8	---	33.6
36		---	---	ND	---	33.6
37		23.604	0.99	798	---	33.6
38		---	---	ND	---	33.6
39		---	---	ND	---	33.6
40	40/41/71	23.387	0.77	2080	---	201
41	40/41/71	23.387	0.77	(2080)	---	201
42		22.850	0.80	811	---	67.1
43		21.408	0.88	205	---	67.1
44	44/47/65	22.330	0.79	9570	---	201
45	45/51	19.228	0.78	2970	---	134
46		19.462	0.86	242	---	67.1
47	44/47/65	22.330	0.79	(9570)	---	201
48		22.045	0.87	392	---	67.1

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

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Lab Sample ID 1096886002
Filename P90623A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.743	0.79	4570	---	134
50	50/53	18.372	0.78	1890	---	134
51	45/51	19.228	0.78	(2970)	---	134
52		21.207	0.79	7970	---	67.1
53	50/53	18.372	0.78	(1890)	---	134
54		15.756	0.81	194	---	67.1
55		---	---	ND	---	67.1
56		27.596	0.78	1720	---	67.1
57		---	---	ND	---	67.1
58		---	---	ND	---	67.1
59	59/62/75	22.666	0.77	299	---	201
60		27.814	0.74	780	---	67.1
61	61/70/74/76	26.522	0.76	8290	---	268
62	59/62/75	22.666	0.77	(299)	---	201
63		26.154	0.75	171	---	67.1
64		23.655	0.78	1350	---	67.1
65	44/47/65	22.330	0.79	(9570)	---	201
66		26.875	0.75	3210	---	67.1
67		25.885	0.78	68.0	---	67.1
68		24.997	0.80	90.0	---	67.1
69	49/69	21.743	0.79	(4570)	---	134
70	61/70/74/76	26.522	0.76	(8290)	---	268
71	40/41/71	23.387	0.77	(2080)	---	201
72		---	---	ND	---	67.1
73		---	---	ND	---	67.1
74	61/70/74/76	26.522	0.76	(8290)	---	268
75	59/62/75	22.666	0.77	(299)	---	201
76	61/70/74/76	26.522	0.76	(8290)	---	268
77		31.503	0.77	674	---	67.1
78		---	---	ND	---	67.1
79		29.843	0.71	124	---	67.1
80		---	---	ND	---	67.1
81		---	---	ND	---	67.1
82		31.050	1.54	2310	---	67.1
83		29.172	1.53	1240	---	67.1
84		26.657	1.59	5050	---	67.1
85	85/116/117	30.564	1.57	3740	---	201
86	86/87/97/108/119/125	29.893	1.58	16200	---	403
87	86/87/97/108/119/125	29.893	1.58	(16200)	---	403
88	88/91	26.455	1.60	4540	---	134
89		27.176	1.55	148	---	67.1
90	90/101/113	28.736	1.57	43400	---	201
91	88/91	26.455	1.60	(4540)	---	134
92		28.132	1.58	6940	---	67.1
93	93/98/100/102	25.818	1.57	1640	---	268
94		25.030	1.58	767	---	67.1
95		25.516	1.58	29100	---	67.1
96		22.548	1.62	372	---	67.1

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Sample Analysis Results**

Client Sample ID PSF0274-02;F0095658
Lab Sample ID 1096886002
Filename P90623A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.893	1.58	(16200)	---	403
98	93/98/100/102	25.818	1.57	(1640)	---	268
99		29.340	1.53	9860	---	67.1
100	93/98/100/102	25.818	1.57	(1640)	---	268
101	90/101/113	28.736	1.57	(43400)	---	201
102	93/98/100/102	25.818	1.57	(1640)	---	268
103		24.829	1.58	511	---	67.1
104		---	---	ND	---	67.1
105		35.109	1.54	6750	---	67.1
106		---	---	ND	---	67.1
107	107/124	33.247	1.53	780	---	134
108	86/87/97/108/119/125	29.893	1.58	(16200)	---	403
109		33.499	1.56	1160	---	67.1
110	110/115	30.765	1.57	31700	---	134
111		31.755	1.59	1800	---	67.1
112		---	---	ND	---	67.1
113	90/101/113	28.736	1.57	(43400)	---	201
114		34.455	1.59	298	---	67.1
115	110/115	30.765	1.57	(31700)	---	134
116	85/116/117	30.564	1.57	(3740)	---	201
117	85/116/117	30.564	1.57	(3740)	---	201
118		33.952	1.49	19700	---	67.1
119	86/87/97/108/119/125	29.893	1.58	(16200)	---	403
120		32.090	1.57	80.6	---	67.1
121		---	---	ND	---	67.1
122		34.270	1.51	286	---	67.1
123		33.616	1.56	278	---	67.1
124	107/124	33.247	1.53	(780)	---	134
125	86/87/97/108/119/125	29.893	1.58	(16200)	---	403
126		38.379	1.45	640	---	67.1
127		---	---	ND	---	67.1
128	128/166	38.379	1.24	9080	---	134
129	129/138/163	37.138	1.25	117000	---	201
130		36.467	1.26	4520	---	67.1
131		33.499	1.18	921	---	67.1
132		33.968	1.25	40000	---	67.1
133		34.606	1.24	1590	---	67.1
134	134/143	32.878	1.25	4730	---	134
135	135/151	31.755	1.26	68100	---	134
136		29.122	1.26	21500	---	67.1
137		36.736	1.26	2870	---	67.1
138	129/138/163	37.138	1.25	(117000)	---	201
139	139/140	33.331	1.22	680	---	134
140	139/140	33.331	1.22	(680)	---	134
141		36.065	1.26	30900	---	67.1
142		---	---	ND	---	67.1
143	134/143	32.878	1.25	(4730)	---	134
144		32.342	1.27	8170	---	67.1

Conc = Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-02;F0095658
Lab Sample ID 1096886002
Filename P90623A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	67.1
146		35.276	1.25	17100	---	67.1
147	147/149	32.711	1.26	124000	---	134
148		31.168	1.17	206	---	67.1
149	147/149	32.711	1.26	(124000)	---	134
150		28.803	1.28	291	---	67.1
151	135/151	31.755	1.26	(68100)	---	134
152		28.585	1.35	123	---	67.1
153	153/168	35.897	1.25	126000	---	134
154		32.057	1.27	935	---	67.1
155		---	---	ND	---	67.1
156	156/157	41.381	1.24	7450	---	134
157	156/157	41.381	1.24	(7450)	---	134
158		37.540	1.25	10500	---	67.1
159		---	---	ND	---	67.1
160		---	---	ND	---	67.1
161		---	---	ND	---	67.1
162		39.821	1.22	1570	---	67.1
163	129/138/163	37.138	1.25	(117000)	---	201
164		36.836	1.26	7670	---	67.1
165		---	---	ND	---	67.1
166	128/166	38.379	1.24	(9080)	---	134
167		40.274	1.24	3010	---	67.1
168	153/168	35.897	1.25	(126000)	---	134
169		44.802	1.63 I	---	296	67.1
170		44.047	1.04	44900	---	67.1
171	171/173	40.459	1.03	14700	---	134
172		42.169	1.04	8060	---	67.1
173	171/173	40.459	1.03	(14700)	---	134
174		39.368	1.04	52800	---	67.1
175		38.262	1.04	2620	---	67.1
176		35.662	1.06	8860	---	67.1
177		39.804	1.04	30700	---	67.1
178		37.624	1.05	12000	---	67.1
179		34.740	1.05	27900	---	67.1
180	180/193	42.823	1.04	108000	---	134
181		40.224	0.96	140	---	67.1
182		---	---	ND	---	67.1
183	183/185	39.167	1.04	37800	---	134
184		---	---	ND	---	67.1
185	183/185	39.167	1.04	(37800)	---	134
186		---	---	ND	---	67.1
187		38.547	1.04	71900	---	67.1
188		---	---	ND	---	67.1
189		47.267	0.99	1850	---	67.1
190		44.601	1.04	8700	---	67.1
191		43.192	1.09	1900	---	67.1
192		---	---	ND	---	67.1

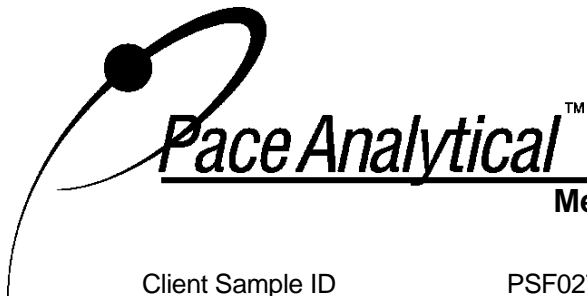
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-02;F0095658
Lab Sample ID 1096886002
Filename P90623A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.823	1.04	(108000)	---	134
194		49.358	0.90	19700	---	101
195		46.943	0.90	8910	---	101
196		45.439	0.90	13000	---	101
197	197/200	41.850	0.89	4710	---	201
198	198/199	44.785	0.89	25900	---	201
199	198/199	44.785	0.89	(25900)	---	201
200	197/200	41.850	0.89	(4710)	---	201
201		40.878	0.89	3590	---	101
202		39.939	0.89	3680	---	101
203		45.640	0.90	13800	---	101
204		---	---	ND	---	101
205		49.832	0.92	1310	---	101
206		51.535	0.79	4540	---	101
207		47.633	0.82	632	---	101
208		46.706	0.80	714	---	101
209		53.086	0.63	245	---	101

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1700 Elm Street - Suite 200
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-02;F0095658
Lab Sample ID 1096886002
Filename P90623A_06

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	36.5
Total Dichloro Biphenyls	2060
Total Trichloro Biphenyls	7160
Total Tetrachloro Biphenyls	47700
Total Pentachloro Biphenyls	189000
Total Hexachloro Biphenyls	609000
Total Heptachloro Biphenyls	433000
Total Octachloro Biphenyls	94600
Total Nonachloro Biphenyls	5890
Decachloro Biphenyls	245
Total PCBs	1390000

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSF0274-03;F0095659		
Lab Sample ID	1096886003		
Filename	P90622A_05		
Injected By	BAL		
Total Amount Extracted	16.9 g	Matrix	Solid
% Moisture	50.1	Dilution	20
Dry Weight Extracted	8.43 g	Collected	05/29/2009
ICAL ID	P90622A02	Received	06/10/2009
CCal Filename(s)	P90622A_01	Extracted	06/11/2009
Method Blank ID	BLANK-20249	Analyzed	06/22/2009 19:39

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.408	2.86	2.0	1.25	63
13C-4-MoCB	3	7.768	2.88	2.0	1.28	64
13C-2,2'-DiCB	4	8.032	1.55	2.0	1.09	54
13C-4,4'-DiCB	15	15.413	1.59	2.0	1.75	87
13C-2,2',6-TrCB	19	11.926	1.07	2.0	1.26	63
13C-3,4,4'-TrCB	37	23.512	1.04	2.0	1.76	88
13C-2,2',6,6'-TeCB	54	15.698	0.83	2.0	1.36	68
13C-3,4,4',5-TeCB	81	30.790	0.79	2.0	1.78	89
13C-3,3',4,4'-TeCB	77	31.394	0.80	2.0	1.70	85
13C-2,2',4,6,6'-PeCB	104	22.104	1.62	2.0	1.38	69
13C-2,3,3',4,4'-PeCB	105	35.016	1.54	2.0	1.85	92
13C-2,3,4,4',5-PeCB	114	34.329	1.66	2.0	1.85	92
13C-2,3',4,4',5-PeCB	118	33.826	1.58	2.0	1.84	92
13C-2,3',4,4',5'-PeCB	123	33.490	1.58	2.0	1.90	95
13C-3,3',4,4',5-PeCB	126	38.186	1.57	2.0	1.82	91
13C-2,2',4,4',6,6'-HxCB	155	28.426	1.31	2.0	1.22	61
13C-HxCB (156/157)	156/157	41.221	1.26	4.0	3.12	78
13C-2,3',4,4',5,5'-HxCB	167	40.114	1.34	2.0	1.58	79
13C-3,3',4,4',5,5'-HxCB	169	44.541	1.26	2.0	1.51	76
13C-2,2',3,4',5,6,6'-HpCB	188	34.329	1.05	2.0	1.77	88
13C-2,3,3',4,4',5,5'-HpCB	189	47.063	1.05	2.0	1.70	85
13C-2,2',3,3',5,5',6,6'-OxCB	202	39.796	0.93	2.0	1.61	80
13C-2,3,3',4,4',5,5',6-OxCB	205	49.628	0.95	2.0	1.49	75
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.331	0.78	2.0	1.40	70
13C-2,2',3,3',4,4',5,5',6-NoCB	208	46.525	0.80	2.0	1.67	83
13C--DeCB	209	52.904	0.69	2.0	1.14	57
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.002	1.04	2.0	1.81	90
13C-2,3,3',5,5'-PeCB	111	31.528	1.64	2.0	1.99	100
13C-2,2',3,3',5,5',6-HpCB	178	37.481	1.05	2.0	1.69	85
Recovery Standards						
13C-2,5-DiCB	9	10.548	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.115	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.661	1.58	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	36.995	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	49.154	0.89	2.0	NA	NA

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Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-03;F0095659
Lab Sample ID 1096886003
Filename P90622A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	29.6
2		---	---	ND	---	29.6
3		---	---	ND	---	29.6
4		---	---	ND	---	29.6
5		---	---	ND	---	29.6
6		---	---	ND	---	29.6
7		---	---	ND	---	29.6
8		---	---	ND	---	29.6
9		---	---	ND	---	29.6
10		---	---	ND	---	29.6
11		14.706	1.57	214	---	178
12	12/13	---	---	ND	---	59.3
13	12/13	---	---	ND	---	59.3
14		---	---	ND	---	29.6
15		---	---	ND	---	29.6
16		---	---	ND	---	29.6
17		---	---	ND	---	29.6
18	18/30	---	---	ND	---	59.3
19		---	---	ND	---	29.6
20	20/28	19.018	1.05	84.3	---	59.3
21	21/33	---	---	ND	---	59.3
22		19.706	1.10	34.3	---	29.6
23		---	---	ND	---	29.6
24		---	---	ND	---	29.6
25		---	---	ND	---	29.6
26	26/29	---	---	ND	---	59.3
27		---	---	ND	---	29.6
28	20/28	19.018	1.05	(84.3)	---	59.3
29	26/29	---	---	ND	---	59.3
30	18/30	---	---	ND	---	59.3
31		18.683	1.06	74.9 B	---	29.6
32		---	---	ND	---	29.6
33	21/33	---	---	ND	---	59.3
34		---	---	ND	---	29.6
35		---	---	ND	---	29.6
36		---	---	ND	---	29.6
37		---	---	ND	---	29.6
38		---	---	ND	---	29.6
39		---	---	ND	---	29.6
40	40/41/71	---	---	ND	---	178
41	40/41/71	---	---	ND	---	178
42		---	---	ND	---	59.3
43		---	---	ND	---	59.3
44	44/47/65	---	---	ND	---	178
45	45/51	---	---	ND	---	119
46		---	---	ND	---	59.3
47	44/47/65	---	---	ND	---	178
48		---	---	ND	---	59.3

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-03;F0095659
Lab Sample ID 1096886003
Filename P90622A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	---	---	ND	---	119
50	50/53	---	---	ND	---	119
51	45/51	---	---	ND	---	119
52		21.131	0.81	221	---	59.3
53	50/53	---	---	ND	---	119
54		---	---	ND	---	59.3
55		---	---	ND	---	59.3
56		---	---	ND	---	59.3
57		---	---	ND	---	59.3
58		---	---	ND	---	59.3
59	59/62/75	---	---	ND	---	178
60		---	---	ND	---	59.3
61	61/70/74/76	26.464	0.81	269	---	237
62	59/62/75	---	---	ND	---	178
63		---	---	ND	---	59.3
64		---	---	ND	---	59.3
65	44/47/65	---	---	ND	---	178
66		26.816	0.76	96.4	---	59.3
67		---	---	ND	---	59.3
68		---	---	ND	---	59.3
69	49/69	---	---	ND	---	119
70	61/70/74/76	26.464	0.81	(269)	---	237
71	40/41/71	---	---	ND	---	178
72		---	---	ND	---	59.3
73		---	---	ND	---	59.3
74	61/70/74/76	26.464	0.81	(269)	---	237
75	59/62/75	---	---	ND	---	178
76	61/70/74/76	26.464	0.81	(269)	---	237
77		---	---	ND	---	59.3
78		---	---	ND	---	59.3
79		---	---	ND	---	59.3
80		---	---	ND	---	59.3
81		---	---	ND	---	59.3
82		---	---	ND	---	59.3
83		---	---	ND	---	59.3
84		26.598	1.58	95.2	---	59.3
85	85/116/117	---	---	ND	---	178
86	86/87/97/108/119/125	---	---	ND	---	356
87	86/87/97/108/119/125	---	---	ND	---	356
88	88/91	---	---	ND	---	119
89		---	---	ND	---	59.3
90	90/101/113	28.677	1.56	302	---	178
91	88/91	---	---	ND	---	119
92		---	---	ND	---	59.3
93	93/98/100/102	---	---	ND	---	237
94		---	---	ND	---	59.3
95		25.458	1.55	254	---	59.3
96		---	---	ND	---	59.3

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-03;F0095659
Lab Sample ID 1096886003
Filename P90622A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	---	---	ND	---	356
98	93/98/100/102	---	---	ND	---	237
99		29.281	1.58	165	---	59.3
100	93/98/100/102	---	---	ND	---	237
101	90/101/113	28.677	1.56	(302)	---	178
102	93/98/100/102	---	---	ND	---	237
103		---	---	ND	---	59.3
104		---	---	ND	---	59.3
105		35.033	1.60	155	---	59.3
106		---	---	ND	---	59.3
107	107/124	---	---	ND	---	119
108	86/87/97/108/119/125	---	---	ND	---	356
109		---	---	ND	---	59.3
110	110/115	30.690	1.54	459	---	119
111		---	---	ND	---	59.3
112		---	---	ND	---	59.3
113	90/101/113	28.677	1.56	(302)	---	178
114		---	---	ND	---	59.3
115	110/115	30.690	1.54	(459)	---	119
116	85/116/117	---	---	ND	---	178
117	85/116/117	---	---	ND	---	178
118		33.859	1.64	372	---	59.3
119	86/87/97/108/119/125	---	---	ND	---	356
120		---	---	ND	---	59.3
121		---	---	ND	---	59.3
122		---	---	ND	---	59.3
123		---	---	ND	---	59.3
124	107/124	---	---	ND	---	119
125	86/87/97/108/119/125	---	---	ND	---	356
126		---	---	ND	---	59.3
127		---	---	ND	---	59.3
128	128/166	---	---	ND	---	119
129	129/138/163	37.029	1.25	494	---	178
130		---	---	ND	---	59.3
131		---	---	ND	---	59.3
132		33.876	1.30	169	---	59.3
133		---	---	ND	---	59.3
134	134/143	---	---	ND	---	119
135	135/151	---	---	ND	---	119
136		---	---	ND	---	59.3
137		---	---	ND	---	59.3
138	129/138/163	37.029	1.25	(494)	---	178
139	139/140	---	---	ND	---	119
140	139/140	---	---	ND	---	119
141		35.955	1.31	88.0	---	59.3
142		---	---	ND	---	59.3
143	134/143	---	---	ND	---	119
144		---	---	ND	---	59.3

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
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Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
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! = Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-03;F0095659
Lab Sample ID 1096886003
Filename P90622A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	59.3
146		---	---	ND	---	59.3
147	147/149	32.635	1.26	335	---	119
148		---	---	ND	---	59.3
149	147/149	32.635	1.26	(335)	---	119
150		---	---	ND	---	59.3
151	135/151	---	---	ND	---	119
152		---	---	ND	---	59.3
153	153/168	35.788	1.27	345	---	119
154		---	---	ND	---	59.3
155		---	---	ND	---	59.3
156	156/157	---	---	ND	---	119
157	156/157	---	---	ND	---	119
158		---	---	ND	---	59.3
159		---	---	ND	---	59.3
160		---	---	ND	---	59.3
161		---	---	ND	---	59.3
162		---	---	ND	---	59.3
163	129/138/163	37.029	1.25	(494)	---	178
164		---	---	ND	---	59.3
165		---	---	ND	---	59.3
166	128/166	---	---	ND	---	119
167		---	---	ND	---	59.3
168	153/168	35.788	1.27	(345)	---	119
169		---	---	ND	---	59.3
170		43.904	1.01	81.7	---	59.3
171	171/173	---	---	ND	---	119
172		---	---	ND	---	59.3
173	171/173	---	---	ND	---	119
174		39.242	1.03	91.5	---	59.3
175		---	---	ND	---	59.3
176		---	---	ND	---	59.3
177		---	---	ND	---	59.3
178		---	---	ND	---	59.3
179		---	---	ND	---	59.3
180	180/193	42.680	1.07	190	---	119
181		---	---	ND	---	59.3
182		---	---	ND	---	59.3
183	183/185	---	---	ND	---	119
184		---	---	ND	---	59.3
185	183/185	---	---	ND	---	119
186		---	---	ND	---	59.3
187		38.420	1.06	118	---	59.3
188		---	---	ND	---	59.3
189		---	---	ND	---	59.3
190		---	---	ND	---	59.3
191		---	---	ND	---	59.3
192		---	---	ND	---	59.3

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-03;F0095659
Lab Sample ID 1096886003
Filename P90622A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.680	1.07	(190)	---	119
194		---	---	ND	---	88.9
195		---	---	ND	---	88.9
196		---	---	ND	---	88.9
197	197/200	---	---	ND	---	178
198	198/199	---	---	ND	---	178
199	198/199	---	---	ND	---	178
200	197/200	---	---	ND	---	178
201		---	---	ND	---	88.9
202		---	---	ND	---	88.9
203		---	---	ND	---	88.9
204		---	---	ND	---	88.9
205		---	---	ND	---	88.9
206		---	---	ND	---	88.9
207		---	---	ND	---	88.9
208		---	---	ND	---	88.9
209		---	---	ND	---	88.9

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-03;F0095659
Lab Sample ID 1096886003
Filename P90622A_05

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	214
Total Trichloro Biphenyls	194
Total Tetrachloro Biphenyls	586
Total Pentachloro Biphenyls	1800
Total Hexachloro Biphenyls	1430
Total Heptachloro Biphenyls	481
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 4710

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSF0274-04;F0095660		
Lab Sample ID	1096886004		
Filename	P90623A_08		
Injected By	BAL		
Total Amount Extracted	12.9 g	Matrix	Solid
% Moisture	36.1	Dilution	20
Dry Weight Extracted	8.26 g	Collected	06/01/2009
ICAL ID	P90623A02	Received	06/10/2009
CCal Filename(s)	P90623A_01	Extracted	06/11/2009
Method Blank ID	BLANK-20249	Analyzed	06/23/2009 22:44

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.421	2.73	2.0	1.13	56
13C-4-MoCB	3	7.793	2.68	2.0	1.08	54
13C-2,2'-DiCB	4	8.057	1.59	2.0	1.03	51
13C-4,4'-DiCB	15	15.534	1.59	2.0	1.03	51
13C-2,2',6-TrCB	19	12.023	1.05	2.0	1.04	52
13C-3,4,4'-TrCB	37	23.689	1.07	2.0	1.21	61
13C-2,2',6,6'-TeCB	54	15.807	0.79	2.0	1.27	64
13C-3,4,4',5-TeCB	81	31.019	0.74	2.0	1.03	52
13C-3,3',4,4'-TeCB	77	31.606	0.77	2.0	1.00	50
13C-2,2',4,6,6'-PeCB	104	22.264	1.69	2.0	1.34	67
13C-2,3,3',4,4'-PeCB	105	35.228	1.58	2.0	0.954	48
13C-2,3,4,4',5-PeCB	114	34.574	1.50	2.0	0.938	47
13C-2,3',4,4',5-PeCB	118	34.071	1.50	2.0	1.04	52
13C-2,3',4,4',5'-PeCB	123	33.719	1.50	2.0	1.01	50
13C-3,3',4,4',5-PeCB	126	38.499	1.49	2.0	0.844	42
13C-2,2',4,4',6,6'-HxCB	155	28.537	1.18	2.0	1.54	77
13C-HxCB (156/157)	156/157	41.568	1.33	4.0	1.95	49
13C-2,3',4,4',5,5'-HxCB	167	40.427	1.23	2.0	1.07	54
13C-3,3',4,4',5,5'-HxCB	169	44.939	1.25	2.0	0.779	39
13C-2,2',3,4',5,6,6'-HpCB	188	34.541	1.12	2.0	2.60	130
13C-2,3,3',4,4',5,5'-HpCB	189	47.464	1.20	2.0	1.34	67
13C-2,2',3,3',5,5',6,6'-OxCB	202	40.075	0.88	2.0	2.17	109
13C-2,3,3',4,4',5,5',6-OxCB	205	50.007	0.89	2.0	1.16	58
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.689	0.78	2.0	1.10	55
13C-2,2',3,3',4,4',5,5',6-NoCB	208	46.860	0.73	2.0	1.41	70
13C--DeCB	209	53.219	0.68	2.0	0.953	48
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.145	1.09	2.0	1.31	66
13C-2,3,3',5,5'-PeCB	111	31.723	1.52	2.0	1.14	57
13C-2,2',3,3',5,5',6-HpCB	178	37.744	1.08	2.0	1.20	60
Recovery Standards						
13C-2,5-DiCB	9	10.621	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.274	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.805	1.63	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.258	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	49.533	0.83	2.0	NA	NA

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ND = Not Detected
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-04;F0095660
Lab Sample ID 1096886004
Filename P90623A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	30.3
2		---	---	ND	---	30.3
3		7.805	3.15	60.1	---	30.3
4		8.069	1.53	113	---	30.3
5		---	---	ND	---	30.3
6		11.161	1.61	67.8	---	30.3
7		---	---	ND	---	30.3
8		11.700	1.55	301	---	30.3
9		---	---	ND	---	30.3
10		---	---	ND	---	30.3
11		14.815	1.59	2200	---	182
12	12/13	15.162	1.50	68.0	---	60.5
13	12/13	15.162	1.50	(68.0)	---	60.5
14		---	---	ND	---	30.3
15		15.546	1.50	522	---	30.3
16		15.438	1.07	472	---	30.3
17		14.923	1.00	385	---	30.3
18	18/30	14.420	1.05	778	---	60.5
19		12.047	1.01	78.6	---	30.3
20	20/28	19.178	1.02	1620	---	60.5
21	21/33	19.430	1.03	800	---	60.5
22		19.866	1.05	696	---	30.3
23		---	---	ND	---	30.3
24		---	---	ND	---	30.3
25		18.474	1.06	93.9	---	30.3
26	26/29	18.205	1.02	222	---	60.5
27		15.186	1.06	61.8	---	30.3
28	20/28	19.178	1.02	(1620)	---	60.5
29	26/29	18.205	1.02	(222)	---	60.5
30	18/30	14.420	1.05	(778)	---	60.5
31		18.843	1.02	1220	---	30.3
32		16.109	1.00	248	---	30.3
33	21/33	19.430	1.03	(800)	---	60.5
34		---	---	ND	---	30.3
35		23.270	1.04	90.6	---	30.3
36		---	---	ND	---	30.3
37		23.706	1.01	1280	---	30.3
38		---	---	ND	---	30.3
39		---	---	ND	---	30.3
40	40/41/71	23.471	0.78	1810	---	182
41	40/41/71	23.471	0.78	(1810)	---	182
42		22.935	0.79	732	---	60.5
43		21.543	0.75	62.6	---	60.5
44	44/47/65	22.365	0.78	2990	---	182
45	45/51	19.212	0.78	430	---	121
46		19.547	0.82	163	---	60.5
47	44/47/65	22.365	0.78	(2990)	---	182
48		22.130	0.80	511	---	60.5

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-04;F0095660
Lab Sample ID 1096886004
Filename P90623A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.845	0.77	1530	---	121
50	50/53	18.457	0.79	291	---	121
51	45/51	19.212	0.78	(430)	---	121
52		21.308	0.78	4140	---	60.5
53	50/53	18.457	0.79	(291)	---	121
54		---	---	ND	---	60.5
55		---	---	ND	---	60.5
56		27.664	0.76	2030	---	60.5
57		---	---	ND	---	60.5
58		---	---	ND	---	60.5
59	59/62/75	22.734	0.74	239	---	182
60		27.882	0.77	1110	---	60.5
61	61/70/74/76	26.625	0.77	7070	---	242
62	59/62/75	22.734	0.74	(239)	---	182
63		26.256	0.89	105	---	60.5
64		23.740	0.77	1280	---	60.5
65	44/47/65	22.365	0.78	(2990)	---	182
66		26.960	0.77	3300	---	60.5
67		25.970	0.83	105	---	60.5
68		---	---	ND	---	60.5
69	49/69	21.845	0.77	(1530)	---	121
70	61/70/74/76	26.625	0.77	(7070)	---	242
71	40/41/71	23.471	0.78	(1810)	---	182
72		---	---	ND	---	60.5
73		---	---	ND	---	60.5
74	61/70/74/76	26.625	0.77	(7070)	---	242
75	59/62/75	22.734	0.74	(239)	---	182
76	61/70/74/76	26.625	0.77	(7070)	---	242
77		31.623	0.77	1320	---	60.5
78		---	---	ND	---	60.5
79		---	---	ND	---	60.5
80		---	---	ND	---	60.5
81		---	---	ND	---	60.5
82		31.153	1.59	2210	---	60.5
83		29.274	1.48	728	---	60.5
84		26.742	1.56	3510	---	60.5
85	85/116/117	30.683	1.55	2660	---	182
86	86/87/97/108/119/125	29.996	1.58	11400	---	363
87	86/87/97/108/119/125	29.996	1.58	(11400)	---	363
88	88/91	26.541	1.52	1350	---	121
89		27.262	1.53	142	---	60.5
90	90/101/113	28.838	1.57	17900	---	182
91	88/91	26.541	1.52	(1350)	---	121
92		28.235	1.57	2800	---	60.5
93	93/98/100/102	26.004	1.46	288	---	242
94		---	---	ND	---	60.5
95		25.601	1.56	12800	---	60.5
96		22.650	1.60	70.2	---	60.5

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Pace AnalyticalTM

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-04;F0095660
Lab Sample ID 1096886004
Filename P90623A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.996	1.58	(11400)	---	363
98	93/98/100/102	26.004	1.46	(288)	---	242
99		29.442	1.55	5260	---	60.5
100	93/98/100/102	26.004	1.46	(288)	---	242
101	90/101/113	28.838	1.57	(17900)	---	182
102	93/98/100/102	26.004	1.46	(288)	---	242
103		---	---	ND	---	60.5
104		---	---	ND	---	60.5
105		35.262	1.58	11300	---	60.5
106		---	---	ND	---	60.5
107	107/124	33.384	1.57	893	---	121
108	86/87/97/108/119/125	29.996	1.58	(11400)	---	363
109		33.618	1.52	1230	---	60.5
110	110/115	30.885	1.56	22300	---	121
111		31.891	1.67	684	---	60.5
112		---	---	ND	---	60.5
113	90/101/113	28.838	1.57	(17900)	---	182
114		34.591	1.50	452	---	60.5
115	110/115	30.885	1.56	(22300)	---	121
116	85/116/117	30.683	1.55	(2660)	---	182
117	85/116/117	30.683	1.55	(2660)	---	182
118		34.088	1.56	22800	---	60.5
119	86/87/97/108/119/125	29.996	1.58	(11400)	---	363
120		---	---	ND	---	60.5
121		---	---	ND	---	60.5
122		34.390	1.59	294	---	60.5
123		33.753	1.46	311	---	60.5
124	107/124	33.384	1.57	(893)	---	121
125	86/87/97/108/119/125	29.996	1.58	(11400)	---	363
126		38.532	1.59	820	---	60.5
127		---	---	ND	---	60.5
128	128/166	38.532	1.26	9620	---	121
129	129/138/163	37.291	1.26	68300	---	182
130		36.620	1.25	3870	---	60.5
131		33.618	1.16	636	---	60.5
132		34.088	1.27	22800	---	60.5
133		34.775	1.31	996	---	60.5
134	134/143	32.998	1.31	2460	---	121
135	135/151	31.874	1.26	27500	---	121
136		29.224	1.26	8540	---	60.5
137		36.855	1.20	2650	---	60.5
138	129/138/163	37.291	1.26	(68300)	---	182
139	139/140	33.451	1.29	599	---	121
140	139/140	33.451	1.29	(599)	---	121
141		36.218	1.28	13600	---	60.5
142		---	---	ND	---	60.5
143	134/143	32.998	1.31	(2460)	---	121
144		32.478	1.31	2960	---	60.5

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Nn = Value obtained from additional analyses

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
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ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-04;F0095660
Lab Sample ID 1096886004
Filename P90623A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	60.5
146		35.413	1.29	8640	---	60.5
147	147/149	32.830	1.26	54600	---	121
148		---	---	ND	---	60.5
149	147/149	32.830	1.26	(54600)	---	121
150		28.889	1.21	79.7	---	60.5
151	135/151	31.874	1.26	(27500)	---	121
152		---	---	ND	---	60.5
153	153/168	36.050	1.25	58200	---	121
154		32.176	1.31	419	---	60.5
155		---	---	ND	---	60.5
156	156/157	41.568	1.26	9060	---	121
157	156/157	41.568	1.26	(9060)	---	121
158		37.694	1.27	6550	---	60.5
159		---	---	ND	---	60.5
160		---	---	ND	---	60.5
161		---	---	ND	---	60.5
162		39.975	1.20	815	---	60.5
163	129/138/163	37.291	1.26	(68300)	---	182
164		36.989	1.26	4490	---	60.5
165		---	---	ND	---	60.5
166	128/166	38.532	1.26	(9620)	---	121
167		40.461	1.28	3010	---	60.5
168	153/168	36.050	1.25	(58200)	---	121
169		44.972	1.40	196	---	60.5
170		44.234	1.05	19400	---	60.5
171	171/173	40.612	1.04	6350	---	121
172		42.356	1.04	3800	---	60.5
173	171/173	40.612	1.04	(6350)	---	121
174		39.522	1.01	24400	---	60.5
175		38.415	1.04	1170	---	60.5
176		35.782	1.05	3640	---	60.5
177		39.975	1.05	14000	---	60.5
178		37.778	1.05	5410	---	60.5
179		34.859	1.04	12700	---	60.5
180	180/193	43.010	1.05	46900	---	121
181		40.377	1.17	105	---	60.5
182		38.901	1.04	165	---	60.5
183	183/185	39.337	1.11	16900	---	121
184		---	---	ND	---	60.5
185	183/185	39.337	1.11	(16900)	---	121
186		---	---	ND	---	60.5
187		38.700	1.04	31700	---	60.5
188		---	---	ND	---	60.5
189		47.485	1.04	848	---	60.5
190		44.788	1.05	3520	---	60.5
191		43.379	1.03	784	---	60.5
192		---	---	ND	---	60.5

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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ND = Not Detected
NA = Not Applicable
NC = Not Calculated
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-04;F0095660
Lab Sample ID 1096886004
Filename P90623A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	43.010	1.05	(46900)	---	121
194		49.555	0.88	8850	---	90.8
195		47.119	0.93	3740	---	90.8
196		45.626	0.89	5750	---	90.8
197	197/200	42.004	0.89	2230	---	182
198	198/199	44.972	0.90	13400	---	182
199	198/199	44.972	0.90	(13400)	---	182
200	197/200	42.004	0.89	(2230)	---	182
201		41.048	0.88	1710	---	90.8
202		40.092	0.90	2100	---	90.8
203		45.844	0.88	6650	---	90.8
204		---	---	ND	---	90.8
205		50.029	0.85	580	---	90.8
206		51.710	0.77	2880	---	90.8
207		47.809	0.74	421	---	90.8
208		46.882	1.12 I	---	702	90.8
209		53.241	0.67	406	---	90.8

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-04;F0095660
Lab Sample ID 1096886004
Filename P90623A_08

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	60.1
Total Dichloro Biphenyls	3270
Total Trichloro Biphenyls	8050
Total Tetrachloro Biphenyls	29200
Total Pentachloro Biphenyls	122000
Total Hexachloro Biphenyls	311000
Total Heptachloro Biphenyls	192000
Total Octachloro Biphenyls	45000
Total Nonachloro Biphenyls	3300
Decachloro Biphenyls	406
Total PCBs	714000

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-20249		
Filename	P90621B_07		
Injected By	BAL	Matrix	Solid
Total Amount Extracted	11.0 g	Extracted	06/11/2009
ICAL ID	P90621B02	Analyzed	06/22/2009 08:14
CCal Filename(s)	P90621B_01	Dilution	3

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	5.384	3.56	2.0	0.875	44
13C-4-MoCB	3	7.720	3.02	2.0	1.09	54
13C-2,2'-DiCB	4	8.008	1.55	2.0	0.944	47
13C-4,4'-DiCB	15	15.401	1.58	2.0	1.43	72
13C-2,2',6-TrCB	19	11.938	1.04	2.0	1.09	55
13C-3,4,4'-TrCB	37	23.479	1.06	2.0	1.49	74
13C-2,2',6,6'-TeCB	54	15.665	0.79	2.0	1.29	65
13C-3,4,4',5-TeCB	81	30.757	0.78	2.0	1.61	81
13C-3,3',4,4'-TeCB	77	31.344	0.79	2.0	1.60	80
13C-2,2',4,6,6'-PeCB	104	22.087	1.67	2.0	1.07	54
13C-2,3,3',4,4'-PeCB	105	34.949	1.59	2.0	1.50	75
13C-2,3,4,4',5-PeCB	114	34.295	1.65	2.0	1.41	71
13C-2,3',4,4',5-PeCB	118	33.775	1.61	2.0	1.50	75
13C-2,3',4,4',5'-PeCB	123	33.440	1.61	2.0	1.46	73
13C-3,3',4,4',5-PeCB	126	38.152	1.53	2.0	1.41	71
13C-2,2',4,4',6,6'-HxCB	155	28.325	1.21	2.0	1.39	69
13C-HxCB (156/157)	156/157	41.188	1.28	4.0	3.00	75
13C-2,3',4,4',5,5'-HxCB	167	40.064	1.30	2.0	1.55	77
13C-3,3',4,4',5,5'-HxCB	169	44.491	1.26	2.0	1.48	74
13C-2,2',3,4',5,6,6'-HpCB	188	34.295	1.06	2.0	1.60	80
13C-2,3,3',4,4',5,5'-HpCB	189	46.999	1.02	2.0	1.59	80
13C-2,2',3,3',5,5',6-OcCB	202	39.762	0.94	2.0	1.48	74
13C-2,3,3',4,4',5,5',6-OcCB	205	49.564	0.91	2.0	1.56	78
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.288	0.77	2.0	1.49	75
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	46.482	0.82	2.0	1.61	81
13C--DeCB	209	52.840	0.70	2.0	1.40	70

Cleanup Standards

13C-2,4,4'-TrCB	28	18.985	1.04	2.0	1.43	72
13C-2,3,3',5,5'-PeCB	111	31.461	1.58	2.0	1.59	79
13C-2,2',3,3',5,5',6-HpCB	178	37.448	1.08	2.0	1.68	84

Recovery Standards

13C-2,5-DiCB	9	10.668	1.61	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.081	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.577	1.66	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	36.962	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	49.090	0.90	2.0	NA	NA

Conc = Concentration
EML = Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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P = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-20249
P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	22.8
2		---	---	ND	---	22.8
3		---	---	ND	---	22.8
4		---	---	ND	---	22.8
5		---	---	ND	---	22.8
6		---	---	ND	---	22.8
7		---	---	ND	---	22.8
8		---	---	ND	---	22.8
9		---	---	ND	---	22.8
10		---	---	ND	---	22.8
11		---	---	ND	---	137
12	12/13	---	---	ND	---	45.5
13	12/13	---	---	ND	---	45.5
14		---	---	ND	---	22.8
15		---	---	ND	---	22.8
16		---	---	ND	---	22.8
17		---	---	ND	---	22.8
18	18/30	---	---	ND	---	45.5
19		---	---	ND	---	22.8
20	20/28	---	---	ND	---	45.5
21	21/33	---	---	ND	---	45.5
22		---	---	ND	---	22.8
23		---	---	ND	---	22.8
24		---	---	ND	---	22.8
25		---	---	ND	---	22.8
26	26/29	---	---	ND	---	45.5
27		---	---	ND	---	22.8
28	20/28	---	---	ND	---	45.5
29	26/29	---	---	ND	---	45.5
30	18/30	---	---	ND	---	45.5
31		18.666	1.04	24.2	---	22.8
32		---	---	ND	---	22.8
33	21/33	---	---	ND	---	45.5
34		---	---	ND	---	22.8
35		---	---	ND	---	22.8
36		---	---	ND	---	22.8
37		---	---	ND	---	22.8
38		---	---	ND	---	22.8
39		---	---	ND	---	22.8
40	40/41/71	---	---	ND	---	137
41	40/41/71	---	---	ND	---	137
42		---	---	ND	---	45.5
43		---	---	ND	---	45.5
44	44/47/65	---	---	ND	---	137
45	45/51	---	---	ND	---	91.1

Conc = Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	45.5
47	44/47/65	---	---	ND	---	137
48		---	---	ND	---	45.5
49	49/69	---	---	ND	---	91.1
50	50/53	---	---	ND	---	91.1
51	45/51	---	---	ND	---	91.1
52		---	---	ND	---	45.5
53	50/53	---	---	ND	---	91.1
54		---	---	ND	---	45.5
55		---	---	ND	---	45.5
56		---	---	ND	---	45.5
57		---	---	ND	---	45.5
58		---	---	ND	---	45.5
59	59/62/75	---	---	ND	---	137
60		---	---	ND	---	45.5
61	61/70/74/76	---	---	ND	---	182
62	59/62/75	---	---	ND	---	137
63		---	---	ND	---	45.5
64		---	---	ND	---	45.5
65	44/47/65	---	---	ND	---	137
66		---	---	ND	---	45.5
67		---	---	ND	---	45.5
68		---	---	ND	---	45.5
69	49/69	---	---	ND	---	91.1
70	61/70/74/76	---	---	ND	---	182
71	40/41/71	---	---	ND	---	137
72		---	---	ND	---	45.5
73		---	---	ND	---	45.5
74	61/70/74/76	---	---	ND	---	182
75	59/62/75	---	---	ND	---	137
76	61/70/74/76	---	---	ND	---	182
77		---	---	ND	---	45.5
78		---	---	ND	---	45.5
79		---	---	ND	---	45.5
80		---	---	ND	---	45.5
81		---	---	ND	---	45.5
82		---	---	ND	---	45.5
83		---	---	ND	---	45.5
84		---	---	ND	---	45.5
85	85/116/117	---	---	ND	---	137
86	86/87/97/108/119/125	---	---	ND	---	273
87	86/87/97/108/119/125	---	---	ND	---	273
88	88/91	---	---	ND	---	91.1
89		---	---	ND	---	45.5
90	90/101/113	---	---	ND	---	137

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	91.1
92		---	---	ND	---	45.5
93	93/98/100/102	---	---	ND	---	182
94		---	---	ND	---	45.5
95		---	---	ND	---	45.5
96		---	---	ND	---	45.5
97	86/87/97/108/119/125	---	---	ND	---	273
98	93/98/100/102	---	---	ND	---	182
99		---	---	ND	---	45.5
100	93/98/100/102	---	---	ND	---	182
101	90/101/113	---	---	ND	---	137
102	93/98/100/102	---	---	ND	---	182
103		---	---	ND	---	45.5
104		---	---	ND	---	45.5
105		---	---	ND	---	45.5
106		---	---	ND	---	45.5
107	107/124	---	---	ND	---	91.1
108	86/87/97/108/119/125	---	---	ND	---	273
109		---	---	ND	---	45.5
110	110/115	---	---	ND	---	91.1
111		---	---	ND	---	45.5
112		---	---	ND	---	45.5
113	90/101/113	---	---	ND	---	137
114		---	---	ND	---	45.5
115	110/115	---	---	ND	---	91.1
116	85/116/117	---	---	ND	---	137
117	85/116/117	---	---	ND	---	137
118		---	---	ND	---	45.5
119	86/87/97/108/119/125	---	---	ND	---	273
120		---	---	ND	---	45.5
121		---	---	ND	---	45.5
122		---	---	ND	---	45.5
123		---	---	ND	---	45.5
124	107/124	---	---	ND	---	91.1
125	86/87/97/108/119/125	---	---	ND	---	273
126		---	---	ND	---	45.5
127		---	---	ND	---	45.5
128	128/166	---	---	ND	---	91.1
129	129/138/163	---	---	ND	---	137
130		---	---	ND	---	45.5
131		---	---	ND	---	45.5
132		---	---	ND	---	45.5
133		---	---	ND	---	45.5
134	134/143	---	---	ND	---	91.1
135	135/151	---	---	ND	---	91.1

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	45.5
137		---	---	ND	---	45.5
138	129/138/163	---	---	ND	---	137
139	139/140	---	---	ND	---	91.1
140	139/140	---	---	ND	---	91.1
141		---	---	ND	---	45.5
142		---	---	ND	---	45.5
143	134/143	---	---	ND	---	91.1
144		---	---	ND	---	45.5
145		---	---	ND	---	45.5
146		---	---	ND	---	45.5
147	147/149	---	---	ND	---	91.1
148		---	---	ND	---	45.5
149	147/149	---	---	ND	---	91.1
150		---	---	ND	---	45.5
151	135/151	---	---	ND	---	91.1
152		---	---	ND	---	45.5
153	153/168	---	---	ND	---	91.1
154		---	---	ND	---	45.5
155		---	---	ND	---	45.5
156	156/157	---	---	ND	---	91.1
157	156/157	---	---	ND	---	91.1
158		---	---	ND	---	45.5
159		---	---	ND	---	45.5
160		---	---	ND	---	45.5
161		---	---	ND	---	45.5
162		---	---	ND	---	45.5
163	129/138/163	---	---	ND	---	137
164		---	---	ND	---	45.5
165		---	---	ND	---	45.5
166	128/166	---	---	ND	---	91.1
167		---	---	ND	---	45.5
168	153/168	---	---	ND	---	91.1
169		---	---	ND	---	45.5
170		---	---	ND	---	45.5
171	171/173	---	---	ND	---	91.1
172		---	---	ND	---	45.5
173	171/173	---	---	ND	---	91.1
174		---	---	ND	---	45.5
175		---	---	ND	---	45.5
176		---	---	ND	---	45.5
177		---	---	ND	---	45.5
178		---	---	ND	---	45.5
179		---	---	ND	---	45.5
180	180/193	---	---	ND	---	91.1

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	45.5
182		---	---	ND	---	45.5
183	183/185	---	---	ND	---	91.1
184		---	---	ND	---	45.5
185	183/185	---	---	ND	---	91.1
186		---	---	ND	---	45.5
187		---	---	ND	---	45.5
188		---	---	ND	---	45.5
189		---	---	ND	---	45.5
190		---	---	ND	---	45.5
191		---	---	ND	---	45.5
192		---	---	ND	---	45.5
193	180/193	---	---	ND	---	91.1
194		---	---	ND	---	68.3
195		---	---	ND	---	68.3
196		---	---	ND	---	68.3
197	197/200	---	---	ND	---	137
198	198/199	---	---	ND	---	137
199	198/199	---	---	ND	---	137
200	197/200	---	---	ND	---	137
201		---	---	ND	---	68.3
202		---	---	ND	---	68.3
203		---	---	ND	---	68.3
204		---	---	ND	---	68.3
205		---	---	ND	---	68.3
206		---	---	ND	---	68.3
207		---	---	ND	---	68.3
208		---	---	ND	---	68.3
209		---	---	ND	---	68.3

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKVB
Lab Sample ID BLANK-20249
Filename P90621B_07

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	24.2
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	24.2

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-20250		
Filename	P90621B_05	Matrix	Solid
Total Amount Extracted	10.2 g	Dilution	3
ICAL ID	P90621B02	Extracted	06/11/2009
CCal Filename(s)	P90621B_01	Analyzed	06/22/2009 06:12
Method Blank ID	BLANK-20249	Injected By	BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.983	98	2.0	1.17	58
3	1.0	0.987	99	2.0	1.31	66
4	1.0	1.05	105	2.0	1.14	57
15	1.0	1.05	105	2.0	1.55	78
19	1.0	1.05	105	2.0	1.25	63
37	1.0	1.00	100	2.0	1.56	78
54	1.0	0.934	93	2.0	1.49	74
81	1.0	0.928	93	2.0	1.61	80
77	1.0	0.932	93	2.0	1.62	81
104	1.0	1.04	104	2.0	1.10	55
105	1.0	0.941	94	2.0	1.58	79
114	1.0	0.908	91	2.0	1.44	72
118	1.0	0.997	100	2.0	1.47	73
123	1.0	0.927	93	2.0	1.50	75
126	1.0	0.911	91	2.0	1.45	72
155	1.0	1.02	102	2.0	1.35	68
156/157	2.0	1.91	95	4.0	2.94	74
167	1.0	1.01	101	2.0	1.52	76
169	1.0	0.952	95	2.0	1.47	74
188	1.0	0.963	96	2.0	1.57	78
189	1.0	0.948	95	2.0	1.55	77
202	1.0	1.02	102	2.0	1.47	73
205	1.0	0.957	96	2.0	1.47	74
206	1.0	1.01	101	2.0	1.46	73
208	1.0	0.998	100	2.0	1.57	78
209	1.0	0.974	97	2.0	1.29	64

P = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
! = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Phase 2 Inline Solids Samples



Water Solutions, Inc.

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 Outfall Basin 43 and 44 (April 29, 2009)

To: File
From: Erin Carroll, GSI
Date: June 2, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control investigation sampling and analyses conducted by the City of Portland (City) on April 29, 2009. The City collected five inline solids samples in Outfall Basin 44, all of which were sieved by #10 sieve except the sample from Site 44_13. In addition, two inline solids samples were collected from Outfall Basin 43 and sieved by #10 sieve. One additional sample was collected from Site 43_5 and retained un-sieved for comparative purposes. All eight samples were submitted for analysis.

The laboratory analyses for this solids sample was completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
 - Total Solids – SM 2540G
 - Metals – EPA 6020
 - Diesel- and oil-range hydrocarbons – Washington State Department of Ecology Method NWTPH-Dx
 - Polychlorinated Biphenyls (PCBs) as Aroclors – EPA 8082
- Analytical Resources, Incorporated (ARI)
 - Grain Size – ASTM D421/422
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C

- Test America (TA)
 - Polynuclear Aromatic Hydrocarbons (PAHs) and Phthalates – EPA 8270M-SIM
 - Total Organic Carbon (TOC) – EPA 9060 MOD

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data report are attached. The WPCL summary report comments that unless otherwise noted, all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review is based on the available laboratory documentation and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

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

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analysis of SVOCs, PAHs phthalates, and TOC. There are no reported detections of these constituents in the associated method blanks, with one exception. Phenol was detected in the method blank for the EPA 8270C analysis and in two field samples at estimated concentrations greater than the method detection limit (MDL) but less than the method reporting limit (MRL). The presence of these SVOCs in the samples at concentrations less than the MRL is considered to be a result of laboratory contamination; therefore, these data are shown as not detected at a concentration greater than the MRL.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of SVOCs, PAHs, and phthalates.

CAS reports that the control criteria for SVOC surrogates in three field samples are not considered applicable because the analysis required a dilution resulting in a surrogate concentration below the MRL. Therefore, no corrective action was taken.

For the phthalate analysis, TA reports that the surrogate recoveries do not provide useful information as a result of sample dilution. The surrogate recovery information for PAHs is considered applicable and within laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) were processed during the laboratory analysis of SVOCs, PAHs, and phthalates.

The matrix spike recovery of 4-Nitrophenol for sample F095557 was outside of the control criteria indicating a potentially low bias for this analyte. CAS reports that the relative percent difference (RPD) criterion for 4-Nitrophenol between the MS and MSD is applicable given the similarity between the analyte concentration and the MRL.

The RPD for 4-Chlo-3-methylphenol between the MS/MSD was outside of control limits. However, because the spike recoveries were within acceptance limits, the analytical batch was in control and no further corrective action was taken.

For the phthalate analysis, TA reports that the MS/MSD recoveries do not provide useful information as a result of sample dilution. The MS/MSD recovery information for PAHs is considered applicable and within laboratory control limits.

WPCL comments that the MS/MSD results for the PAH/Phthalate analysis by EPA8270M-SIM indicates non-homogenous sample matrix.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control samples were processed during the laboratory analysis of PAHs, phthalates, SVOCs and TOC. A duplicate laboratory control sample was analyzed during the SVOC analyses. All laboratory control samples and duplicate laboratory control samples recoveries and RPDs were within the laboratory control limits.

Other

The method reporting limits (MRL) for all samples were significantly elevated during the EPA 8270C analyses due to the presence of non-target background components.

WPCL reports that precision of quantification for PCB Aroclors may be reduced due to overlapping peaks in Aroclors 1254 and 1260.

Collected By: MJS, ATB, LJS
5/23

[illegible]

Date: 4/30/09
Page: 1 of 1
Collected By: JR / PTB

Project Name: PORTLAND HARBOR INLINE SAMP									
File Number: 1020.001									
Matrix: SEDIMENT									
Requested Analyses									
Organics									
General									
Metals									
Field Comments									
OUTFALLS 43 (Albina River Lots)									
SAMPLE WAS NOT SIEVED									
WPCL Sample I.D.									
Location									
Point Code									
Sample Date									
Sample Time									
Sample Type									
PCB Aroclors - LL									
TOC									
Total Solids									
Whole sample submitted for comparison with sieved sample (43_5S)									
F0095560									
IL-43-ABC280-CBS-0409									
N RIVER & ALBINA									
43_5									
4/29/09									
1438									
C									
Relinquished By: 1.									
Signature:									
Time:									
Printed Name:									
Date:									
Received By: 1.									
Signature:									
Time:									
Printed Name:									
Date:									
Relinquished By: 2.									
Signature:									
Time:									
Printed Name:									
Date:									
Received By: 2.									
Signature:									
Time:									
Printed Name:									
Date:									
Relinquished By: 3.									
Signature:									
Time:									
Printed Name:									
Date:									
Received By: 3.									
Signature:									
Time:									
Printed Name:									
Date:									
Relinquished By: 4.									
Signature:									
Time:									
Printed Name:									
Date:									
Received By: 4.									
Signature:									
Time:									
Printed Name:									
Date:									
Portland Harbor Inline Sump CCG - DE 43 45 (4/29/09) v16									



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: **FO095558**

Sample Collected: 04/29/09 13:29

Sample Received: 04/30/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC479-0409 (#10 SIEVED)
N THOMPSON & KERBY DS 15IN LINE TO SOUTH
Sample Point Code: 43_4
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 5

System ID: AN04743
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix. Precision of the quantifications for PCB Aroclors may be reduced due to overlapping peaks in Aroclors 1254 and 1260.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	52.8	% W/W	0.01	SM 2540 G	04/30/09
METALS					
ARSENIC	4.86	mg/Kg dry wt	0.50	EPA 6020	05/11/09
CADMIUM	27.0	mg/Kg dry wt	0.10	EPA 6020	05/11/09
CHROMIUM	82.2	mg/Kg dry wt	0.50	EPA 6020	05/11/09
COPPER	233	mg/Kg dry wt	0.25	EPA 6020	05/11/09
LEAD	296	mg/Kg dry wt	0.10	EPA 6020	05/11/09
MERCURY	0.17	mg/Kg dry wt	0.010	EPA 6020	05/11/09
NICKEL	60.4	mg/Kg dry wt	0.25	EPA 6020	05/11/09
SILVER	2.07	mg/Kg dry wt	0.10	EPA 6020	05/11/09
ZINC	544	mg/Kg dry wt	0.50	EPA 6020	05/11/09
GC ANALYSIS					
NWTPH-Dx					
DIESEL RANGE HYDROCARBONS (C12-C24)	<150	mg/Kg dry wt	150	NWTPH-Dx	05/06/09
OIL RANGE HYDROCARBONS (>C24)	942	mg/Kg dry wt	300	NWTPH-Dx	05/06/09
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	05/06/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1248	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1254	50	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1260	118	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	25000	mg/Kg dry wt	50	EPA 9060 MOD	05/13/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	1.2	Fract %	0.1	ASTM D421/422	05/05/09
Coarse Sand (4750-2000 µm)	<0.1	Fract %	0.1	ASTM D421/422	05/05/09
Fine Sand (150-75 µm)	22.8	Fract %	0.1	ASTM D421/422	05/05/09
Fine Sand (250-150 µm)	16.6	Fract %	0.1	ASTM D421/422	05/05/09

Report Date: 05/27/09

Validated By:



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: **FO095558**

Sample Collected: 04/29/09 13:29
Sample Received: 04/30/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC479-0409 (#10 SIEVED)
N THOMPSON & KERBY DS 15IN LINE TO SOUTH
Sample Point Code: 43_4
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 5

System ID: AN04743
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix. Precision of the quantifications for PCB Aroclors may be reduced due to overlapping peaks in Aroclors 1254 and 1260.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fine Sand (425-250 μ m)	16.8	Fract %	0.1	ASTM D421/422	05/05/09
Gravel (>4750 μ m)	<0.1	Fract %	0.1	ASTM D421/422	05/05/09
Medium Sand (2000-850 μ m)	2.5	Fract %	0.1	ASTM D421/422	05/05/09
Medium Sand (850-425 μ m)	8.6	Fract %	0.1	ASTM D421/422	05/05/09
Silt (13-9 μ m)	<0.1	Fract %	0.1	ASTM D421/422	05/05/09
Silt (22-13 μ m)	3.6	Fract %	0.1	ASTM D421/422	05/05/09
Silt (32-22 μ m)	2.4	Fract %	0.1	ASTM D421/422	05/05/09
Silt (7-3.2 μ m)	1.8	Fract %	0.1	ASTM D421/422	05/05/09
Silt (75-32 μ m)	21.9	Fract %	0.1	ASTM D421/422	05/05/09
Silt (9-7 μ m)	1.8	Fract %	0.1	ASTM D421/422	05/05/09

POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Acenaphthylene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Anthracene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Benzo(a)anthracene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Benzo(a)pyrene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Benzo(b)fluoranthene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Benzo(ghi)perylene	154	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Benzo(k)fluoranthene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Bis(2-ethylhexyl) phthalate	16800	μ g/Kg dry wt	1070	EPA8270M-SIM	05/04/09
Butyl benzyl phthalate	4400	μ g/Kg dry wt	1070	EPA8270M-SIM	05/04/09
Chrysene	180	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Dibenzo(a,h)anthracene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Diethyl phthalate	<214	μ g/Kg dry wt	214	EPA8270M-SIM	05/04/09
Dimethyl phthalate	<214	μ g/Kg dry wt	214	EPA8270M-SIM	05/04/09
Di-n-butyl phthalate	<214	μ g/Kg dry wt	214	EPA8270M-SIM	05/04/09
Di-n-octyl phthalate	<3210	μ g/Kg dry wt	3210	EPA8270M-SIM	05/04/09
Fluoranthene	337	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Fluorene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Indeno(1,2,3-cd)pyrene	<107	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Naphthalene	308	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Phenanthrene	332	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09
Pyrene	295	μ g/Kg dry wt	107	EPA8270M-SIM	05/04/09

Report Date: 05/27/09

Validated By:



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: **FO095558**

Sample Collected: 04/29/09 13:29
Sample Received: 04/30/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC479-0409 (#10 SIEVED)
N THOMPSON & KERBY DS 15IN LINE TO SOUTH
Sample Point Code: 43_4
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 5

System ID: AN04743
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix. Precision of the quantifications for PCB Aroclors may be reduced due to overlapping peaks in Aroclors 1254 and 1260.

Test Parameter	Result	Units	MRL	Method	Analysis Date
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
1,2-Dichlorobenzene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
1,3-Dichlorobenzene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
1,4-Dichlorobenzene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2,4,5-Trichlorophenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2,4,6-Trichlorophenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2,4-Dichlorophenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2,4-Dimethylphenol	<2900	µg/Kg dry wt	2900	EPA 8270 LV	05/06/09
2,4-Dinitrophenol	<12000	µg/Kg dry wt	12000	EPA 8270 LV	05/06/09
2,4-Dinitrotoluene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2,6-Dinitrotoluene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2-Chloronaphthalene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2-Chlorophenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2-Methylnaphthalene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2-Methylphenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
2-Nitroaniline	<1200	µg/Kg dry wt	1200	EPA 8270 LV	05/06/09
2-Nitrophenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
3,3'-Dichlorobenzidine	<5800	µg/Kg dry wt	5800	EPA 8270 LV	05/06/09
3-Nitroaniline	<1200	µg/Kg dry wt	1200	EPA 8270 LV	05/06/09
4,6-Dinitro-2-methylphenol	<5800	µg/Kg dry wt	5800	EPA 8270 LV	05/06/09
4-Bromophenylphenyl ether	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
4-Chloro-3-methylphenol	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
4-Chloroaniline	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
4-Chlorophenylphenyl ether	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
4-Methylphenol	900	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
4-Nitroaniline	<1200	µg/Kg dry wt	1200	EPA 8270 LV	05/06/09
4-Nitrophenol	<5800	µg/Kg dry wt	5800	EPA 8270 LV	05/06/09
Acenaphthene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Acenaphthylene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Anthracene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Benzo(a)anthracene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Benzo(a)pyrene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Benzo(b)fluoranthene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09

Report Date: 05/27/09

Validated By:



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: FO095558

Sample Collected: 04/29/09 13:29
Sample Received: 04/30/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC479-0409 (#10 SIEVED)
N THOMPSON & KERBY DS 15IN LINE TO SOUTH
Sample Point Code: 43_4
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 4 of 5

System ID: AN04743
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix. Precision of the quantifications for PCB Aroclors may be reduced due to overlapping peaks in Aroclors 1254 and 1260.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzo(g,h,i)perylene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Benzo(k)fluoranthene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Benzoic acid	<12000	µg/Kg dry wt	12000	EPA 8270 LV	05/06/09
Benzyl alcohol	<1200	µg/Kg dry wt	1200	EPA 8270 LV	05/06/09
Bis(2-chloroethoxy) methane	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Bis(2-chloroethyl) ether	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Bis(2-chloroisopropyl) ether	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Bis(2-ethylhexyl) phthalate	19000	µg/Kg dry wt	5800	EPA 8270 LV	05/06/09
Butyl benzyl phthalate	5300	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Chrysene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Dibenzo(a,h)anthracene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Dibenzofuran	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Diethyl phthalate	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Dimethyl phthalate	840	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Di-n-butyl phthalate	<1200	µg/Kg dry wt	1200	EPA 8270 LV	05/06/09
Di-n-octyl phthalate	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Fluoranthene	720	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Fluorene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Hexachlorobenzene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Hexachlorobutadiene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Hexachlorocyclopentadiene	<2900	µg/Kg dry wt	2900	EPA 8270 LV	05/06/09
Hexachloroethane	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Indeno(1,2,3-cd)pyrene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Isophorone	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Naphthalene	690	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Nitrobenzene	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
N-Nitrosodi-n-propylamine	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
N-Nitrosodiphenylamine	<580	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Pentachlorophenol	<5800	µg/Kg dry wt	5800	EPA 8270 LV	05/06/09
Phenanthrene	680	µg/Kg dry wt	580	EPA 8270 LV	05/06/09
Phenol	<1800	µg/Kg dry wt	1800	EPA 8270 LV	05/06/09
Pyrene	840	µg/Kg dry wt	580	EPA 8270 LV	05/06/09

Report Date: 05/27/09

Validated By: 



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LABORATORY ANALYSIS REPORT

Sample ID: FO095558

Sample Collected: 04/29/09 13:29
Sample Received: 04/30/09

**Sample Status: COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC479-0409 (#10 SIEVED)
N THOMPSON & KERBY DS 15IN LINE TO SOUTH
Sample Point Code: 43_4
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 5 of 5

System ID: AN04743
EID File # : 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix. Precision of the quantifications for PCB Aroclors may be reduced due to overlapping peaks in Aroclors 1254 and 1260.

Test Parameter	Result	Units	MRL	Method	Analysis Date
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End of Report for Sample ID: FO095558

Report Date: 05/27/09

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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO095559

Sample Collected: 04/29/09 14:38
Sample Received: 04/30/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC290-CBs-0409 (#10 SIEVED)
N RIVER & ALBINA TWO CBs TO ABC290 COMP
Sample Point Code: 43_5S
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 4

System ID: AN04744
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	62.7	% W/W	0.01	SM 2540 G	04/30/09
METALS					
ARSENIC	3.04	mg/Kg dry wt	0.50	EPA 6020	05/11/09
CADMIUM	0.61	mg/Kg dry wt	0.10	EPA 6020	05/11/09
CHROMIUM	33.4	mg/Kg dry wt	0.50	EPA 6020	05/11/09
COPPER	62.9	mg/Kg dry wt	0.25	EPA 6020	05/11/09
LEAD	27.8	mg/Kg dry wt	0.10	EPA 6020	05/11/09
MERCURY	0.030	mg/Kg dry wt	0.010	EPA 6020	05/11/09
NICKEL	28.4	mg/Kg dry wt	0.25	EPA 6020	05/11/09
SILVER	0.13	mg/Kg dry wt	0.10	EPA 6020	05/11/09
ZINC	185	mg/Kg dry wt	0.50	EPA 6020	05/11/09
GC ANALYSIS					
NWTPH-Dx					
DIESEL RANGE HYDROCARBONS (C12-C24)	<50	mg/Kg dry wt	50	NWTPH-Dx	05/06/09
OIL RANGE HYDROCARBONS (>C24)	441	mg/Kg dry wt	100	NWTPH-Dx	05/06/09
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1260	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	36800	mg/Kg dry wt	50	EPA 9060 MOD	05/13/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	5.3	Fract %	0.1	ASTM D421/422	05/05/09
Coarse Sand (4750-2000 µm)	0.1	Fract %	0.1	ASTM D421/422	05/05/09
Fine Sand (150-75 µm)	7.2	Fract %	0.1	ASTM D421/422	05/05/09
Fine Sand (250-150 µm)	9.9	Fract %	0.1	ASTM D421/422	05/05/09
Fine Sand (425-250 µm)	17.1	Fract %	0.1	ASTM D421/422	05/05/09

Report Date: 05/27/09

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: **FO095559**

Sample Collected: 04/29/09 14:38

Sample Received: 04/30/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC290-CBs-0409 (#10 SIEVED)
N RIVER & ALBINA TWO CBs TO ABC290 COMP
Sample Point Code: 43_5S
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 4

System ID: AN04744
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gravel (>4750 μm)	<0.1	Fract %	0.1	ASTM D421/422	05/05/09
Medium Sand (2000-850 μm)	16.3	Fract %	0.1	ASTM D421/422	05/05/09
Medium Sand (850-425 μm)	17.1	Fract %	0.1	ASTM D421/422	05/05/09
Silt (13-9 μm)	2.6	Fract %	0.1	ASTM D421/422	05/05/09
Silt (22-13 μm)	4.0	Fract %	0.1	ASTM D421/422	05/05/09
Silt (32-22 μm)	2.6	Fract %	0.1	ASTM D421/422	05/05/09
Silt (7-3.2 μm)	7.3	Fract %	0.1	ASTM D421/422	05/05/09
Silt (75-32 μm)	8.7	Fract %	0.1	ASTM D421/422	05/05/09
Silt (9-7 μm)	2.0	Fract %	0.1	ASTM D421/422	05/05/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Acenaphthylene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Anthracene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Benzo(a)anthracene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Benzo(a)pyrene	176	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Benzo(b)fluoranthene	258	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Benzo(ghi)perylene	196	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Benzo(k)fluoranthene	200	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Bis(2-ethylhexyl) phthalate	840	$\mu\text{g/Kg dry wt}$	224	EPA8270M-SIM	05/04/09
Butyl benzyl phthalate	<224	$\mu\text{g/Kg dry wt}$	224	EPA8270M-SIM	05/04/09
Chrysene	343	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Dibenzo(a,h)anthracene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Diethyl phthalate	<224	$\mu\text{g/Kg dry wt}$	224	EPA8270M-SIM	05/04/09
Dimethyl phthalate	<224	$\mu\text{g/Kg dry wt}$	224	EPA8270M-SIM	05/04/09
Di-n-butyl phthalate	<224	$\mu\text{g/Kg dry wt}$	224	EPA8270M-SIM	05/04/09
Di-n-octyl phthalate	<1120	$\mu\text{g/Kg dry wt}$	1120	EPA8270M-SIM	05/04/09
Fluoranthene	182	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Fluorene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Indeno(1,2,3-cd)pyrene	154	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Naphthalene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Phenanthrene	<112	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
Pyrene	167	$\mu\text{g/Kg dry wt}$	112	EPA8270M-SIM	05/04/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<100	$\mu\text{g/Kg dry wt}$	100	EPA 8270 LV	05/06/09

Report Date: 05/27/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO095559

Sample Collected: 04/29/09 14:38

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 04/30/09

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC290-CBs-0409 (#10 SIEVED)
N RIVER & ALBINA TWO CBs TO ABC290 COMP
Sample Point Code: 43_5S
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 4

System ID: AN04744
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2-Dichlorobenzene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
1,3-Dichlorobenzene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
1,4-Dichlorobenzene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2,4,5-Trichlorophenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2,4,6-Trichlorophenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2,4-Dichlorophenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2,4-Dimethylphenol	<500	µg/Kg dry wt	500	EPA 8270 LV	05/06/09
2,4-Dinitrophenol	<2000	µg/Kg dry wt	2000	EPA 8270 LV	05/06/09
2,4-Dinitrotoluene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2,6-Dinitrotoluene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2-Chloronaphthalene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2-Chlorophenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2-Methylnaphthalene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2-Methylphenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
2-Nitroaniline	<200	µg/Kg dry wt	200	EPA 8270 LV	05/06/09
2-Nitrophenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
3,3'-Dichlorobenzidine	<1000	µg/Kg dry wt	1000	EPA 8270 LV	05/06/09
3-Nitroaniline	<200	µg/Kg dry wt	200	EPA 8270 LV	05/06/09
4,6-Dinitro-2-methylphenol	<1000	µg/Kg dry wt	1000	EPA 8270 LV	05/06/09
4-Bromophenylphenyl ether	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
4-Chloro-3-methylphenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
4-Chloroaniline	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
4-Chlorophenylphenyl ether	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
4-Methylphenol	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
4-Nitroaniline	<200	µg/Kg dry wt	200	EPA 8270 LV	05/06/09
4-Nitrophenol	<1000	µg/Kg dry wt	1000	EPA 8270 LV	05/06/09
Acenaphthene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Acenaphthylene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Anthracene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Benzo(a)anthracene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Benzo(a)pyrene	150	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Benzo(b)fluoranthene	290	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Benzo(g,h,i)perylene	160	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Benzo(k)fluoranthene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Benzoic acid	<2000	µg/Kg dry wt	2000	EPA 8270 LV	05/06/09

Report Date: 05/27/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO095559

Sample Collected: 04/29/09 14:38
Sample Received: 04/30/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC290-CBs-0409 (#10 SIEVED)
N RIVER & ALBINA TWO CBs TO ABC290 COMP
Sample Point Code: 43_5S
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 4 of 4

System ID: AN04744
EID File # : 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Due to required dilution for PAH/phthalate analysis, surrogate and matrix spike recovery data are not useful; MS/MSD results indicate non-homogeneous sample matrix.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzyl alcohol	<200	µg/Kg dry wt	200	EPA 8270 LV	05/06/09
Bis(2-chloroethoxy) methane	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Bis(2-chloroethyl) ether	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Bis(2-chloroisopropyl) ether	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Bis(2-ethylhexyl) phthalate	<1000	µg/Kg dry wt	1000	EPA 8270 LV	05/06/09
Butyl benzyl phthalate	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Chrysene	300	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Dibenzo(a,h)anthracene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Dibenzofuran	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Diethyl phthalate	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Dimethyl phthalate	530	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Di-n-butyl phthalate	<200	µg/Kg dry wt	200	EPA 8270 LV	05/06/09
Di-n-octyl phthalate	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Fluoranthene	130	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Fluorene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Hexachlorobenzene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Hexachlorobutadiene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Hexachlorocyclopentadiene	<500	µg/Kg dry wt	500	EPA 8270 LV	05/06/09
Hexachloroethane	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Indeno(1,2,3-cd)pyrene	170	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Isophorone	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Naphthalene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Nitrobenzene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
N-Nitrosodi-n-propylamine	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
N-Nitrosodiphenylamine	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Pentachlorophenol	<1000	µg/Kg dry wt	1000	EPA 8270 LV	05/06/09
Phenanthrene	<100	µg/Kg dry wt	100	EPA 8270 LV	05/06/09
Phenol	<300	µg/Kg dry wt	300	EPA 8270 LV	05/06/09
Pyrene	130	µg/Kg dry wt	100	EPA 8270 LV	05/06/09

End of Report for Sample ID: FO095559

Report Date: 05/27/09

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO095560

Sample Collected: 04/29/09 14:38
Sample Received: 04/30/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC290-CBs-0409 (NOT SIEVED)
N RIVER & ALBINA TWO CBs TO ABC290 COMP
Sample Point Code: 43_5
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN04747
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/PTB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Analysis for PCB Aroclors indicated the possible presence of Aroclor 1254 but at trace level less than the reporting limit.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	71.2	% W/W	0.01	SM 2540 G	05/06/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	05/06/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1260	20	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	05/06/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	30300	mg/Kg dry wt	50	EPA 9060 MOD	05/13/09

End of Report for Sample ID: FO095560

Report Date: 05/27/09

Validated By:



Analytical Resources, Incorporated
Analytical Chemists and Consultants

May 11, 2009

Mr. Howard Holmes
Test America, Inc.
9405 SW Nimbus Ave.
Beaverton, OR 97008

Subject: Project No.: PSE0031 OR-Oregon
ARI Project No.: OX63

Dear Mr. Holmes,

The following pages provide the information you requested. Please call me to discuss any questions or comments you may have on the data or its presentation.

Best Regards,
Analytical Resources Incorporated

Guenna Smith
Geotechnical Division Manager
206-695-6246
guennas@arilabs.com

Enclosures

cc: File OX63

SUBCONTRACT ORDER

TestAmerica Portland

PSE0031

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone: (206) 621-6490
Fax: 206-621-7523
Project Location: OR - OREGON
Receipt Temperature: 2.6 °C

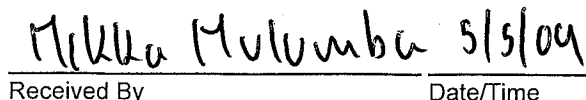
Ice: Y / N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSE0031-01 Soil Sampled: 04/29/09 08:42				
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 08:42	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSE0031-02 Soil Sampled: 04/29/09 09:50				
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 09:50	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSE0031-03 Soil Sampled: 04/29/09 10:30				
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 10:30	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSE0031-04 Soil Sampled: 04/29/09 10:52				
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 10:52	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSE0031-05 Soil Sampled: 04/29/09 11:20				
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 11:20	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSE0031-06 Soil Sampled: 04/29/09 13:29				
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 13:29	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				


Released By

5/4/09
Date/Time


Received By

5/5/09 1308
Date/Time

Released By

Date/Time

Received By

Date/Time

Page 1 of 2

SUBCONTRACT ORDER

TestAmerica Portland

PSE0031

Analysis	Units	Due	Expires	Comments
Sample ID: PSE0031-07	Soil		Sampled: 04/29/09 14:38	
Grain Size (ASTM) - SUB	ug/l	05/15/09	10/26/09 14:38	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				



Client: Test America, Inc.

ARI Project No.: OX63

Client Project: OR-Oregon

Client Project No.: PSE0031

Case Narrative

1. Seven samples were received on May 5, 2009, and were in good condition. The samples were submitted for grain size distribution, according to ASTM D422. The samples were prepared according to ASTM D421.
2. An assumed specific gravity of 2.65 was used in the calculations.
3. A standard milkshake mixer type device was used to disperse the sample.
4. One sample contained woody or other organic debris that may have broken down during the sieving process, thereby affecting grain size analysis.
5. The data is provided in summary tables and plots.
6. There were no further anomalies in the samples or test method.

Approved by: _____
Title:

[Signature]
Lead Technician

Date: 05/11/09

Test America, Inc.
PSE0031 OR-Oregon

Percent Finer (Passing) Than the Indicated Size

Sieve Size (microns)	3"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3
PSE0031-01	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	81.5	54.7	32.2	17.4	8.1	7.0	5.9	3.5	3.5	2.9	1.8	1.8
PSE0031-02	100.0	100.0	100.0	100.0	100.0	100.0	100.0	93.8	91.1	87.1	82.0	76.8	71.7	63.3	50.4	43.0	32.6	29.6	22.2	12.6	7.4
PSE0031-03	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	72.2	53.8	38.4	22.8	13.5	9.9	9.2	8.5	7.1	2.8	1.4
PSE0031-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.3	77.4	54.7	36.0	18.7	10.0	8.5	6.4	6.4	5.7	2.8	2.1
PSE0031-05	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	92.0	75.1	53.9	35.7	18.3	9.4	7.7	6.5	5.3	4.7	1.8	1.2
PSE0031-06	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.5	88.9	72.1	55.5	32.7	10.8	8.4	4.8	4.8	3.0	1.2	1.2
PSE0031-07	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	83.7	66.6	49.5	39.6	32.4	23.8	21.1	17.2	14.5	12.5	5.3	3.3

Testing performed according to ASTM D421/D422

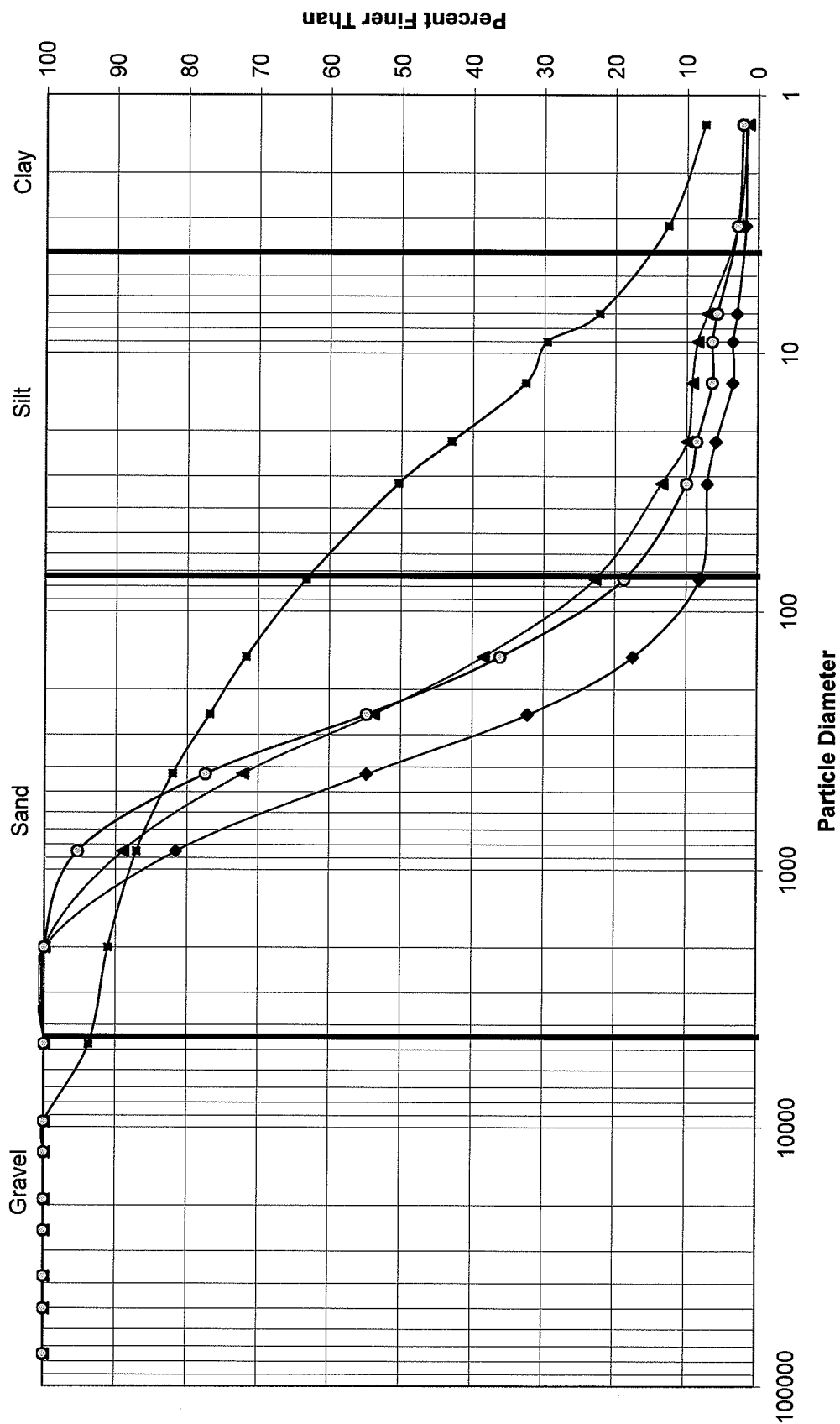
OX63

Test America, Inc.
PSE0031 OR-Oregon

Percent Retained in Each Size Fraction

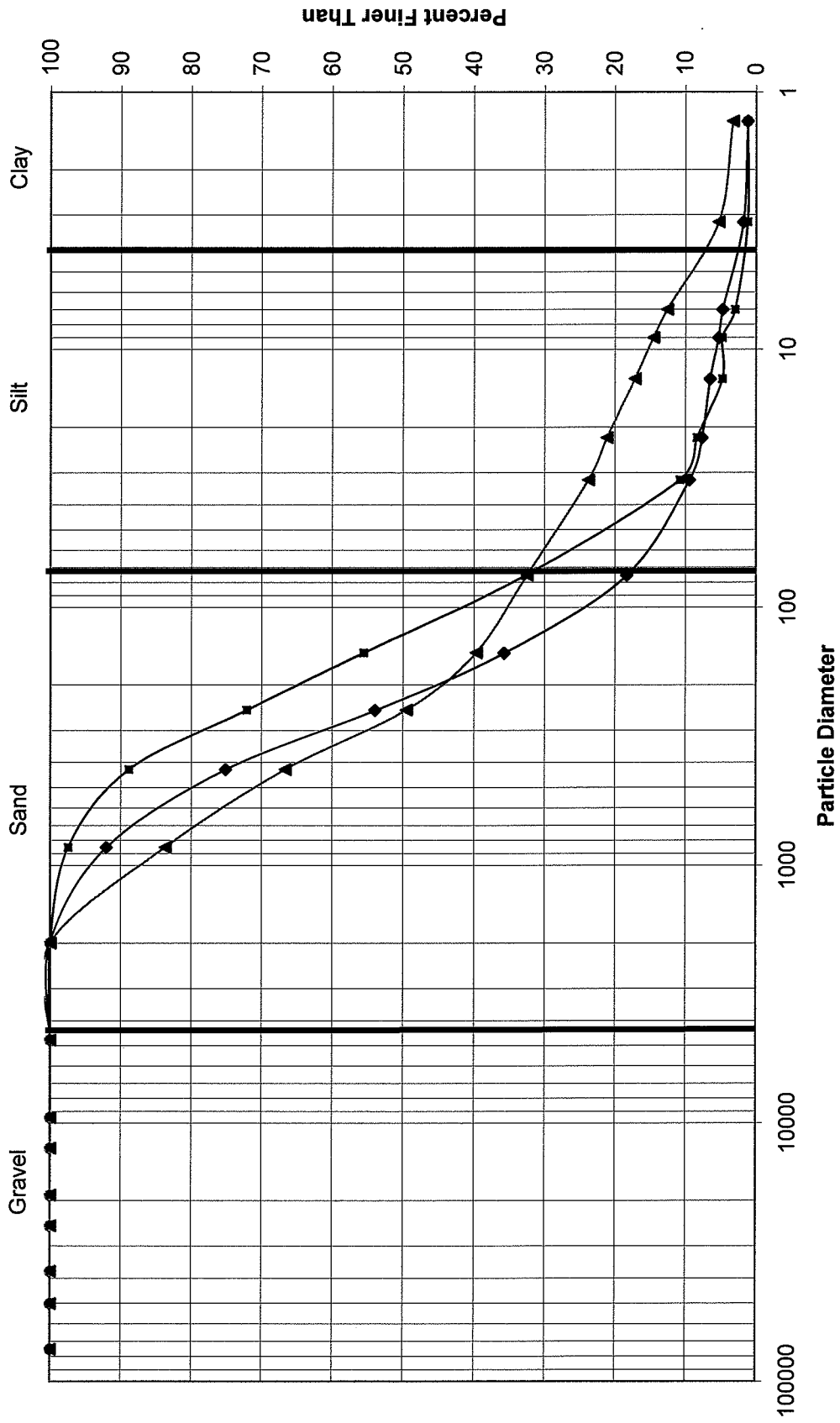
Description	%Coarse Gravel				% Gravel			% Coarse Sand	% Medium Sand			% Fine Sand			% Very Coarse Silt	% Coarse Silt	% Medium Silt	% Fine Silt	% Very Fine Silt	% Clay
	3-2"	2-1 1/2"	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4/750"		4750-2000	2000-850	850-425	425-250	250-150	150-75						
Particle Size (microns)																				
PSE0031-01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	18.4	26.8	22.5	14.8	9.3	1.1	1.2	2.3	0.0	0.6	1.2
PSE0031-02	0.0	0.0	0.0	0.0	0.0	0.0	6.2	2.7	4.0	5.1	5.1	5.2	5.1	8.5	12.9	7.4	10.4	3.0	7.4	9.6
PSE0031-03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	16.9	18.4	15.3	15.7	9.3	3.5	0.7	0.7	1.4	4.3
PSE0031-04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	18.0	22.7	18.7	17.4	8.7	1.4	2.1	0.0	0.7	2.8
PSE0031-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	16.9	21.2	18.3	17.4	8.8	1.8	1.2	1.2	0.6	2.9
PSE0031-06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	8.6	16.8	16.6	22.8	21.9	2.4	3.6	0.0	1.8	1.8
PSE0031-07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	16.3	17.1	17.1	9.9	7.2	8.7	2.6	4.0	2.6	2.0	7.3

Grain Size Distribution by Hydrometer



—◆— PSE0031-01
—■— PSE0031-02
—▲— PSE0031-03
—○— PSE0031-04

Grain Size Distribution by Hydrometer



—◆— PSE0031-05

—■— PSE0031-06

—▲— PSE0031-07

May 20, 2009

Analytical Report for Service Request No: K0903811

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: Portland Harbor Inline

Dear Jennifer:

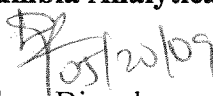
Enclosed are the results of the samples submitted to our laboratory on May 01, 2009. For your reference, these analyses have been assigned our service request number K0903811.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. 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 PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Pradeep Divvela
Project Chemist

PD/rh

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cc: Peter Abrams, City of Portland, Portland, OR

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: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request No.: K0903811
Date Received: 05/01/2009

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 II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Six soil samples were received for analysis at Columbia Analytical Services on 05/01/2009. 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.

Semivolatile Organic Compounds by EPA Method 8270C-LL

Surrogate Exceptions:

The control criteria for surrogates in samples F0095556 and F0095558 were not applicable. The analysis of the samples required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

The control criteria for 2-Fluorophenol in sample F0095553 were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.



Matrix Spike Recovery Exceptions:

The matrix spike recovery of 4-Nitrophenol for sample F0095557MS was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) for 4-Chloro-3-methylphenol in the replicate matrix spike analyses of sample F0095557 was outside control criteria. All spike recoveries for the analyte in question were within acceptance limits in the MS, DMS, and associated Laboratory Control Sample (LCS), indicating the analytical batch was in control. No further corrective action was appropriate.

The Relative Percent Difference (RPD) criterion for 4-Nitrophenol in the replicate matrix spike of sample F0095557 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by  Date 

Elevated Method Reporting Limits:

The detection limits were elevated in numerous samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored and viscous, which indicated the need to perform dilutions prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

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

Approved by  Date 05/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

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

Service Request: K0903811

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
F0095553	K0903811-001	04/29/2009	05/01/2009	05/01/2009	71.2	
F0095555	K0903811-002	04/29/2009	05/01/2009	05/01/2009	73.3	
F0095556	K0903811-003	04/29/2009	05/01/2009	05/01/2009	68.3	
F0095557	K0903811-004	04/29/2009	05/01/2009	05/01/2009	74.5	
F0095558	K0903811-005	04/29/2009	05/01/2009	05/01/2009	43.3	
F0095559	K0903811-006	04/29/2009	05/01/2009	05/01/2009	64.0	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009
Date Analyzed: 05/01/2009

Duplicate Sample Summary
Total Solids

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

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
F0095559	K0903811-006	64.0	62.8	63.4	2	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095558
Lab Code: K0903811-005
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	580	110	50	05/06/09	05/14/09	KWG0903761	
Phenol	240	JD	1800	120	50	05/06/09	05/14/09	KWG0903761	
2-Chlorophenol	ND	U	580	120	50	05/06/09	05/14/09	KWG0903761	
1,3-Dichlorobenzene	ND	U	580	180	50	05/06/09	05/14/09	KWG0903761	
1,4-Dichlorobenzene	ND	U	580	170	50	05/06/09	05/14/09	KWG0903761	
1,2-Dichlorobenzene	ND	U	580	170	50	05/06/09	05/14/09	KWG0903761	
Benzyl Alcohol	ND	U	1200	130	50	05/06/09	05/14/09	KWG0903761	
Bis(2-chloroisopropyl) Ether	ND	U	580	150	50	05/06/09	05/14/09	KWG0903761	
2-Methylphenol	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
Hexachloroethane	ND	U	580	180	50	05/06/09	05/14/09	KWG0903761	
N-Nitrosodi-n-propylamine	ND	U	580	140	50	05/06/09	05/14/09	KWG0903761	
4-Methylphenol†	900	D	580	87	50	05/06/09	05/14/09	KWG0903761	
Nitrobenzene	ND	U	580	130	50	05/06/09	05/14/09	KWG0903761	
Isophorone	ND	U	580	58	50	05/06/09	05/14/09	KWG0903761	
2-Nitrophenol	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
2,4-Dimethylphenol	ND	U	2900	320	50	05/06/09	05/14/09	KWG0903761	
Bis(2-chloroethoxy)methane	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
2,4-Dichlorophenol	ND	U	580	58	50	05/06/09	05/14/09	KWG0903761	
Benzoic Acid	ND	U	12000	5600	50	05/06/09	05/14/09	KWG0903761	
1,2,4-Trichlorobenzene	ND	U	580	150	50	05/06/09	05/14/09	KWG0903761	
Naphthalene	690	D	580	140	50	05/06/09	05/14/09	KWG0903761	
4-Chloroaniline	ND	U	580	110	50	05/06/09	05/14/09	KWG0903761	
Hexachlorobutadiene	ND	U	580	150	50	05/06/09	05/14/09	KWG0903761	
4-Chloro-3-methylphenol	ND	U	580	81	50	05/06/09	05/14/09	KWG0903761	
2-Methylnaphthalene	180	JD	580	130	50	05/06/09	05/14/09	KWG0903761	
Hexachlorocyclopentadiene	ND	U	2900	1700	50	05/06/09	05/14/09	KWG0903761	
2,4,6-Trichlorophenol	ND	U	580	81	50	05/06/09	05/14/09	KWG0903761	
2,4,5-Trichlorophenol	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
2-Chloronaphthalene	ND	U	580	93	50	05/06/09	05/14/09	KWG0903761	
2-Nitroaniline	ND	U	1200	190	50	05/06/09	05/14/09	KWG0903761	
Acenaphthylene	ND	U	580	70	50	05/06/09	05/14/09	KWG0903761	
Dimethyl Phthalate	840	D	580	58	50	05/06/09	05/14/09	KWG0903761	
2,6-Dinitrotoluene	ND	U	580	120	50	05/06/09	05/14/09	KWG0903761	
Acenaphthene	ND	U	580	81	50	05/06/09	05/14/09	KWG0903761	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095558
Lab Code: K0903811-005
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	1200	150	50	05/06/09	05/14/09	KWG0903761	
2,4-Dinitrophenol	ND	U	12000	980	50	05/06/09	05/14/09	KWG0903761	
Dibenzofuran	ND	U	580	70	50	05/06/09	05/14/09	KWG0903761	
4-Nitrophenol	ND	U	5800	1100	50	05/06/09	05/14/09	KWG0903761	
2,4-Dinitrotoluene	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
Fluorene	ND	U	580	64	50	05/06/09	05/14/09	KWG0903761	
4-Chlorophenyl Phenyl Ether	ND	U	580	81	50	05/06/09	05/14/09	KWG0903761	
Diethyl Phthalate	ND	U	580	75	50	05/06/09	05/14/09	KWG0903761	
4-Nitroaniline	ND	U	1200	110	50	05/06/09	05/14/09	KWG0903761	
2-Methyl-4,6-dinitrophenol	ND	U	5800	81	50	05/06/09	05/14/09	KWG0903761	
N-Nitrosodiphenylamine	ND	U	580	93	50	05/06/09	05/14/09	KWG0903761	
4-Bromophenyl Phenyl Ether	ND	U	580	93	50	05/06/09	05/14/09	KWG0903761	
Hexachlorobenzene	ND	U	580	70	50	05/06/09	05/14/09	KWG0903761	
Pentachlorophenol	ND	U	5800	1200	50	05/06/09	05/14/09	KWG0903761	
Phenanthrene	680	D	580	81	50	05/06/09	05/14/09	KWG0903761	
Anthracene	ND	U	580	93	50	05/06/09	05/14/09	KWG0903761	
Di-n-butyl Phthalate	ND	U	1200	460	50	05/06/09	05/14/09	KWG0903761	
Fluoranthene	720	D	580	93	50	05/06/09	05/14/09	KWG0903761	
Pyrene	840	D	580	87	50	05/06/09	05/14/09	KWG0903761	
Butyl Benzyl Phthalate	5300	D	580	190	50	05/06/09	05/14/09	KWG0903761	
3,3'-Dichlorobenzidine	ND	U	5800	220	50	05/06/09	05/14/09	KWG0903761	
Benz(a)anthracene	200	JD	580	98	50	05/06/09	05/14/09	KWG0903761	
Chrysene	450	JD	580	87	50	05/06/09	05/14/09	KWG0903761	
Bis(2-ethylhexyl) Phthalate	19000	D	5800	410	50	05/06/09	05/14/09	KWG0903761	
Di-n-octyl Phthalate	ND	U	580	98	50	05/06/09	05/14/09	KWG0903761	
Benzo(b)fluoranthene	350	JD	580	70	50	05/06/09	05/14/09	KWG0903761	
Benzo(k)fluoranthene	ND	U	580	81	50	05/06/09	05/14/09	KWG0903761	
Benzo(a)pyrene	ND	U	580	98	50	05/06/09	05/14/09	KWG0903761	
Indeno(1,2,3-cd)pyrene	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
Dibenz(a,h)anthracene	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	
Benzo(g,h,i)perylene	ND	U	580	87	50	05/06/09	05/14/09	KWG0903761	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095558
Lab Code: K0903811-005

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	05/14/09	Outside Control Limits
Phenol-d6	62	15-103	05/14/09	Acceptable
Nitrobenzene-d5	89	10-108	05/14/09	Acceptable
2-Fluorobiphenyl	86	10-105	05/14/09	Acceptable
2,4,6-Tribromophenol	68	16-122	05/14/09	Acceptable
Terphenyl-d14	105	31-126	05/14/09	Acceptable

f 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
Sample Matrix: Soil

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095559
Lab Code: K0903811-006
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	100	19	10	05/06/09	05/14/09	KWG0903761	
Phenol	ND	U	300	20	10	05/06/09	05/14/09	KWG0903761	
2-Chlorophenol	ND	U	100	20	10	05/06/09	05/14/09	KWG0903761	
1,3-Dichlorobenzene	ND	U	100	30	10	05/06/09	05/14/09	KWG0903761	
1,4-Dichlorobenzene	ND	U	100	29	10	05/06/09	05/14/09	KWG0903761	
1,2-Dichlorobenzene	ND	U	100	29	10	05/06/09	05/14/09	KWG0903761	
Benzyl Alcohol	ND	U	200	21	10	05/06/09	05/14/09	KWG0903761	
Bis(2-chloroisopropyl) Ether	ND	U	100	26	10	05/06/09	05/14/09	KWG0903761	
2-Methylphenol	ND	U	100	15	10	05/06/09	05/14/09	KWG0903761	
Hexachloroethane	ND	U	100	31	10	05/06/09	05/14/09	KWG0903761	
N-Nitrosodi-n-propylamine	ND	U	100	24	10	05/06/09	05/14/09	KWG0903761	
4-Methylphenol†	ND	U	100	15	10	05/06/09	05/14/09	KWG0903761	
Nitrobenzene	ND	U	100	22	10	05/06/09	05/14/09	KWG0903761	
Isophorone	ND	U	100	10	10	05/06/09	05/14/09	KWG0903761	
2-Nitrophenol	ND	U	100	15	10	05/06/09	05/14/09	KWG0903761	
2,4-Dimethylphenol	ND	U	500	55	10	05/06/09	05/14/09	KWG0903761	
Bis(2-chloroethoxy)methane	ND	U	100	15	10	05/06/09	05/14/09	KWG0903761	
2,4-Dichlorophenol	ND	U	100	10	10	05/06/09	05/14/09	KWG0903761	
Benzoic Acid	ND	U	2000	960	10	05/06/09	05/14/09	KWG0903761	
1,2,4-Trichlorobenzene	ND	U	100	26	10	05/06/09	05/14/09	KWG0903761	
Naphthalene	30	JD	100	23	10	05/06/09	05/14/09	KWG0903761	
4-Chloroaniline	ND	U	100	19	10	05/06/09	05/14/09	KWG0903761	
Hexachlorobutadiene	ND	U	100	25	10	05/06/09	05/14/09	KWG0903761	
4-Chloro-3-methylphenol	ND	U	100	14	10	05/06/09	05/14/09	KWG0903761	
2-Methylnaphthalene	ND	U	100	22	10	05/06/09	05/14/09	KWG0903761	
Hexachlorocyclopentadiene	ND	U	500	290	10	05/06/09	05/14/09	KWG0903761	
2,4,6-Trichlorophenol	ND	U	100	14	10	05/06/09	05/14/09	KWG0903761	
2,4,5-Trichlorophenol	ND	U	100	15	10	05/06/09	05/14/09	KWG0903761	
2-Chloronaphthalene	ND	U	100	16	10	05/06/09	05/14/09	KWG0903761	
2-Nitroaniline	ND	U	200	32	10	05/06/09	05/14/09	KWG0903761	
Acenaphthylene	37	JD	100	12	10	05/06/09	05/14/09	KWG0903761	
Dimethyl Phthalate	530	D	100	10	10	05/06/09	05/14/09	KWG0903761	
2,6-Dinitrotoluene	ND	U	100	20	10	05/06/09	05/14/09	KWG0903761	
Acenaphthene	ND	U	100	14	10	05/06/09	05/14/09	KWG0903761	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095559
Lab Code: K0903811-006
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	200	25	10	05/06/09	05/14/09	KWG0903761	
2,4-Dinitrophenol	ND	U	2000	170	10	05/06/09	05/14/09	KWG0903761	
Dibenzofuran	ND	U	100	12	10	05/06/09	05/14/09	KWG0903761	
4-Nitrophenol	ND	U	1000	180	10	05/06/09	05/14/09	KWG0903761	
2,4-Dinitrotoluene	ND	U	100	15	10	05/06/09	05/14/09	KWG0903761	
Fluorene	ND	U	100	11	10	05/06/09	05/14/09	KWG0903761	
4-Chlorophenyl Phenyl Ether	ND	U	100	14	10	05/06/09	05/14/09	KWG0903761	
Diethyl Phthalate	ND	U	100	13	10	05/06/09	05/14/09	KWG0903761	
4-Nitroaniline	ND	U	200	18	10	05/06/09	05/14/09	KWG0903761	
2-Methyl-4,6-dinitrophenol	ND	U	1000	14	10	05/06/09	05/14/09	KWG0903761	
N-Nitrosodiphenylamine	ND	U	100	16	10	05/06/09	05/14/09	KWG0903761	
4-Bromophenyl Phenyl Ether	ND	U	100	16	10	05/06/09	05/14/09	KWG0903761	
Hexachlorobenzene	ND	U	100	12	10	05/06/09	05/14/09	KWG0903761	
Pentachlorophenol	ND	U	1000	200	10	05/06/09	05/14/09	KWG0903761	
Phenanthrene	52	JD	100	14	10	05/06/09	05/14/09	KWG0903761	
Anthracene	64	JD	100	16	10	05/06/09	05/14/09	KWG0903761	
Di-n-butyl Phthalate	ND	U	200	79	10	05/06/09	05/14/09	KWG0903761	
Fluoranthene	130	D	100	16	10	05/06/09	05/14/09	KWG0903761	
Pyrene	130	D	100	15	10	05/06/09	05/14/09	KWG0903761	
Butyl Benzyl Phthalate	ND	U	100	32	10	05/06/09	05/14/09	KWG0903761	
3,3'-Dichlorobenzidine	ND	U	1000	37	10	05/06/09	05/14/09	KWG0903761	
Benz(a)anthracene	95	JD	100	17	10	05/06/09	05/14/09	KWG0903761	
Chrysene	300	D	100	15	10	05/06/09	05/14/09	KWG0903761	
Bis(2-ethylhexyl) Phthalate	280	JD	1000	70	10	05/06/09	05/14/09	KWG0903761	
Di-n-octyl Phthalate	ND	U	100	17	10	05/06/09	05/14/09	KWG0903761	
Benzo(b)fluoranthene	290	D	100	12	10	05/06/09	05/14/09	KWG0903761	
Benzo(k)fluoranthene	73	JD	100	14	10	05/06/09	05/14/09	KWG0903761	
Benzo(a)pyrene	150	D	100	17	10	05/06/09	05/14/09	KWG0903761	
Indeno(1,2,3-cd)pyrene	170	D	100	15	10	05/06/09	05/14/09	KWG0903761	
Dibenz(a,h)anthracene	58	JD	100	15	10	05/06/09	05/14/09	KWG0903761	
Benzo(g,h,i)perylene	160	D	100	15	10	05/06/09	05/14/09	KWG0903761	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: 04/29/2009
Date Received: 05/01/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095559
Lab Code: K0903811-006

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	33	10-89	05/14/09	Acceptable
Phenol-d6	45	15-103	05/14/09	Acceptable
Nitrobenzene-d5	43	10-108	05/14/09	Acceptable
2-Fluorobiphenyl	42	10-105	05/14/09	Acceptable
2,4,6-Tribromophenol	56	16-122	05/14/09	Acceptable
Terphenyl-d14	60	31-126	05/14/09	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
Sample Matrix: Soil

Service Request: K0903811
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0903761-5
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	5.0	1.9	1	05/06/09	05/11/09	KWG0903761	
Phenol	2.4	J	15	2.0	1	05/06/09	05/11/09	KWG0903761	
2-Chlorophenol	ND	U	5.0	2.0	1	05/06/09	05/11/09	KWG0903761	
1,3-Dichlorobenzene	ND	U	5.0	3.0	1	05/06/09	05/11/09	KWG0903761	
1,4-Dichlorobenzene	ND	U	5.0	2.9	1	05/06/09	05/11/09	KWG0903761	
1,2-Dichlorobenzene	ND	U	5.0	2.9	1	05/06/09	05/11/09	KWG0903761	
Benzyl Alcohol	ND	U	10	2.1	1	05/06/09	05/11/09	KWG0903761	
Bis(2-chloroisopropyl) Ether	ND	U	5.0	2.6	1	05/06/09	05/11/09	KWG0903761	
2-Methylphenol	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Hexachloroethane	ND	U	5.0	3.1	1	05/06/09	05/11/09	KWG0903761	
N-Nitrosodi-n-propylamine	ND	U	5.0	2.4	1	05/06/09	05/11/09	KWG0903761	
4-Methylphenol†	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Nitrobenzene	ND	U	5.0	2.2	1	05/06/09	05/11/09	KWG0903761	
Isophorone	ND	U	5.0	1.0	1	05/06/09	05/11/09	KWG0903761	
2-Nitrophenol	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
2,4-Dimethylphenol	ND	U	25	5.5	1	05/06/09	05/11/09	KWG0903761	
Bis(2-chloroethoxy)methane	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
2,4-Dichlorophenol	ND	U	5.0	1.0	1	05/06/09	05/11/09	KWG0903761	
Benzoic Acid	ND	U	100	96	1	05/06/09	05/11/09	KWG0903761	
1,2,4-Trichlorobenzene	ND	U	5.0	2.6	1	05/06/09	05/11/09	KWG0903761	
Naphthalene	ND	U	5.0	2.3	1	05/06/09	05/11/09	KWG0903761	
4-Chloroaniline	ND	U	5.0	1.9	1	05/06/09	05/11/09	KWG0903761	
Hexachlorobutadiene	ND	U	5.0	2.5	1	05/06/09	05/11/09	KWG0903761	
4-Chloro-3-methylphenol	ND	U	5.0	1.4	1	05/06/09	05/11/09	KWG0903761	
2-Methylnaphthalene	ND	U	5.0	2.2	1	05/06/09	05/11/09	KWG0903761	
Hexachlorocyclopentadiene	ND	U	29	29	1	05/06/09	05/11/09	KWG0903761	
2,4,6-Trichlorophenol	ND	U	5.0	1.4	1	05/06/09	05/11/09	KWG0903761	
2,4,5-Trichlorophenol	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
2-Chloronaphthalene	ND	U	5.0	1.6	1	05/06/09	05/11/09	KWG0903761	
2-Nitroaniline	ND	U	10	3.2	1	05/06/09	05/11/09	KWG0903761	
Acenaphthylene	ND	U	5.0	1.2	1	05/06/09	05/11/09	KWG0903761	
Dimethyl Phthalate	ND	U	5.0	1.0	1	05/06/09	05/11/09	KWG0903761	
2,6-Dinitrotoluene	ND	U	5.0	2.0	1	05/06/09	05/11/09	KWG0903761	
Acenaphthene	ND	U	5.0	1.4	1	05/06/09	05/11/09	KWG0903761	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0903761-5
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	10	2.5	1	05/06/09	05/11/09	KWG0903761	
2,4-Dinitrophenol	ND	U	100	17	1	05/06/09	05/11/09	KWG0903761	
Dibenzofuran	ND	U	5.0	1.2	1	05/06/09	05/11/09	KWG0903761	
4-Nitrophenol	ND	U	50	18	1	05/06/09	05/11/09	KWG0903761	
2,4-Dinitrotoluene	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Fluorene	ND	U	5.0	1.1	1	05/06/09	05/11/09	KWG0903761	
4-Chlorophenyl Phenyl Ether	ND	U	5.0	1.4	1	05/06/09	05/11/09	KWG0903761	
Diethyl Phthalate	ND	U	5.0	1.3	1	05/06/09	05/11/09	KWG0903761	
4-Nitroaniline	ND	U	10	1.8	1	05/06/09	05/11/09	KWG0903761	
2-Methyl-4,6-dinitrophenol	ND	U	50	1.4	1	05/06/09	05/11/09	KWG0903761	
N-Nitrosodiphenylamine	ND	U	5.0	1.6	1	05/06/09	05/11/09	KWG0903761	
4-Bromophenyl Phenyl Ether	ND	U	5.0	1.6	1	05/06/09	05/11/09	KWG0903761	
Hexachlorobenzene	ND	U	5.0	1.2	1	05/06/09	05/11/09	KWG0903761	
Pentachlorophenol	ND	U	50	20	1	05/06/09	05/11/09	KWG0903761	
Phenanthrene	ND	U	5.0	1.4	1	05/06/09	05/11/09	KWG0903761	
Anthracene	ND	U	5.0	1.6	1	05/06/09	05/11/09	KWG0903761	
Di-n-butyl Phthalate	ND	U	10	7.9	1	05/06/09	05/11/09	KWG0903761	
Fluoranthene	ND	U	5.0	1.6	1	05/06/09	05/11/09	KWG0903761	
Pyrene	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Butyl Benzyl Phthalate	ND	U	5.0	3.2	1	05/06/09	05/11/09	KWG0903761	
3,3'-Dichlorobenzidine	ND	U	50	3.7	1	05/06/09	05/11/09	KWG0903761	
Benz(a)anthracene	ND	U	5.0	1.7	1	05/06/09	05/11/09	KWG0903761	
Chrysene	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Bis(2-ethylhexyl) Phthalate	ND	U	50	7.0	1	05/06/09	05/11/09	KWG0903761	
Di-n-octyl Phthalate	ND	U	5.0	1.7	1	05/06/09	05/11/09	KWG0903761	
Benzo(b)fluoranthene	ND	U	5.0	1.2	1	05/06/09	05/11/09	KWG0903761	
Benzo(k)fluoranthene	ND	U	5.0	1.4	1	05/06/09	05/11/09	KWG0903761	
Benzo(a)pyrene	ND	U	5.0	1.7	1	05/06/09	05/11/09	KWG0903761	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Dibenz(a,h)anthracene	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	
Benzo(g,h,i)perylene	ND	U	5.0	1.5	1	05/06/09	05/11/09	KWG0903761	

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0903761-5

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	58	10-89	05/11/09	Acceptable
Phenol-d6	63	15-103	05/11/09	Acceptable
Nitrobenzene-d5	58	10-108	05/11/09	Acceptable
2-Fluorobiphenyl	56	10-105	05/11/09	Acceptable
2,4,6-Tribromophenol	67	16-122	05/11/09	Acceptable
Terphenyl-d14	70	31-126	05/11/09	Acceptable

† Analyte Comments

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

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811

**Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS**

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
F0095553	K0903811-001	0 D *	46 D	55 D	53 D	52 D	88 D
F0095555	K0903811-002	50 D	57 D	56 D	49 D	51 D	72 D
F0095556	K0903811-003	0 D #	0 D #	0 D #	57 D #	45 D #	92 D #
F0095557	K0903811-004	23	38	46	45	36	54
F0095558	K0903811-005	0 D #	62 D #	89 D #	86 D #	68 D #	105 D #
F0095559	K0903811-006	33 D	45 D	43 D	42 D	56 D	60 D
Method Blank	KWG0903761-5	58	63	58	56	67	70
F0095557MS	KWG0903761-1	39	50	51	51	52	61
F0095557DMS	KWG0903761-2	53	58	53	54	72	63
Lab Control Sample	KWG0903761-3	54	60	54	51	65	65
Duplicate Lab Control Sample	KWG0903761-4	47	50	45	43	57	55

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	10-89	Sur5 = 2,4,6-Tribromophenol	16-122
Sur2 = Phenol-d6	15-103	Sur6 = Terphenyl-d14	31-126
Sur3 = Nitrobenzene-d5	10-108		
Sur4 = 2-Fluorobiphenyl	10-105		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Extracted: 05/06/2009
Date Analyzed: 05/12/2009

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095557
Lab Code: K0903811-004
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0903761

Analyte Name	Sample Result	F0095557MS KWG0903761-1 Matrix Spike			F0095557DMS KWG0903761-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Phenol	10	134	249	50	175	250	66	10-120	27	40
2-Chlorophenol	ND	130	249	52	153	250	61	12-105	16	40
1,4-Dichlorobenzene	ND	140	249	56	151	250	60	10-105	7	40
N-Nitrosodi-n-propylamine	ND	162	249	65	181	250	72	10-111	11	40
1,2,4-Trichlorobenzene	ND	149	249	60	162	250	65	10-102	8	40
4-Chloro-3-methylphenol	ND	85.3	249	34	176	250	70	10-119	69 *	40
Acenaphthene	2.9	162	249	64	184	250	72	23-106	12	40
4-Nitrophenol	ND	ND	249	0 *	130	250	52	11-143	200 *	40
2,4-Dinitrotoluene	ND	147	249	59	164	250	66	22-125	11	40
Pentachlorophenol	ND	146	249	59	192	250	77	10-146	27	40
Pyrene	110	252	249	56	303	250	76	10-146	18	40

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Extracted: 05/06/2009
Date Analyzed: 05/11/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0903761

Analyte Name	Lab Control Sample KWG0903761-3 Lab Control Spike			Duplicate Lab Control Sample KWG0903761-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	159	250	64	130	250	52	22-98	20	40
Phenol	159	250	64	130	250	52	34-101	20	40
2-Chlorophenol	153	250	61	126	250	50	30-91	19	40
1,3-Dichlorobenzene	154	250	62	126	250	50	10-97	20	40
1,4-Dichlorobenzene	154	250	61	124	250	50	10-98	21	40
1,2-Dichlorobenzene	152	250	61	127	250	51	10-98	18	40
Benzyl Alcohol	166	250	66	138	250	55	30-101	19	40
Bis(2-chloroisopropyl) Ether	162	250	65	130	250	52	17-100	22	40
2-Methylphenol	133	250	53	108	250	43	10-93	21	40
Hexachloroethane	157	250	63	132	250	53	10-99	17	40
N-Nitrosodi-n-propylamine	169	250	68	140	250	56	10-103	19	40
4-Methylphenol	138	250	55	112	250	45	10-98	21	40
Nitrobenzene	171	250	68	139	250	56	22-99	20	40
Isophorone	161	250	64	133	250	53	35-91	19	40
2-Nitrophenol	161	250	64	133	250	53	30-98	19	40
2,4-Dimethylphenol	48.9	250	20	38.4	250	15	10-81	24	40
Bis(2-chloroethoxy)methane	160	250	64	131	250	52	34-93	20	40
2,4-Dichlorophenol	150	250	60	125	250	50	35-91	19	40
Benzoic Acid	203	750	27	185	750	25	10-50	9	40
1,2,4-Trichlorobenzene	152	250	61	129	250	52	18-96	16	40
Naphthalene	160	250	64	132	250	53	23-95	19	40
4-Chloroaniline	137	250	55	113	250	45	10-95	19	40
Hexachlorobutadiene	153	250	61	127	250	51	14-100	18	40
4-Chloro-3-methylphenol	149	250	59	124	250	50	28-98	18	40
2-Methylnaphthalene	158	250	63	127	250	51	30-92	22	40
Hexachlorocyclopentadiene	101	250	40	89.8	250	36	10-81	11	40
2,4,6-Trichlorophenol	154	250	61	125	250	50	31-96	20	40
2,4,5-Trichlorophenol	161	250	64	133	250	53	38-95	19	40
2-Chloronaphthalene	161	250	64	128	250	51	33-95	22	40
2-Nitroaniline	187	250	75	151	250	60	40-104	21	40
Acenaphthylene	172	250	69	139	250	55	38-99	21	40
Dimethyl Phthalate	169	250	67	140	250	56	44-99	19	40
2,6-Dinitrotoluene	173	250	69	143	250	57	42-100	19	40
Acenaphthene	164	250	65	133	250	53	39-90	21	40
3-Nitroaniline	170	250	68	139	250	56	28-100	20	40
2,4-Dinitrophenol	158	250	63	140	250	56	14-104	12	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inline
Sample Matrix: Soil

Service Request: K0903811
Date Extracted: 05/06/2009
Date Analyzed: 05/11/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0903761

Analyte Name	Lab Control Sample KWG0903761-3 Lab Control Spike			Duplicate Lab Control Sample KWG0903761-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Dibenzofuran	164	250	66	133	250	53	40-91	21	40
4-Nitrophenol	179	250	72	140	250	56	42-115	24	40
2,4-Dinitrotoluene	194	250	78	159	250	64	43-106	20	40
Fluorene	171	250	68	140	250	56	41-94	20	40
4-Chlorophenyl Phenyl Ether	164	250	66	135	250	54	41-93	20	40
Diethyl Phthalate	176	250	71	146	250	58	46-104	19	40
4-Nitroaniline	174	250	70	139	250	55	29-107	23	40
2-Methyl-4,6-dinitrophenol	189	250	76	159	250	64	30-107	17	40
N-Nitrosodiphenylamine	167	250	67	133	250	53	20-100	23	40
4-Bromophenyl Phenyl Ether	163	250	65	138	250	55	42-97	16	40
Hexachlorobenzene	167	250	67	140	250	56	42-98	18	40
Pentachlorophenol	139	250	56	112	250	45	28-100	22	40
Phenanthrene	172	250	69	143	250	57	44-97	18	40
Anthracene	170	250	68	141	250	56	31-104	18	40
Di-n-butyl Phthalate	192	250	77	151	250	60	47-129	24	40
Fluoranthene	184	250	74	148	250	59	45-111	21	40
Pyrene	177	250	71	142	250	57	46-112	22	40
Butyl Benzyl Phthalate	188	250	75	152	250	61	50-119	21	40
3,3'-Dichlorobenzidine	149	250	59	124	250	49	10-112	18	40
Benz(a)anthracene	177	250	71	144	250	58	45-110	21	40
Chrysene	184	250	74	145	250	58	50-108	24	40
Bis(2-ethylhexyl) Phthalate	188	250	75	155	250	62	48-127	19	40
Di-n-octyl Phthalate	198	250	79	163	250	65	52-126	20	40
Benzo(b)fluoranthene	181	250	72	152	250	61	51-111	18	40
Benzo(k)fluoranthene	187	250	75	155	250	62	52-109	19	40
Benzo(a)pyrene	158	250	63	132	250	53	26-125	18	40
Indeno(1,2,3-cd)pyrene	194	250	78	164	250	66	47-119	17	40
Dibenz(a,h)anthracene	197	250	79	163	250	65	50-115	19	40
Benzo(g,h,i)perylene	183	250	73	154	250	61	43-115	17	40

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Longview Portland Service Request K09 01335 K090381
 Received: 5-1-09 Opened: 5-1-09 By: bu

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 CAS COOLER 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): 3.8
 Temperature Blank (°C): N-P
 Thermometer ID: SMO 268

6. If applicable, list Chain of Custody Numbers: _____
7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
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.)? NA Y N
11. Did all sample labels and tags agree with custody papers? Indicate in the table below NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles tested* received at the appropriate pH? Indicate in the table below NA Y N
14. Were VOA vials received without headspace? 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	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: _____

Amended Report

May 19, 2009

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 05/01/09 14:05.
The following list is a summary of the Work Orders contained in this report, generated on 05/19/09 09:00.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSE0031	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/19/09 09:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095553	PSE0031-01	Soil	04/29/09 08:42	05/01/09 14:05
FO095554	PSE0031-02	Soil	04/29/09 09:50	05/01/09 14:05
FO095555	PSE0031-03	Soil	04/29/09 10:30	05/01/09 14:05
FO095556	PSE0031-04	Soil	04/29/09 10:52	05/01/09 14:05
FO095557	PSE0031-05	Soil	04/29/09 11:20	05/01/09 14:05
FO095558	PSE0031-06	Soil	04/29/09 13:29	05/01/09 14:05
FO095559	PSE0031-07	Soil	04/29/09 14:38	05/01/09 14:05
FO095560	PSE0031-08	Soil	04/29/09 14:38	05/01/09 14:05

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/19/09 09:00

Analytical Case Narrative

TestAmerica - Portland, OR

PSE0031

Amended Report.

This report includes the TOC by 9060 results which were missing in the previous report created on May 15, 2009

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSE0031-06 (FO095558)				Soil				Sampled: 04/29/09 13:29		RL3
Acenaphthene	EPA 8270m	ND	----	107	ug/kg dry	2x	9050065	05/04/09 16:35	05/06/09 22:43	
Acenaphthylene	"	ND	----	107	"	"	"	"	"	
Anthracene	"	ND	----	107	"	"	"	"	"	
Benzo (a) anthracene	"	ND	----	107	"	"	"	"	"	
Benzo (a) pyrene	"	ND	----	107	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	----	107	"	"	"	"	"	
Benzo (ghi) perylene	"	154	----	107	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	----	107	"	"	"	"	"	
Chrysene	"	180	----	107	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	107	"	"	"	"	"	
Fluoranthene	"	337	----	107	"	"	"	"	"	
Fluorene	"	ND	----	107	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	----	107	"	"	"	"	"	
Naphthalene	"	308	----	107	"	"	"	"	"	
Phenanthrene	"	332	----	107	"	"	"	"	"	
Pyrene	"	295	----	107	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10				105%		24 - 125 %	"			"
Pyrene-d10				89.5%		41 - 141 %	"			"
Benzo (a) pyrene-d12				98.1%		38 - 143 %	"			"

PSE0031-07 (FO095559)				Soil				Sampled: 04/29/09 14:38		RL3
Acenaphthene	EPA 8270m	ND	----	112	ug/kg dry	2x	9050065	05/04/09 16:35	05/06/09 23:14	
Acenaphthylene	"	ND	----	112	"	"	"	"	"	
Anthracene	"	ND	----	112	"	"	"	"	"	
Benzo (a) anthracene	"	ND	----	112	"	"	"	"	"	
Benzo (a) pyrene	"	176	----	112	"	"	"	"	"	
Benzo (b) fluoranthene	"	258	----	112	"	"	"	"	"	
Benzo (ghi) perylene	"	196	----	112	"	"	"	"	"	
Benzo (k) fluoranthene	"	200	----	112	"	"	"	"	"	
Chrysene	"	343	----	112	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	112	"	"	"	"	"	
Fluoranthene	"	182	----	112	"	"	"	"	"	
Fluorene	"	ND	----	112	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	154	----	112	"	"	"	"	"	
Naphthalene	"	ND	----	112	"	"	"	"	"	
Phenanthrene	"	ND	----	112	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSE0031-07 (FO095559)				Soil			Sampled: 04/29/09 14:38			RL3
Pyrene	EPA 8270m	167	-----	112	ug/kg dry	2x	9050065	05/04/09 16:35	05/06/09 23:14	
Surrogate(s):	Fluorene-d10			97.8%		24 - 125 %	"			"
	Pyrene-d10			86.3%		41 - 141 %	"			"
	Benzo (a) pyrene-d12			91.5%		38 - 143 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSE0031-04 (FO095556)			Soil					Sampled: 04/29/09 10:52		RL3
Surrogate(s): 2-Fluorobiphenyl				76.8%		10 - 150 %	2x		05/06/09 19:46	
p-Terphenyl-d14				130%		10 - 150 %	10x		05/06/09 16:08	Z3
PSE0031-05 (FO095557)			Soil					Sampled: 04/29/09 11:20		RL3
Dimethyl phthalate	EPA 8270m	ND	----	193	ug/kg dry	2x	9050065	05/04/09 16:35	05/06/09 20:22	
Diethyl phthalate	"	ND	----	193	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	193	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	193	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	2810	----	193	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	967	"	10x	"	"	05/06/09 16:45	RL1
Surrogate(s): 2-Fluorobiphenyl				102%		10 - 150 %	2x		05/06/09 20:22	
p-Terphenyl-d14				124%		10 - 150 %	10x		05/06/09 16:45	Z3
PSE0031-06 (FO095558)			Soil					Sampled: 04/29/09 13:29		RL3
Dimethyl phthalate	EPA 8270m	ND	----	214	ug/kg dry	2x	9050065	05/04/09 16:35	05/06/09 20:58	
Diethyl phthalate	"	ND	----	214	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	214	"	"	"	"	"	
Butyl benzyl phthalate	"	4400	----	1070	"	10x	"	"	05/06/09 17:21	
Bis(2-ethylhexyl)phthalate	"	16800	----	1070	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	3210	"	"	"	"	"	RL1
Surrogate(s): 2-Fluorobiphenyl				98.8%		10 - 150 %	2x		05/06/09 20:58	
p-Terphenyl-d14				123%		10 - 150 %	10x		05/06/09 17:21	Z3
PSE0031-07 (FO095559)			Soil					Sampled: 04/29/09 14:38		RL3
Dimethyl phthalate	EPA 8270m	ND	----	224	ug/kg dry	2x	9050065	05/04/09 16:35	05/06/09 21:35	
Diethyl phthalate	"	ND	----	224	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	224	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	224	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	840	----	224	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	1120	"	10x	"	"	05/06/09 17:57	RL1
Surrogate(s): 2-Fluorobiphenyl				83.8%		10 - 150 %	2x		05/06/09 21:35	
p-Terphenyl-d14				114%		10 - 150 %	10x		05/06/09 17:57	Z3

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

*** DEFAULT GENERAL METHOD ***

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSE0031-01 (FO095553)					Soil					Sampled: 04/29/09 08:42
% Solids	NCA SOP	75.0	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	
PSE0031-02 (FO095554)					Soil					Sampled: 04/29/09 09:50
% Solids	NCA SOP	51.2	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	
PSE0031-03 (FO095555)					Soil					Sampled: 04/29/09 10:30
% Solids	NCA SOP	68.4	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	
PSE0031-04 (FO095556)					Soil					Sampled: 04/29/09 10:52
% Solids	NCA SOP	68.0	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	
PSE0031-05 (FO095557)					Soil					Sampled: 04/29/09 11:20
% Solids	NCA SOP	69.2	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	
PSE0031-06 (FO095558)					Soil					Sampled: 04/29/09 13:29
% Solids	NCA SOP	62.2	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	
PSE0031-07 (FO095559)					Soil					Sampled: 04/29/09 14:38
% Solids	NCA SOP	59.7	-----	0.0100	% by Weight	1x	9050203	05/07/09 07:30	05/07/09 07:30	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Organic Carbon, Total (TOC)

TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSE0031-01 (FO095553)			Soil							Sampled: 04/29/09 08:42
Total Organic Carbon - Duplicates	9060	11800	10.4	100	mg/Kg	1x	27145	05/13/09 16:57	05/13/09 16:57	
PSE0031-02 (FO095554)			Soil							Sampled: 04/29/09 09:50
Total Organic Carbon - Duplicates	9060	16900	10.4	100	mg/Kg	1x	27145	05/13/09 17:11	05/13/09 17:11	
PSE0031-03 (FO095555)			Soil							Sampled: 04/29/09 10:30
Total Organic Carbon - Duplicates	9060	19500	10.4	100	mg/Kg	1x	27145	05/13/09 17:24	05/13/09 17:24	
PSE0031-04 (FO095556)			Soil							Sampled: 04/29/09 10:52
Total Organic Carbon - Duplicates	9060	15300	10.4	100	mg/Kg	1x	27145	05/13/09 17:52	05/13/09 17:52	
PSE0031-05 (FO095557)			Soil							Sampled: 04/29/09 11:20
Total Organic Carbon - Duplicates	9060	17000	10.4	100	mg/Kg	1x	27145	05/13/09 18:05	05/13/09 18:05	
PSE0031-06 (FO095558)			Soil							Sampled: 04/29/09 13:29
Total Organic Carbon - Duplicates	9060	25000	10.4	100	mg/Kg	1x	27145	05/13/09 18:19	05/13/09 18:19	
PSE0031-07 (FO095559)			Soil							Sampled: 04/29/09 14:38
Total Organic Carbon - Duplicates	9060	36800	10.4	100	mg/Kg	1x	27145	05/13/09 18:34	05/13/09 18:34	
PSE0031-08 (FO095560)			Soil							Sampled: 04/29/09 14:38
Total Organic Carbon - Duplicates	9060	30300	10.4	100	mg/Kg	1x	27145	05/13/09 18:51	05/13/09 18:51	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9050065

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9050065-BLK1)

Extracted: 05/04/09 16:35

Acenaphthene	EPA 8270m	ND	---	13.3	ug/kg wet	1x	--	--	--	--	--	--	05/05/09 23:15	
Acenaphthylene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	

Surrogate(s): Fluorene-d10	Recovery: 100%	Limits: 24-125%	"	05/05/09 23:15
Pyrene-d10	83.6%	41-141%	"	"
Benzo (a) pyrene-d12	89.4%	38-143%	"	"

LCS (9050065-BS1)

Extracted: 05/04/09 16:35

Acenaphthene	EPA 8270m	165	---	13.4	ug/kg wet	1x	--	166	99.2%	(33-139)	--	--	05/05/09 23:46	
Benzo (a) pyrene	"	154	---	13.4	"	"	--	"	92.4%	(45-149)	--	--	"	
Pyrene	"	131	---	13.4	"	"	--	"	78.7%	(39-138)	--	--	"	

Surrogate(s): Fluorene-d10	Recovery: 108%	Limits: 24-125%	"	05/05/09 23:46
Pyrene-d10	83.3%	41-141%	"	"
Benzo (a) pyrene-d12	96.4%	38-143%	"	"

Matrix Spike (9050065-MS1)

QC Source: PSE0031-01

Extracted: 05/04/09 16:35

Acenaphthene	EPA 8270m	217	---	357	ug/kg dry	20x	ND	222	97.7%	(33-139)	--	--	05/06/09 19:01	
Benzo (a) pyrene	"	262	---	357	"	"	91.5	"	77.0%	(45-149)	--	--	"	
Pyrene	"	264	---	357	"	"	134	"	58.7%	(39-138)	--	--	"	

Surrogate(s): Fluorene-d10	Recovery: 102%	Limits: 24-125%	"	05/06/09 19:01
Pyrene-d10	90.8%	41-141%	"	"
Benzo (a) pyrene-d12	96.4%	38-143%	"	"

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9050065

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (9050065-MSD1)			QC Source: PSE0031-01					Extracted: 05/04/09 16:35						
Acenaphthene	EPA 8270m	202	---	357	ug/kg dry	20x	ND	222	91.3%	(33-139)	6.78%	(60)	05/06/09 19:33	
Benzo (a) pyrene	"	228	---	357	"	"	91.5	"	61.6%	(45-149)	14.0%	"	"	
Pyrene	"	269	---	357	"	"	134	"	60.9%	(39-138)	1.84%	"	"	
<i>Surrogate(s): Fluorene-d10</i>														
		<i>Recovery:</i>	94.5%	<i>Limits:</i> 24-125%		"								05/06/09 19:33
		<i>Pyrene-d10</i>	82.1%	41-141%		"								"
		<i>Benzo (a) pyrene-d12</i>	91.3%	38-143%		"								"

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9050065

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9050065-BLK1)

Extracted: 05/04/09 16:35

Dimethyl phthalate	EPA 8270m	ND	---	26.6	ug/kg wet	1x	--	--	--	--	--	--	05/06/09 10:48	
Diethyl phthalate	"	ND	---	26.6	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	26.6	"	"	--	--	--	--	--	--	"	
Butyl benzyl phthalate	"	ND	---	26.6	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	26.6	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	---	26.6	"	"	--	--	--	--	--	--	"	
Surrogate(s): 2-Fluorobiphenyl	Recovery:	90.2%	Limits:	10-150%	"								05/06/09 10:48	
p-Terphenyl-d14	102%		10-150%	"									"	

LCS (9050065-BS1)

Extracted: 05/04/09 16:35

Dimethyl phthalate	EPA 8270m	121	---	26.7	ug/kg wet	1x	--	133	91.2%	(20-150)	--	--	05/06/09 11:24	
Diethyl phthalate	"	123	---	26.7	"	"	--	"	92.5%	"	--	--	"	
Di-n-butyl phthalate	"	142	---	26.7	"	"	--	"	106%	"	--	--	"	
Butyl benzyl phthalate	"	154	---	26.7	"	"	--	"	115%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	159	---	26.7	"	"	--	"	119%	"	--	--	"	
Di-n-octyl phthalate	"	158	---	26.7	"	"	--	"	119%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl	Recovery:	97.9%	Limits:	10-150%	"								05/06/09 11:24	
p-Terphenyl-d14	103%		10-150%	"									"	

Matrix Spike (9050065-MS1)

QC Source: PSE0031-01

Extracted: 05/04/09 16:35

Dimethyl phthalate	EPA 8270m	164	---	713	ug/kg dry	20x	ND	177	92.5%	(10-150)	--	--	05/06/09 13:06	
Diethyl phthalate	"	175	---	713	"	"	ND	"	98.5%	"	--	--	"	
Di-n-butyl phthalate	"	218	---	713	"	"	ND	"	123%	"	--	--	"	
Butyl benzyl phthalate	"	271	---	713	"	"	ND	"	153%	"	--	--	"	M7
Bis(2-ethylhexyl)phthalate	"	1300	---	713	"	"	2080	"	-440%	"	--	--	"	MHA
Di-n-octyl phthalate	"	381	---	713	"	"	ND	"	215%	"	--	--	"	M7
Surrogate(s): 2-Fluorobiphenyl	Recovery:	98.0%	Limits:	10-150%	"								05/06/09 13:06	Z3
p-Terphenyl-d14	108%		10-150%	"									"	Z3

Matrix Spike Dup (9050065-MSD1)

QC Source: PSE0031-01

Extracted: 05/04/09 16:35

Dimethyl phthalate	EPA 8270m	163	---	713	ug/kg dry	20x	ND	177	92.2%	(10-150)	0.379% (50)		05/06/09 13:43	
Diethyl phthalate	"	174	---	713	"	"	ND	"	98.1%	"	0.427%	"	"	
Di-n-butyl phthalate	"	250	---	713	"	"	ND	"	141%	"	13.7%	"	"	
Butyl benzyl phthalate	"	339	---	713	"	"	ND	"	191%	"	22.1%	"	"	M7
Bis(2-ethylhexyl)phthalate	"	1010	---	713	"	"	2080	"	-603%	"	25.1%	"	"	MHA
Di-n-octyl phthalate	"	342	---	713	"	"	ND	"	193%	"	10.8%	"	"	M7
Surrogate(s): 2-Fluorobiphenyl	Recovery:	89.6%	Limits:	10-150%	"								05/06/09 13:43	Z3
p-Terphenyl-d14	104%		10-150%	"									"	Z3

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

*** DEFAULT GENERAL METHOD *** - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9050203

Soil Preparation Method: Dry Weight

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9050203-DUP1)			QC Source: PSE0020-63					Extracted: 05/07/09 07:30						
% Solids	NCA SOP	83.8	---	0.0100	% by Weight	1x	83.1	--	--	--	0.839% (20)		05/07/09 07:30	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 27145

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-27145-5)			QC Source:					Extracted: 05/13/09 14:59						
Total Organic Carbon - Duplicates	9060	4821	10.4	100	mg/Kg	1x	--	3530	137%	(28-172)	--	--	05/13/09 14:59	
Blank (220-27145-6)			QC Source:					Extracted: 05/13/09 15:06						
Total Organic Carbon - Duplicates	9060	ND	10.4	100	mg/Kg	1x	--	--	--	--	--	--	05/13/09 15:06	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/19/09 09:00

Notes and Definitions

Report Specific Notes:

- M7 - The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).
- MHA - Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- RL1 - Reporting limit raised due to sample matrix effects.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10 Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9710
 907-563-9200 FAX 863-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSE 0031**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST	
REPORT TO: Jennifer Shackelford		ADDRESS:		in Business Days *	
PHONE:		FAX:		<input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Organic & Inorganic Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Petroleum Hydrocarbon Analyses STD.	
PROJECT NAME: Portland Harbor		PRESERVATIVE		OTHER: Specify:	
PROJECT NUMBER: Inline Samp		P.O. NUMBER: 36238		* Turnaround Requests less than standard may incur Rush Charges.	
SAMPLED BY:		REQUESTED ANALYSES			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PAH+Pesticides	Trace Metals	TCC	Gravimetric
1 F0095553	4/29/09 0842	X	X	X	X
2 F0095554	0950	X	X	X	X
3 F0095555	1030	X	X	X	X
4 F0095556	1052	X	X	X	X
5 F0095557	1120	X	X	X	X
6 F0095558	1329	X	X	X	X
7 F0095559	1438	X	X	X	X
8 F0095560	1438	X	X	X	X
9					
10					
RELEASED BY: Jennifer Shackelford	DATE: 5/11/09	RECEIVED BY: Bob Lytle	DATE: 5/11/09	FIRM: TAP	DATE: 5/11/09
PRINT NAME: Rona Ketch	TIME: 12:15	PRINT NAME: Bob Lytle	TIME: 12:15		TIME: 12:15
RELEASED BY: Bob Lytle	DATE: 5/11/09	RECEIVED BY: Mmanee Eddy	DATE: 5/11/09	FIRM: TAP	DATE: 5/11/09
PRINT NAME: Bob Lytle	TIME: 14:05	PRINT NAME: Mmanee Eddy	TIME: 14:05		TIME: 14:05
ADDITIONAL REMARKS:		TEMP: 1.6°C PAGE: 1 OF 1			

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSE0031 Date/Time Received: 5/1/09 @ 1405
Client Name and Project: City of Portland
Portland Harbor

PM to Complete This Section: Yes No
Residual Chlorine Check Required: ☐ ☐ Quarantined: ☐ ☐
Quote #:
Special Instructions:

Time Zone:
☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☐ PDT/PST ☐ OTHER

Unpacking Checks:

Cooler #(s): 1
Temperatures: 1.6 C
Digi #1 Digi #2 IR Gun
☐ ☐ ☒ (☐ Plastic ☒ Glass)

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
Other: _____

N/A Yes No

Initials: BTE

- ☒ ☐ ☐ 1. If ESI client, were temp blanks received? If no, document on NOD.
- ☒ ☐ ☐ 2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
- ☒ ☐ ☐ 3. Chain of Custody present? If no, document on NOD.
- ☒ ☐ ☐ 4. Bottles received intact? If no, document on NOD.
- ☒ ☐ ☐ 5. Sample is not multiphasic? If no, document on NOD.
- ☒ ☐ ☐ 6. Proper Container and preservatives used? If no, document on NOD.
- ☒ ☐ ☐ 7. pH of all samples checked and meet requirements? If no, document on NOD.
- ☒ ☐ ☐ 8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
- ☒ ☐ ☐ 9. HF Dilution required?
- ☒ ☐ ☐ 10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
- ☒ ☐ ☐ 11. Did chain of custody agree with samples received? If no, document on NOD.
- ☒ ☐ ☐ 12. Were VOA/Oil Syringe samples without headspace?
- ☒ ☐ ☐ 13. Were VOA vials preserved? ☐ HCL ☐ Sodium Thiosulfate ☐ Ascorbic Acid
- ☐ ☒ ☐ 14. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 17. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
- ☒ ☐ ☐ 18. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 19. Was Standard Turn Around (TAT) requested?
- ☒ ☐ ☐ 20. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSE0031

Login Checks:

Initials: BUE

N/A Yes No

- ☒ ☒ 21. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
- ☒ ☐ 22. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
- ☒ ☐ 23. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
- ☐ ☒ 24. Were special log in instructions read and followed?
- ☒ ☐ 25. Were tests logged checked against the COC?
- ☒ ☐ 26. Were rush notices printed and delivered?
- ☒ ☐ 27. Were short hold notices printed and delivered?
- ☐ ☒ 28. Were subcontract COCs printed?
- ☒ ☐ 29. Was HF dilution logged?

Labeling and Storage Checks:

Initials: PS

N/A Yes No

- ☒ ☐ 30. Were the subcontracted samples/containers put in Sx fridge?
- ☒ ☐ 31. Were sample bottles and COC double checked for dissolved/filtered metals?
- ☒ ☐ 32. Did the sample ID, Date, and Time from label match what was logged?
- ☒ ☐ 33. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
- ☒ ☐ 34. Were HF stickers affixed to each container, and containers stored in Sx fridge?
- ☒ ☐ 35. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

2009-2010 Sediment Trap Samples



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 Inline Solids Investigation City Outfall Basin 43

To: File
From: Andrew Davidson, GSI Water Solutions, Inc. (GSI)
Date: September 22, 2010

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) between December 2009 and June 2010. Two sediment trap samples (FO105680, FO105681) and one duplicate sample (FO105701) were collected in City Outfall Basin 43 between December 30, 2009 and April 16, 2010. An additional sediment trap sample (FO105682) was collected in Outfall Basin 43 between April 16, 2010 and June 15, 2010. All samples were submitted for laboratory analyses.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
 - Total Solids – SM 2540G
 - Polychlorinated Biphenyls (PCBs) Aroclors – EPA 8082
- Test America (TA)
 - Total Organic Carbon (TOC) – EPA 9060 MOD
- Pace Analytical Services (Pace)
 - PCB Congeners – EPA 1668A

The WPCL summary report and the subcontracted laboratory reports for all analyses associated with this sampling event are attached. The WPCL summary report comments that unless otherwise noted, all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review of the analytical data is based on the available documentation provided by the subcontracted laboratories and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within accuracy control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

Samples FO105680, FO105681, and FO105701 were extracted and analyzed after the recommended TOC method-specific holding time (28 days after sample collection). However, samples analyzed for TOC were stored at 3.9°C and are not expected to have been significantly affected. All PCB Aroclor and PCB congener samples were extracted and analyzed within the recommended method-specific holding times.

Method Blanks

Two method blanks were processed during the subcontracted laboratory analysis of PCB congeners. One method blank was analyzed with sample FO105680. A second method blank was processed with samples FO105681, FO105682, and FO105701. PCB congeners 31 and 52 were detected in the first method blank; however, because these congeners were detected in sample FO105680 at concentrations greater than 10 times the detections in the associated method blank, the results are not qualified. PCB congener 52 was detected in the second method blank; however, because congener 52 was detected in the associated samples at concentrations greater than 10 times the detection in the method blank, the results are not qualified. No analytes were detected in the method blank processed during TOC analysis.

Internal Standard Recoveries

Isotopically-labeled internal standard recoveries were processed during the laboratory analysis of PCB congeners. Internal standard recoveries were within control limits with one exception for

sample FO105701 and 11 exceptions for the QA/QC samples. Internal standard recoveries outside of method-specified control limits are flagged “R” in the subcontracted laboratory report. Congeners associated with the impacted internal standard in sample FO105701 were not detected and the data did not require further qualification.

Interfering background constituents impacted the measurement of one isotopically-labeled internal standard for sample FO105681 during PCB congener analysis. This value is flagged “I” in the subcontracted report to indicate that incorrect isotope ratios were obtained. However, congeners associated with the affected internal standard were not detected in the sample, and the data did not require further qualification.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were processed during the subcontracted analysis of TOC. Analyte recoveries and relative percent differences (RPDs) were within laboratory control limits for all MS/MSD samples.

Laboratory Control Samples

A LC sample was processed during the laboratory analysis of TOC. Two sets of LC/DLC samples were processed during the laboratory analysis of PCB congeners; one set with sample FO105680 and another set with samples FO105681, FO105682, and FO105701. All LC and DLC recoveries and RPDs were within laboratory control limits for these analyses.

Other

WPCL reports that method reporting limits associated with the PCB Aroclor analysis were elevated in samples FO105681, FO105682, and FO105701 due to low percent solids. The three samples exhibited trace levels of PCBs, tentatively identified as Aroclor 1254.

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: 6/15/2010
Page: 1 of 1
Collected By: MJS, PTB

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: SEDIMENT

Requested Analyses

Basin 43 Sediment Trap Chain-of-custody

Sediment traps installed: 12/30/09 (43_ST5 & 43_ST6 #1); 4/16/10 (43_ST6 #2)
Sediment traps removed: 4/16/10 (43_ST5 & 43_ST6 #1); 6/15/10 (43_ST6 #2)

* Total Solids to be done at WPCL, care should be taken to use the smallest aliquot possible to retain sample volume for additional follow-up analyses.

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

PCB Congeners (All 209)

PCB Aroclors (Low-level)

Grain Size

TOC

TS*

Total Metals (As, Cd Cr, Cu, Pb, Ni, Ag, Zn) + Hg

Comments

FO105680

ST-43-ABC270-0410
N ALBINA & INTERSTATE

43_ST5

4/16/10

1252

C

TS=50.3

44.3 g Total Wet Weight

FO105681

ST-43-ABC363-0410
N RIVER & ALBINA

43_ST6

4/16/10

1201

C

TS=42.1

314.0 g Total Wet Weight

FO105682

ST-43-ABC363-0610
N RIVER & ALBINA

43_ST6

6/15/10

1600

C

TS=46.6

151.5 g Total Wet Weight

FO105701

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105702

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105703

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105704

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105705

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105706

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105707

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105708

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105709

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105710

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

FO105711

Duplicate

DVR

4/16/10

—

C

TS=42.1

151.5 g Total Wet Weight

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.		Relinquished By: 4.	
Signature:	Time:	Signature:	Time:	Signature:	Time:	Signature:	Time:
<i>[Signature]</i>	6/26						
Printed Name:	Date:	Printed Name:	Date:	Printed Name:	Date:	Printed Name:	Date:
Peter Bryant	6/15/10						
Received By: 1.	Time:	Received By: 2.	Time:	Received By: 3.	Time:	Received By: 4.	Time:
<i>[Signature]</i>	6/26						
Printed Name:	Date:	Printed Name:	Date:	Printed Name:	Date:	Printed Name:	Date:
Sheldene Lake	6/15/10						
Printed Name:	Date:	Printed Name:	Date:	Printed Name:	Date:	Printed Name:	Date:
Sheldene Lake	6/15/10						

SLD:\H001\1020.005 - Portland Harbor Stormwater Samp\Sampdoc\FY 2008_2009 Sediment Trap Sampling\Portland Harbor Stormwater of 43 Sed Trap COCs (6-15-10).xls



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: FO105680

Sample Collected: 04/16/10 12:52
Sample Received: 06/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC270-0410
N ALBINA & INTERSTATE
Sample Point Code: 43_ST5
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AO05537
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/PTB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Analytical holding times were exceeded for all analyses due to delayed sample submittal.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	50.3	% W/W	0.01	SM 2540 G	06/16/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	85000	mg/Kg dry wt	2000	EPA 9060 MOD	07/01/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	07/15/10

End of Report for Sample ID: FO105680

Report Date: 08/04/10

Validated By:



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: FO105681

Sample Collected: 04/16/10 12:01
Sample Received: 06/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC363-0410
N RIVER & ALBINA
Sample Point Code: 43_ST6
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AO05538
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/PTB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Analytical holding times were exceeded for all analyses due to delayed sample submittal. LAB: Reporting limits for PCB Aroclors are raised due to low %solids. This sample exhibited trace level PCB tentatively identified as Aroclor 1254.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	42.1	% W/W	0.01	SM 2540 G	06/16/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	06/22/10
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1248	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1260	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	100000	mg/Kg dry wt	2000	EPA 9060 MOD	07/01/10

End of Report for Sample ID: FO105681



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: FO105682

Sample Collected: 06/15/10 16:00
Sample Received: 06/15/10

**Sample Status: COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-43-ABC363-0610
N RIVER & ALBINA
Sample Point Code: 43_ST6
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AO05539
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/PTB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Reporting limits for PCB Aroclors are raised due to low %solids. This sample exhibited trace level PCB tentatively identified as Aroclor 1254.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	46.6	% WW	0.01	SM 2540 G	06/16/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	06/22/10
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1248	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1260	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	96000	mg/Kg dry wt	2000	EPA 9060 MOD	07/01/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	07/26/10

End of Report for Sample ID: FO105682

Report Date: 08/04/10

Validated By:



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: **FO105701**

Sample Collected: 04/16/10 00:00
Sample Received: 06/18/10

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: DUPLICATE

Report Page: Page 1 of 1

Sample Point Code: DUP
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

System ID: AO05610
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/PTB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times; calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Analytical holding times were exceeded for all analyses due to delayed sample submittal. LAB: Reporting limits for PCB Aroclors are raised due to low %solids. This sample exhibited trace level PCB tentatively identified as Aroclor 1254.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	06/22/10
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1248	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1260	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	06/22/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	100000	mg/Kg dry wt	2000	EPA 9060 MOD	07/01/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	07/26/10

End of Report for Sample ID: FO105701

Report Date: 08/04/10

Validated By:

August 03, 2010

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

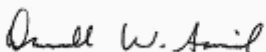
RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 06/21/10 14:20.
The following list is a summary of the Work Orders contained in this report, generated on 08/03/10 09:58.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PTF0637	Portland Harbor	Stormwater (Basin 43)

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

Stormwater (Basin 43)

Project Manager:

Jennifer Shackelford

Report Created:

08/03/10 09:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO105680	PTF0637-01	Other dry	04/16/10 12:52	06/21/10 14:20
FO105681	PTF0637-02	Other dry	04/16/10 12:01	06/21/10 14:20
FO105682	PTF0637-03	Other dry	06/15/10 16:00	06/21/10 14:20
FO105701	PTF0637-04	Other dry	04/16/10 00:00	06/21/10 14:20

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203


Project Name: **Portland Harbor**
Project Number: Stormwater (Basin 43)
Project Manager: Jennifer Shackelford

Report Created:
08/03/10 09:58

Organic Carbon, Total (TOC)
TestAmerica Seattle

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0637-01 (FO105680)		Other dry		Sampled: 04/16/10 12:52						
Total Organic Carbon	9060	85000	-----	2000	mg/Kg	1x	67010	07/01/10 09:11	07/01/10 09:11	H
PTF0637-02 (FO105681)		Other dry		Sampled: 04/16/10 12:01						
Total Organic Carbon	9060	100000	-----	2000	mg/Kg	1x	67010	07/01/10 09:11	07/01/10 09:11	H
PTF0637-03 (FO105682)		Other dry		Sampled: 06/15/10 16:00						
Total Organic Carbon	9060	96000	-----	2000	mg/Kg	1x	67010	07/01/10 09:11	07/01/10 09:11	
PTF0637-04 (FO105701)		Other dry		Sampled: 04/16/10 00:00						
Total Organic Carbon	9060	100000	-----	2000	mg/Kg	1x	67010	07/01/10 09:11	07/01/10 09:11	H

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: Stormwater (Basin 43)
Project Manager: Jennifer Shackelford

Report Created:
08/03/10 09:58

Percent Moisture
TestAmerica Seattle

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0637-01 (FO105680)		Other dry				Sampled: 04/16/10 12:52				
Percent Moisture	Moisture	50	----	0.10	%	1x	66304	06/24/10 11:08	06/24/10 11:08	
Percent Solids	"	50	----	0.10	"	"	"	"	"	
PTF0637-02 (FO105681)		Other dry				Sampled: 04/16/10 12:01				
Percent Moisture	Moisture	58	----	0.10	%	1x	66304	06/24/10 11:08	06/24/10 11:08	
Percent Solids	"	42	----	0.10	"	"	"	"	"	
PTF0637-03 (FO105682)		Other dry				Sampled: 06/15/10 16:00				
Percent Moisture	Moisture	53	----	0.10	%	1x	66304	06/24/10 11:08	06/24/10 11:08	
Percent Solids	"	47	----	0.10	"	"	"	"	"	
PTF0637-04 (FO105701)		Other dry				Sampled: 04/16/10 00:00				
Percent Moisture	Moisture	58	----	0.10	%	1x	66304	06/24/10 11:08	06/24/10 11:08	
Percent Solids	"	42	----	0.10	"	"	"	"	"	

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

Stormwater (Basin 43)

Project Manager:

Jennifer Shackelford

Report Created:

08/03/10 09:58

Organic Carbon, Total (TOC) - Laboratory Quality Control Results


TestAmerica Seattle

QC Batch: 67010

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (580-67010-3)			QC Source:					Extracted: 07/01/10 09:11						
Total Organic Carbon	9060	ND	---	2000	mg/Kg	1x	--	--	--	--	--	--	07/01/10 09:11	
LCS (580-67010-4)			QC Source:					Extracted: 07/01/10 09:11						
Total Organic Carbon	9060	4900	---	2000	mg/Kg	1x	--	3400	144%	(12.8-187)	--	--	07/01/10 09:11	
Duplicate (580-67010-7)			QC Source: 580-67010-5					Extracted: 07/01/10 09:11						
Total Organic Carbon	9060	7700	---	2000	mg/Kg	1x	8000	--	--	--	4%	(50)	07/01/10 09:11	
Matrix Spike (580-67010-8)			QC Source: 580-67010-5					Extracted: 07/01/10 09:11						
Total Organic Carbon	9060	27700	---	2000	mg/Kg	1x	8000	18400	107%	(76-128)	--	--	07/01/10 09:11	
Matrix Spike Dup (580-67010-9)			QC Source: 580-67010-5					Extracted: 07/01/10 09:11						
Total Organic Carbon	9060	29300	---	2000	mg/Kg	1x	8000	20000	107%	(76-128)	6%	(28)	07/01/10 09:11	

TestAmerica Portland



Darrell Auvil, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

Stormwater (Basin 43)

Project Manager:

Jennifer Shackelford

Report Created:

08/03/10 09:58

Notes and Definitions

Report Specific Notes:

- H - Sample was prepped or analyzed beyond the specified holding time

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

THE LEADER IN ENVIRONMENTAL TESTING

425-420-9200	FAX 420-9210	
509-924-9200	FAX 924-9290	
503-906-9200	FAX 906-9210	
907-563-9200	FAX 563-9210	

Work Order #: **PTFO437**

[illegible]

TS results are given
on my night basis.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PTF0637 Date/Time Received: 6/21/10 1420
Client Name and Project: COPP

Time Zone:

☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☒ PDT/PST ☐ AK ☐ OTHER

Unpacking Checks:

Cooler #(s): 29

Temperatures: 29

Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☒ Plastic ☐ Glass)

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
☐ Other: _____

N/A Yes No

Initials jm

- ☒ ☐ ☐ 1. If ESI client, were temp blanks received? If no, document on NOD.
- ☒ ☐ ☐ 2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
- ☒ ☐ ☐ 3. Chain of Custody present? If no, document on NOD.
- ☒ ☐ ☐ 4. Bottles received intact? If no, document on NOD.
- ☒ ☐ ☐ 5. Sample is not multiphasic? If no, document on NOD.
- ☒ ☐ ☐ 6. Proper Container and preservatives used? If no, document on NOD.
- ☒ ☐ ☐ 7. pH of all samples checked and meet requirements? If no, document on NOD.
- ☒ ☐ ☐ 8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
- ☒ ☐ ☐ 9. HF Dilution required?
- ☒ ☒ ☐ 10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding. *very limited volume. pm notified. jm*
- ☒ ☐ ☐ 11. Did chain of custody agree with samples received? If no, document on NOD.
- ☐ ☒ ☐ 12. Is the "Sampled by" section of the COC completed?
- ☒ ☐ ☐ 13. Were VOA/Oil Syringe samples without headspace?
- ☒ ☐ ☐ 14. Were VOA vials preserved? ☐ HCl ☐ Sodium Thiosulfate ☐ Ascorbic Acid
- ☐ ☒ ☐ 15. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
- ☒ ☐ ☐ 19. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 20. Was Standard Turn Around (TAT) requested?
- ☐ ☒ ☐ 21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PTF0637

Login Checks:

Initials: jm

N/A Yes No

- ☒ ☒ ☐ 22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
- ☒ ☐ ☐ 23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
- ☐ ☒ ☐ 24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
- ☐ ☒ ☐ 25. Were special log in instructions read and followed?
- ☐ ☒ ☐ 26. Were tests logged checked against the COC?
- ☒ ☐ ☐ 27. Were rush notices printed and delivered?
- ☒ ☐ ☐ 28. Were short hold notices printed and delivered?
- ☐ ☒ ☐ 29. Were subcontract COCs printed?
- ☒ ☐ ☐ 30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: jm

N/A Yes No

- ☐ ☒ ☐ 31. Were the subcontracted samples/containers put in Sx fridge?
- ☒ ☐ ☐ 32. Were sample bottles and COC double checked for dissolved/filtered metals?
- ☐ ☒ ☐ 33. Did the sample ID, Date, and Time from label match what was logged?
- ☒ ☐ ☐ 34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
- ☒ ☐ ☐ 35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
- ☒ ☐ ☐ 36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Report Prepared for:

Darrell Auvil
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

Pace Project #: 10131995
Sample Receipt Date: 06/23/2010
Client Project #: PTF0637
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:



August 02, 2010

Nate Habte, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
natnael.habte@pacelabs.com

Report Prepared Date:

August 2, 2010



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on three samples submitted by a representative of Test America. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to 25 to 75 parts per trillion and adjusted for the amount of sample extracted.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 29-92%. With twelve exceptions, flagged "R" on the results tables, the labeled standard recovery values obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCB congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain low levels of PCB congeners #31 and 52. The samples contained these congeners at levels over an order of magnitude higher than seen in the blank. In general, levels less than ten times the background are not considered statistically different from the background. This indicates that the sample processing procedures did not significantly contribute to the PCB levels determined for the samples.

Laboratory spike samples were also prepared with the sample batch using clean sand that had been fortified with native standards. The results show that the spiked native compounds were recovered at 95-121%, with relative percent differences of 0.0-7.9%. This demonstrates high levels of accuracy and precision for these analyses. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

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Report No.....10131995

Appendix A

Sample Management

10131995

SUBCONTRACT ORDER

TestAmerica Portland

PTF0637

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone : (612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: °C Ice: Y / N

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: 3 weeks Initials: jm

Analysis	Units	Expires	Comments
----------	-------	---------	----------

Sample ID: PTF0637-01 (FO105680 - Other dry)

Sampled: 04/16/10 12:52

001

1668 Coplanar PCBs - SUB ug/l

10/13/10 12:52

209 Congeners to Pace

Containers Supplied:

8 oz. jar (A)

Sample ID: PTF0637-02 (FO105681 - Other dry)

Sampled: 04/16/10 12:01

002

1668 Coplanar PCBs - SUB ug/l

10/13/10 12:01

209 Congeners to Pace

Containers Supplied:

8 oz. jar (A)

Sample ID: PTF0637-03 (FO105682 - Other dry)

Sampled: 06/15/10 16:00

003

1668 Coplanar PCBs - SUB ug/l

12/12/10 16:00

209 Congeners to Pace

Containers Supplied:

8 oz. jar (A)

Sample ID: PTF0637-04 (FO105701 - Other dry)

Sampled: 04/16/10 00:00

004

1668 Coplanar PCBs - SUB ug/l

10/13/10 00:00

209 Congeners to Pace

Containers Supplied:

8 oz. jar (A)

Released By

Report No..... 10131995 1668A

Date/Time

Received By

Received By

Date/Time

Date/Time

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Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 10131995

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 4170 7525 7098

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals Intact: ☒ yes ☐ no

Packing Material: ☒ Bubble Wrap ☐ Bubble Bag ☐ None ☐ Other _____ Temp Blank: Yes ☒ No _____

Thermometer Used 80344042 of 179425 Type of Ice: Wet ☒ Blue ☐ None ☐ Samples on Ice, cooling process has begun

Cooler Temperature 3-6°C Biological Tissue Is Frozen: Yes ☐ No ☐ Date and Initials of person examining contents: NR 6/23/10

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>SL</u>		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: Darrell Auvil

Date/Time: 6/24/10 @ 10:14

Comments/ Resolution: Darrell Auvil

6/28/10 @ 15:45

① - 1668-209, 2 mixtures provided confirmed

② - Star TAT, due 7/2, is fine -> despite note on ECR

Project Manager Review:

NAT

Date: 6/23/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR, Inc. F-L213Rev.00, 05Aug2009

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

Report No.....10131995_1668A

Page 6 of 56

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

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Report No.....10131995

Report No.....10131995_1668A

Page 7 of 56

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTF0637-01 (FO105680)		
Lab Sample ID	10131995001		
Filename	P100720A_13		
Injected By	SMT		
Total Amount Extracted	20.1 g	Matrix	Solid
% Moisture	50.3	Dilution	5
Dry Weight Extracted	10.0 g	Collected	04/16/2010 12:52
ICAL ID	P100720A04	Received	06/23/2010 10:03
CCal Filename(s)	P100720A03	Extracted	07/15/2010 15:45
Method Blank ID	BLANK-25744	Analyzed	07/20/2010 19:56

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.552	3.40	2.0	0.761	38
13C-4-MoCB	3	13.027	2.85	2.0	1.26	63
13C-2,2'-DiCB	4	13.398	1.52	2.0	0.819	41
13C-4,4'-DiCB	15	21.594	1.52	2.0	1.37	69
13C-2,2',6-TrCB	19	17.879	1.08	2.0	0.938	47
13C-3,4,4'-TrCB	37	29.943	1.09	2.0	1.67	83
13C-2,2',6,6'-TeCB	54	21.944	0.80	2.0	1.43	71
13C-3,4,4',5-TeCB	81	37.254	0.77	2.0	1.22	61
13C-3,3',4,4'-TeCB	77	37.858	0.81	2.0	0.950	48
13C-2,2',4,6,6'-PeCB	104	28.517	1.60	2.0	1.89	94
13C-2,3,3',4,4'-PeCB	105	41.480	1.53	2.0	1.15	58
13C-2,3,4,4',5-PeCB	114	40.793	1.53	2.0	1.25	62
13C-2,3',4,4',5-PeCB	118	40.256	1.61	2.0	1.28	64
13C-2,3',4,4',5'-PeCB	123	39.904	1.53	2.0	1.32	66
13C-3,3',4,4',5-PeCB	126	44.666	1.54	2.0	0.818	41
13C-2,2',4,4',6,6'-HxCB	155	34.739	1.24	2.0	2.16	108
13C-HxCB (156/157)	156/157	47.718	1.29	4.0	2.62	65
13C-2,3',4,4',5,5'-HxCB	167	46.544	1.27	2.0	1.36	68
13C-3,3',4,4',5,5'-HxCB	169	51.072	1.16	2.0	1.01	51
13C-2,2',3,4',5,6,6'-HpCB	188	40.725	1.05	2.0	2.54	127
13C-2,3,3',4,4',5,5'-HpCB	189	53.728	1.03	2.0	1.71	86
13C-2,2',3,3',5,5',6'-OxCB	202	46.226	0.93	2.0	1.88	94
13C-2,3,3',4,4',5,5',6-OxCB	205	56.875	0.92	2.0	1.64	82
13C-2,2',3,3',4,4',5,5',6-NoCB	206	59.376	0.81	2.0	1.83	92
13C-2,2',3,3',4,4',5,5',6-NoCB	208	53.082	0.83	2.0	1.42	71
13C--DeCB	209	62.005	0.72	2.0	1.93	96
Cleanup Standards						
13C-2,4,4'-TrCB	28	25.314	1.09	2.0	1.88	94
13C-2,3,3',5,5'-PeCB	111	37.858	1.57	2.0	1.16	58
13C-2,2',3,3',5,5',6-HpCB	178	43.878	1.08	2.0	1.55	78
Recovery Standards						
13C-2,5-DiCB	9	16.322	1.63	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	27.444	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	35.007	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	43.425	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	56.229	0.95	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-01 (FO105680)
Lab Sample ID 10131995001
Filename P100720A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.576	3.00	59.6	---	25.0
2		12.775	3.10	94.3	---	25.0
3		13.039	3.16	60.4	---	25.0
4		13.410	1.56	82.6	---	25.0
5		---	---	ND	---	25.0
6		16.921	1.53	77.9	---	25.0
7		---	---	ND	---	25.0
8		17.520	1.54	197	---	25.0
9		---	---	ND	---	25.0
10		---	---	ND	---	25.0
11		20.827	1.58	1610	---	150
12	12/13	21.199	1.51	81.3	---	50.0
13	12/13	21.199	1.51	(81.3)	---	50.0
14		---	---	ND	---	25.0
15		21.630	1.60	193	---	25.0
16		21.546	1.03	128	---	25.0
17		20.959	1.05	146	---	25.0
18	18/30	20.432	1.05	276	---	50.0
19		17.904	0.98	36.4	---	25.0
20	20/28	25.348	1.04	654	---	50.0
21	21/33	25.616	1.04	355	---	50.0
22		26.086	1.06	246	---	25.0
23		---	---	ND	---	25.0
24		---	---	ND	---	25.0
25		24.627	1.06	53.0	---	25.0
26	26/29	24.325	1.00	118	---	50.0
27		21.235	1.05	30.5	---	25.0
28	20/28	25.348	1.04	(654)	---	50.0
29	26/29	24.325	1.00	(118)	---	50.0
30	18/30	20.432	1.05	(276)	---	50.0
31		24.996	1.02	586	---	25.0
32		22.212	1.03	119	---	25.0
33	21/33	25.616	1.04	(355)	---	50.0
34		---	---	ND	---	25.0
35		29.490	1.01	55.2	---	25.0
36		---	---	ND	---	25.0
37		29.959	1.00	281	---	25.0
38		---	---	ND	---	25.0
39		---	---	ND	---	25.0
40	40/41/71	29.758	0.78	512	---	150
41	40/41/71	29.758	0.78	(512)	---	150
42		29.205	0.78	244	---	50.0
43	43/73	---	---	ND	---	100.0
44	44/47/65	28.601	0.79	991	---	150
45	45/51	25.449	0.78	156	---	100.0
46		25.801	0.80	54.2	---	50.0
47	44/47/65	28.601	0.79	(991)	---	150
48		28.350	0.79	173	---	50.0

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-01 (FO105680)
Lab Sample ID 10131995001
Filename P100720A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	28.031	0.78	555	---	100.0
50	50/53	24.644	0.79	113	---	100.0
51	45/51	25.449	0.78	(156)	---	100.0
52		27.478	0.78	1520	---	50.0
53	50/53	24.644	0.79	(113)	---	100.0
54		---	---	ND	---	50.0
55		---	---	ND	---	50.0
56		33.900	0.78	387	---	50.0
57		---	---	ND	---	50.0
58		---	---	ND	---	50.0
59	59/62/75	---	---	ND	---	150
60		34.135	0.80	190	---	50.0
61	61/70/74/76	32.827	0.78	1840	---	200
62	59/62/75	---	---	ND	---	150
63		---	---	ND	---	50.0
64		30.010	0.83	440	---	50.0
65	44/47/65	28.601	0.79	(991)	---	150
66		33.196	0.78	844	---	50.0
67		---	---	ND	---	50.0
68		---	---	ND	---	50.0
69	49/69	28.031	0.78	(555)	---	100.0
70	61/70/74/76	32.827	0.78	(1840)	---	200
71	40/41/71	29.758	0.78	(512)	---	150
72		---	---	ND	---	50.0
73	43/73	---	---	ND	---	100.0
74	61/70/74/76	32.827	0.78	(1840)	---	200
75	59/62/75	---	---	ND	---	150
76	61/70/74/76	32.827	0.78	(1840)	---	200
77		37.875	0.79	141	---	50.0
78		---	---	ND	---	50.0
79		---	---	ND	---	50.0
80		---	---	ND	---	50.0
81		---	---	ND	---	50.0
82		37.455	1.59	281	---	50.0
83		35.510	1.57	125	---	50.0
84		33.045	1.56	727	---	50.0
85	85/116/117	36.952	1.56	357	---	150
86	86/87/97/108/119/125	36.282	1.62	1670	---	300
87	86/87/97/108/119/125	36.282	1.62	(1670)	---	300
88	88/91	32.793	1.59	366	---	100.0
89		---	---	ND	---	50.0
90	90/101/113	35.041	1.57	2460	---	150
91	88/91	32.793	1.59	(366)	---	100.0
92		34.420	1.52	457	---	50.0
93	93/98/100/102	---	---	ND	---	200
94		---	---	ND	---	50.0
95		31.871	1.59	2200	---	50.0
96		---	---	ND	---	50.0

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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-01 (FO105680)
Lab Sample ID 10131995001
Filename P100720A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	36.282	1.62	(1670)	---	300
98	93/98/100/102	---	---	ND	---	200
99		35.644	1.59	894	---	50.0
100	93/98/100/102	---	---	ND	---	200
101	90/101/113	35.041	1.57	(2460)	---	150
102	93/98/100/102	---	---	ND	---	200
103		---	---	ND	---	50.0
104		---	---	ND	---	50.0
105		41.497	1.59	900	---	50.0
106		---	---	ND	---	50.0
107	107/124	---	---	ND	---	100.0
108	86/87/97/108/119/125	36.282	1.62	(1670)	---	300
109		39.837	1.57	113	---	50.0
110	110/115	37.120	1.57	2540	---	100.0
111		---	---	ND	---	50.0
112		---	---	ND	---	50.0
113	90/101/113	35.041	1.57	(2460)	---	150
114		---	---	ND	---	50.0
115	110/115	37.120	1.57	(2540)	---	100.0
116	85/116/117	36.952	1.56	(357)	---	150
117	85/116/117	36.952	1.56	(357)	---	150
118		40.273	1.55	1880	---	50.0
119	86/87/97/108/119/125	36.282	1.62	(1670)	---	300
120		---	---	ND	---	50.0
121		---	---	ND	---	50.0
122		---	---	ND	---	50.0
123		---	---	ND	---	50.0
124	107/124	---	---	ND	---	100.0
125	86/87/97/108/119/125	36.282	1.62	(1670)	---	300
126		---	---	ND	---	50.0
127		---	---	ND	---	50.0
128	128/166	44.767	1.20	382	---	100.0
129	129/138/163	43.459	1.26	3280	---	150
130		42.805	1.21	196	---	50.0
131		---	---	ND	---	50.0
132		40.357	1.27	1160	---	50.0
133		---	---	ND	---	50.0
134	134/143	39.250	1.27	192	---	100.0
135	135/151	38.076	1.25	1240	---	100.0
136		35.544	1.23	512	---	50.0
137		43.023	1.20	128	---	50.0
138	129/138/163	43.459	1.26	(3280)	---	150
139	139/140	---	---	ND	---	100.0
140	139/140	---	---	ND	---	100.0
141		42.386	1.26	640	---	50.0
142		---	---	ND	---	50.0
143	134/143	39.250	1.27	(192)	---	100.0
144		38.679	1.27	176	---	50.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-01 (FO105680)
Lab Sample ID 10131995001
Filename P100720A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	50.0
146		41.547	1.23	425	---	50.0
147	147/149	39.048	1.25	2690	---	100.0
148		---	---	ND	---	50.0
149	147/149	39.048	1.25	(2690)	---	100.0
150		---	---	ND	---	50.0
151	135/151	38.076	1.25	(1240)	---	100.0
152		---	---	ND	---	50.0
153	153/168	42.184	1.25	2460	---	100.0
154		---	---	ND	---	50.0
155		---	---	ND	---	50.0
156	156/157	47.718	1.29	408	---	100.0
157	156/157	47.718	1.29	(408)	---	100.0
158		43.878	1.25	298	---	50.0
159		---	---	ND	---	50.0
160		---	---	ND	---	50.0
161		---	---	ND	---	50.0
162		---	---	ND	---	50.0
163	129/138/163	43.459	1.26	(3280)	---	150
164		43.140	1.24	212	---	50.0
165		---	---	ND	---	50.0
166	128/166	44.767	1.20	(382)	---	100.0
167		46.561	1.22	150	---	50.0
168	153/168	42.184	1.25	(2460)	---	100.0
169		---	---	ND	---	50.0
170		50.435	1.06	662	---	50.0
171	171/173	46.796	1.02	246	---	100.0
172		48.456	1.03	147	---	50.0
173	171/173	46.796	1.02	(246)	---	100.0
174		45.689	1.00	834	---	50.0
175		---	---	ND	---	50.0
176		42.017	1.01	120	---	50.0
177		46.142	1.02	470	---	50.0
178		43.895	1.03	202	---	50.0
179		41.111	1.03	418	---	50.0
180	180/193	49.144	1.05	1630	---	100.0
181		---	---	ND	---	50.0
182		---	---	ND	---	50.0
183	183/185	45.438	1.11	578	---	100.0
184		---	---	ND	---	50.0
185	183/185	45.438	1.11	(578)	---	100.0
186		---	---	ND	---	50.0
187		44.817	1.03	1000	---	50.0
188		---	---	ND	---	50.0
189		---	---	ND	---	50.0
190		50.988	1.00	139	---	50.0
191		---	---	ND	---	50.0
192		---	---	ND	---	50.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-01 (FO105680)
Lab Sample ID 10131995001
Filename P100720A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	49.144	1.05	(1630)	---	100.0
194		56.272	0.89	418	---	75.0
195		53.427	0.86	151	---	75.0
196		51.810	0.88	203	---	75.0
197	197/200	---	---	ND	---	150
198	198/199	51.139	0.90	396	---	150
199	198/199	51.139	0.90	(396)	---	150
200	197/200	---	---	ND	---	150
201		---	---	ND	---	75.0
202		46.259	0.94	105	---	75.0
203		52.011	0.87	255	---	75.0
204		---	---	ND	---	75.0
205		---	---	ND	---	75.0
206		59.419	0.79	224	---	75.0
207		---	---	ND	---	75.0
208		---	---	ND	---	75.0
209		62.048	0.66	83.2	---	75.0

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-01 (FO105680)
Lab Sample ID 10131995001
Filename P100720A_13

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	214
Total Dichloro Biphenyls	2240
Total Trichloro Biphenyls	3080
Total Tetrachloro Biphenyls	8160
Total Pentachloro Biphenyls	15000
Total Hexachloro Biphenyls	14500
Total Heptachloro Biphenyls	6450
Total Octachloro Biphenyls	1530
Total Nonachloro Biphenyls	224
Decachloro Biphenyls	83.2
Total PCBs	51500

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTF0637-02 (FO105681)		
Lab Sample ID	10131995002-2R		
Filename	P100729B_10		
Injected By	BAL		
Total Amount Extracted	15.8 g	Matrix	Solid
% Moisture	42.1	Dilution	10
Dry Weight Extracted	9.15 g	Collected	04/16/2010 12:01
ICAL ID	P100729B03	Received	06/23/2010 10:03
CCal Filename(s)	P100729B_02	Extracted	07/26/2010 15:30
Method Blank ID	BLANK-25867	Analyzed	07/30/2010 08:52

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.576	2.34	2.0	0.921	50
13C-4-MoCB	3	13.074	2.89	2.0	1.17	58
13C-2,2'-DiCB	4	13.433	1.61	2.0	0.999	50
13C-4,4'-DiCB	15	21.676	1.57	2.0	1.41	70
13C-2,2',6-TrCB	19	17.938	1.14	2.0	1.15	58
13C-3,4,4'-TrCB	37	30.030	1.07	2.0	1.69	85
13C-2,2',6,6'-TeCB	54	21.997	0.80	2.0	1.39	69
13C-3,4,4',5-TeCB	81	37.341	0.80	2.0	1.63	82
13C-3,3',4,4'-TeCB	77	37.945	0.81	2.0	1.55	78
13C-2,2',4,6,6'-PeCB	104	28.571	1.62	2.0	1.57	78
13C-2,3,3',4,4'-PeCB	105	41.550	1.63	2.0	1.60	80
13C-2,3,4,4',5-PeCB	114	40.863	1.60	2.0	1.59	80
13C-2,3',4,4',5-PeCB	118	40.309	1.56	2.0	1.59	79
13C-2,3',4,4',5'-PeCB	123	39.957	1.59	2.0	1.59	80
13C-3,3',4,4',5-PeCB	126	44.720	1.56	2.0	1.36	68
13C-2,2',4,4',6,6'-HxCB	155	34.809	1.23	2.0	1.71	86
13C-HxCB (156/157)	156/157	47.772	1.29	4.0	2.81	70
13C-2,3',4,4',5,5'-HxCB	167	46.564	1.27	2.0	1.53	76
13C-3,3',4,4',5,5'-HxCB	169	51.142	1.32	2.0	1.14	57
13C-2,2',3,4',5,6,6'-HpCB	188	40.779	1.02	2.0	2.11	106
13C-2,3,3',4,4',5,5'-HpCB	189	53.758	1.09	2.0	1.71	85
13C-2,2',3,3',5,5',6'-OxCB	202	46.246	0.92	2.0	1.87	94
13C-2,3,3',4,4',5,5',6-OxCB	205	56.948	0.87	2.0	1.56	78
13C-2,2',3,3',4,4',5,5',6-NoCB	206	59.426	0.81	2.0	1.69	84
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	53.111	0.78	2.0	1.39	70
13C--DeCB	209	62.056	0.73	2.0	1.67	83
Cleanup Standards						
13C-2,4,4'-TrCB	28	25.401	1.19	2.0	1.91	96
13C-2,3,3',5,5'-PeCB	111	37.928	1.55	2.0	1.62	81
13C-2,2',3,3',5,5',6-HpCB	178	43.932	1.06	2.0	1.69	84
Recovery Standards						
13C-2,5-DiCB	9	16.369	1.63	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	27.514	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	35.094	1.54	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	43.496	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	56.301	0.88	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-02 (FO105681)
Lab Sample ID 10131995002-2R
Filename P100729B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	27.3
2		---	---	ND	---	27.3
3		---	---	ND	---	27.3
4		13.445	1.50	61.5	---	27.3
5		---	---	ND	---	27.3
6		16.980	1.55	62.2	---	27.3
7		---	---	ND	---	27.3
8		17.567	1.68	165	---	27.3
9		---	---	ND	---	27.3
10		---	---	ND	---	27.3
11		20.897	1.56	1350	---	164
12	12/13	---	---	ND	---	54.7
13	12/13	---	---	ND	---	54.7
14		---	---	ND	---	27.3
15		21.688	1.64	134	---	27.3
16		21.592	1.06	83.7	---	27.3
17		21.005	1.02	86.9	---	27.3
18	18/30	20.478	1.03	186	---	54.7
19		17.974	1.05	29.9	---	27.3
20	20/28	25.418	1.03	489	---	54.7
21	21/33	25.686	1.03	265	---	54.7
22		26.156	1.03	199	---	27.3
23		---	---	ND	---	27.3
24		---	---	ND	---	27.3
25		24.680	0.98	31.5	---	27.3
26	26/29	24.429	0.98	82.0	---	54.7
27		---	---	ND	---	27.3
28	20/28	25.418	1.03	(489)	---	54.7
29	26/29	24.429	0.98	(82.0)	---	54.7
30	18/30	20.478	1.03	(186)	---	54.7
31		25.066	1.02	419	---	27.3
32		22.266	1.04	85.4	---	27.3
33	21/33	25.686	1.03	(265)	---	54.7
34		---	---	ND	---	27.3
35		29.577	0.90	34.8	---	27.3
36		---	---	ND	---	27.3
37		30.046	1.04	218	---	27.3
38		---	---	ND	---	27.3
39		---	---	ND	---	27.3
40	40/41/71	29.812	0.80	360	---	164
41	40/41/71	29.812	0.80	(360)	---	164
42		29.292	0.83	162	---	54.7
43	43/73	---	---	ND	---	109
44	44/47/65	28.671	0.78	1110	---	164
45	45/51	---	---	ND	---	109
46		---	---	ND	---	54.7
47	44/47/65	28.671	0.78	(1110)	---	164
48		28.420	0.84	90.6	---	54.7

Conc = Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-02 (FO105681)
Lab Sample ID 10131995002-2R
Filename P100729B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	28.118	0.78	542	---	109
50	50/53	---	---	ND	---	109
51	45/51	---	---	ND	---	109
52		27.548	0.79	2330	---	54.7
53	50/53	---	---	ND	---	109
54		---	---	ND	---	54.7
55		---	---	ND	---	54.7
56		33.970	0.79	550	---	54.7
57		---	---	ND	---	54.7
58		---	---	ND	---	54.7
59	59/62/75	---	---	ND	---	164
60		34.205	0.75	240	---	54.7
61	61/70/74/76	32.897	0.77	3970	---	219
62	59/62/75	---	---	ND	---	164
63		---	---	ND	---	54.7
64		30.080	0.79	445	---	54.7
65	44/47/65	28.671	0.78	(1110)	---	164
66		33.249	0.78	1310	---	54.7
67		---	---	ND	---	54.7
68		---	---	ND	---	54.7
69	49/69	28.118	0.78	(542)	---	109
70	61/70/74/76	32.897	0.77	(3970)	---	219
71	40/41/71	29.812	0.80	(360)	---	164
72		---	---	ND	---	54.7
73	43/73	---	---	ND	---	109
74	61/70/74/76	32.897	0.77	(3970)	---	219
75	59/62/75	---	---	ND	---	164
76	61/70/74/76	32.897	0.77	(3970)	---	219
77		37.961	0.77	498	---	54.7
78		---	---	ND	---	54.7
79		36.368	0.75	140	---	54.7
80		---	---	ND	---	54.7
81		---	---	ND	---	54.7
82		37.525	1.59	1220	---	54.7
83		35.597	1.72	439	---	54.7
84		33.098	1.57	1850	---	54.7
85	85/116/117	37.006	1.41	1300	---	164
86	86/87/97/108/119/125	36.352	1.55	6510	---	328
87	86/87/97/108/119/125	36.352	1.55	(6510)	---	328
88	88/91	32.863	1.58	778	---	109
89		33.635	1.60	62.5	---	54.7
90	90/101/113	35.111	1.55	7400	---	164
91	88/91	32.863	1.58	(778)	---	109
92		34.490	1.57	1250	---	54.7
93	93/98/100/102	---	---	ND	---	219
94		---	---	ND	---	54.7
95		31.924	1.56	4640	---	54.7
96		---	---	ND	---	54.7

Conc = Concentration
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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-02 (FO105681)
Lab Sample ID 10131995002-2R
Filename P100729B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	36.352	1.55	(6510)	---	328
98	93/98/100/102	---	---	ND	---	219
99		35.731	1.61	3440	---	54.7
100	93/98/100/102	---	---	ND	---	219
101	90/101/113	35.111	1.55	(7400)	---	164
102	93/98/100/102	---	---	ND	---	219
103		---	---	ND	---	54.7
104		---	---	ND	---	54.7
105		41.550	1.56	5210	---	54.7
106		---	---	ND	---	54.7
107	107/124	39.622	1.60	481	---	109
108	86/87/97/108/119/125	36.352	1.55	(6510)	---	328
109		39.890	1.53	930	---	54.7
110	110/115	37.190	1.53	11300	---	109
111		---	---	ND	---	54.7
112		---	---	ND	---	54.7
113	90/101/113	35.111	1.55	(7400)	---	164
114		40.896	1.58	277	---	54.7
115	110/115	37.190	1.53	(11300)	---	109
116	85/116/117	37.006	1.41	(1300)	---	164
117	85/116/117	37.006	1.41	(1300)	---	164
118		40.343	1.57	11600	---	54.7
119	86/87/97/108/119/125	36.352	1.55	(6510)	---	328
120		---	---	ND	---	54.7
121		---	---	ND	---	54.7
122		40.678	1.42	148	---	54.7
123		40.007	1.64	182	---	54.7
124	107/124	39.622	1.60	(481)	---	109
125	86/87/97/108/119/125	36.352	1.55	(6510)	---	328
126		44.720	1.67	70.0	---	54.7
127		---	---	ND	---	54.7
128	128/166	44.804	1.26	2450	---	109
129	129/138/163	43.512	1.25	15500	---	164
130		42.858	1.21	935	---	54.7
131		39.923	1.17	203	---	54.7
132		40.410	1.25	4330	---	54.7
133		40.930	1.34	140	---	54.7
134	134/143	39.320	1.38	613	---	109
135	135/151	38.163	1.24	2320	---	109
136		35.614	1.25	945	---	54.7
137		43.059	1.31	887	---	54.7
138	129/138/163	43.512	1.25	(15500)	---	164
139	139/140	39.722	1.20	229	---	109
140	139/140	39.722	1.20	(229)	---	109
141		42.439	1.28	1810	---	54.7
142		---	---	ND	---	54.7
143	134/143	39.320	1.38	(613)	---	109
144		38.716	1.31	273	---	54.7

Conc = Concentration

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-02 (FO105681)
Lab Sample ID 10131995002-2R
Filename P100729B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	54.7
146		41.601	1.23	1500	---	54.7
147	147/149	39.119	1.28	7440	---	109
148		---	---	ND	---	54.7
149	147/149	39.119	1.28	(7440)	---	109
150		---	---	ND	---	54.7
151	135/151	38.163	1.24	(2320)	---	109
152		---	---	ND	---	54.7
153	153/168	42.238	1.25	9200	---	109
154		---	---	ND	---	54.7
155		---	---	ND	---	54.7
156	156/157	47.772	1.25	2070	---	109
157	156/157	47.772	1.25	(2070)	---	109
158		43.915	1.25	1460	---	54.7
159		45.743	1.23	72.7	---	54.7
160		---	---	ND	---	54.7
161		---	---	ND	---	54.7
162		46.128	1.17	80.3	---	54.7
163	129/138/163	43.512	1.25	(15500)	---	164
164		43.194	1.32	838	---	54.7
165		---	---	ND	---	54.7
166	128/166	44.804	1.26	(2450)	---	109
167		46.598	1.23	684	---	54.7
168	153/168	42.238	1.25	(9200)	---	109
169		---	---	ND	---	54.7
170		50.471	1.03	1530	---	54.7
171	171/173	46.833	1.03	555	---	109
172		48.510	1.03	278	---	54.7
173	171/173	46.833	1.03	(555)	---	109
174		45.743	1.05	1360	---	54.7
175		44.602	0.91	69.1	---	54.7
176		42.070	1.04	191	---	54.7
177		46.196	1.04	900	---	54.7
178		43.948	1.03	273	---	54.7
179		41.165	1.05	544	---	54.7
180	180/193	49.164	1.04	2710	---	109
181		---	---	ND	---	54.7
182		---	---	ND	---	54.7
183	183/185	45.491	1.05	1010	---	109
184		---	---	ND	---	54.7
185	183/185	45.491	1.05	(1010)	---	109
186		---	---	ND	---	54.7
187		44.854	1.04	1410	---	54.7
188		---	---	ND	---	54.7
189		53.779	1.09	87.0	---	54.7
190		51.025	1.11	232	---	54.7
191		49.532	1.15	62.2	---	54.7
192		---	---	ND	---	54.7

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-02 (FO105681)
Lab Sample ID 10131995002-2R
Filename P100729B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	49.164	1.04	(2710)	---	109
194		56.323	0.88	445	---	82.0
195		53.435	0.95	173	---	82.0
196		51.813	0.86	204	---	82.0
197	197/200	---	---	ND	---	164
198	198/199	51.176	0.88	404	---	164
199	198/199	51.176	0.88	(404)	---	164
200	197/200	---	---	ND	---	164
201		---	---	ND	---	82.0
202		46.296	0.89	97.1	---	82.0
203		52.048	0.88	249	---	82.0
204		---	---	ND	---	82.0
205		---	---	ND	---	82.0
206		59.448	0.75	190	---	82.0
207		---	---	ND	---	82.0
208		---	---	ND	---	82.0
209		---	---	ND	---	82.0

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-02 (FO105681)
Lab Sample ID 10131995002-2R
Filename P100729B_10

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	1770
Total Trichloro Biphenyls	2210
Total Tetrachloro Biphenyls	11700
Total Pentachloro Biphenyls	59100
Total Hexachloro Biphenyls	54000
Total Heptachloro Biphenyls	11200
Total Octachloro Biphenyls	1570
Total Nonachloro Biphenyls	190
Decachloro Biphenyls	ND
Total PCBs	142000

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTF0637-03 (FO105682)		
Lab Sample ID	10131995003-2R		
Filename	P100729B_12		
Injected By	BAL		
Total Amount Extracted	10.5 g	Matrix	Solid
% Moisture	46.6	Dilution	10
Dry Weight Extracted	5.62 g	Collected	06/15/2010 16:00
ICAL ID	P100729B03	Received	06/23/2010 10:03
CCal Filename(s)	P100729B_02	Extracted	07/26/2010 15:30
Method Blank ID	BLANK-25867	Analyzed	07/30/2010 11:03

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.624	2.79	2.0	0.727	36
13C-4-MoCB	3	13.122	2.81	2.0	0.940	47
13C-2,2'-DiCB	4	13.481	1.62	2.0	0.857	43
13C-4,4'-DiCB	15	21.737	1.78	2.0	1.28	64
13C-2,2',6-TrCB	19	17.975	1.18	2.0	0.976	49
13C-3,4,4'-TrCB	37	30.065	1.11	2.0	1.58	79
13C-2,2',6,6'-TeCB	54	22.049	0.76	2.0	1.25	62
13C-3,4,4',5-TeCB	81	37.377	0.78	2.0	1.51	75
13C-3,3',4,4'-TeCB	77	37.980	0.79	2.0	1.44	72
13C-2,2',4,6,6'-PeCB	104	28.589	1.55	2.0	1.33	66
13C-2,3,3',4,4'-PeCB	105	41.569	1.62	2.0	1.31	65
13C-2,3,4,4',5-PeCB	114	40.898	1.53	2.0	1.31	66
13C-2,3',4,4',5-PeCB	118	40.345	1.57	2.0	1.36	68
13C-2,3',4,4',5'-PeCB	123	40.009	1.51	2.0	1.35	68
13C-3,3',4,4',5-PeCB	126	44.772	1.55	2.0	1.07	53
13C-2,2',4,4',6,6'-HxCB	155	34.827	1.22	2.0	1.60	80
13C-HxCB (156/157)	156/157	47.790	1.29	4.0	2.19	55
13C-2,3',4,4',5,5'-HxCB	167	46.616	1.23	2.0	1.30	65
13C-3,3',4,4',5,5'-HxCB	169	51.193	1.31	2.0	0.875	44
13C-2,2',3,4',5,6,6'-HpCB	188	40.814	1.02	2.0	2.23	112
13C-2,3,3',4,4',5,5'-HpCB	189	53.801	1.04	2.0	1.52	76
13C-2,2',3,3',5,5',6'-OxCB	202	46.281	0.92	2.0	1.80	90
13C-2,3,3',4,4',5,5',6-OxCB	205	56.948	0.92	2.0	1.33	67
13C-2,2',3,3',4,4',5,5',6-NoCB	206	59.448	0.81	2.0	1.35	68
13C-2,2',3,3',4,4',5,5',6-NoCB	208	53.155	0.82	2.0	1.14	57
13C--DeCB	209	62.120	0.78	2.0	1.38	69
Cleanup Standards						
13C-2,4,4'-TrCB	28	25.453	1.18	2.0	1.59	79
13C-2,3,3',5,5'-PeCB	111	37.963	1.55	2.0	1.34	67
13C-2,2',3,3',5,5',6-HpCB	178	43.933	1.04	2.0	1.37	69
Recovery Standards						
13C-2,5-DiCB	9	16.429	1.71	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	27.566	0.81	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	35.113	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	43.514	1.31	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	56.323	0.90	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-03 (FO105682)
Lab Sample ID 10131995003-2R
Filename P100729B_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	44.5
2		---	---	ND	---	44.5
3		---	---	ND	---	44.5
4		---	---	ND	---	44.5
5		---	---	ND	---	44.5
6		17.004	1.62	66.9	---	44.5
7		---	---	ND	---	44.5
8		17.615	1.61	131	---	44.5
9		---	---	ND	---	44.5
10		---	---	ND	---	44.5
11		20.934	1.56	2410	---	267
12	12/13	---	---	ND	---	88.9
13	12/13	---	---	ND	---	88.9
14		---	---	ND	---	44.5
15		21.737	1.53	175	---	44.5
16		21.629	1.05	78.8	---	44.5
17		21.054	1.14	79.6	---	44.5
18	18/30	20.527	1.08	161	---	88.9
19		---	---	ND	---	44.5
20	20/28	25.453	1.00	583	---	88.9
21	21/33	25.721	1.05	313	---	88.9
22		26.191	1.05	246	---	44.5
23		---	---	ND	---	44.5
24		---	---	ND	---	44.5
25		24.715	1.06	45.6	---	44.5
26	26/29	24.430	0.97	101	---	88.9
27		---	---	ND	---	44.5
28	20/28	25.453	1.00	(583)	---	88.9
29	26/29	24.430	0.97	(101)	---	88.9
30	18/30	20.527	1.08	(161)	---	88.9
31		25.101	1.04	540	---	44.5
32		22.317	1.04	86.8	---	44.5
33	21/33	25.721	1.05	(313)	---	88.9
34		---	---	ND	---	44.5
35		29.612	1.10	105	---	44.5
36		---	---	ND	---	44.5
37		30.098	1.01	479	---	44.5
38		---	---	ND	---	44.5
39		---	---	ND	---	44.5
40	40/41/71	29.864	0.79	907	---	267
41	40/41/71	29.864	0.79	(907)	---	267
42		29.310	0.82	381	---	88.9
43	43/73	---	---	ND	---	178
44	44/47/65	28.706	0.79	3500	---	267
45	45/51	---	---	ND	---	178
46		---	---	ND	---	88.9
47	44/47/65	28.706	0.79	(3500)	---	267
48		28.455	0.74	166	---	88.9

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-03 (FO105682)
Lab Sample ID 10131995003-2R
Filename P100729B_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	28.136	0.79	1550	---	178
50	50/53	---	---	ND	---	178
51	45/51	---	---	ND	---	178
52		27.583	0.79	7690	---	88.9
53	50/53	---	---	ND	---	178
54		---	---	ND	---	88.9
55		33.436	0.72	167	---	88.9
56		34.023	0.77	1920	---	88.9
57		---	---	ND	---	88.9
58		---	---	ND	---	88.9
59	59/62/75	---	---	ND	---	267
60		34.257	0.77	825	---	88.9
61	61/70/74/76	32.932	0.78	14300	---	356
62	59/62/75	---	---	ND	---	267
63		32.580	0.78	133	---	88.9
64		30.115	0.80	1350	---	88.9
65	44/47/65	28.706	0.79	(3500)	---	267
66		33.285	0.78	4250	---	88.9
67		32.278	0.80	91.7	---	88.9
68		---	---	ND	---	88.9
69	49/69	28.136	0.79	(1550)	---	178
70	61/70/74/76	32.932	0.78	(14300)	---	356
71	40/41/71	29.864	0.79	(907)	---	267
72		---	---	ND	---	88.9
73	43/73	---	---	ND	---	178
74	61/70/74/76	32.932	0.78	(14300)	---	356
75	59/62/75	---	---	ND	---	267
76	61/70/74/76	32.932	0.78	(14300)	---	356
77		37.997	0.80	2260	---	88.9
78		---	---	ND	---	88.9
79		36.303	0.72	438	---	88.9
80		---	---	ND	---	88.9
81		37.376	0.64 I	---	90.3	88.9
82		37.561	1.57	4870	---	88.9
83		35.616	1.60	1760	---	88.9
84		33.134	1.58	6940	---	88.9
85	85/116/117	37.041	1.52	5510	---	267
86	86/87/97/108/119/125	36.387	1.57	24600	---	534
87	86/87/97/108/119/125	36.387	1.57	(24600)	---	534
88	88/91	32.899	1.56	2950	---	178
89		33.654	1.58	223	---	88.9
90	90/101/113	35.129	1.55	26600	---	267
91	88/91	32.899	1.56	(2950)	---	178
92		34.509	1.59	4420	---	88.9
93	93/98/100/102	32.329	1.58	522	---	356
94		---	---	ND	---	88.9
95		31.960	1.56	16300	---	88.9
96		---	---	ND	---	88.9

Conc = Concentration
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EMPC = Estimated Maximum Possible Concentration
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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-03 (FO105682)
Lab Sample ID 10131995003-2R
Filename P100729B_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	36.387	1.57	(24600)	---	534
98	93/98/100/102	32.329	1.58	(522)	---	356
99		35.767	1.58	12400	---	88.9
100	93/98/100/102	32.329	1.58	(522)	---	356
101	90/101/113	35.129	1.55	(26600)	---	267
102	93/98/100/102	32.329	1.58	(522)	---	356
103		---	---	ND	---	88.9
104		---	---	ND	---	88.9
105		41.586	1.57	20900	---	88.9
106		---	---	ND	---	88.9
107	107/124	39.657	1.57	1800	---	178
108	86/87/97/108/119/125	36.387	1.57	(24600)	---	534
109		39.909	1.56	3370	---	88.9
110	110/115	37.242	1.55	43200	---	178
111		---	---	ND	---	88.9
112		---	---	ND	---	88.9
113	90/101/113	35.129	1.55	(26600)	---	267
114		40.915	1.53	1060	---	88.9
115	110/115	37.242	1.55	(43200)	---	178
116	85/116/117	37.041	1.52	(5510)	---	267
117	85/116/117	37.041	1.52	(5510)	---	267
118		40.378	1.57	43900	---	88.9
119	86/87/97/108/119/125	36.387	1.57	(24600)	---	534
120		---	---	ND	---	88.9
121		---	---	ND	---	88.9
122		40.731	1.53	595	---	88.9
123		40.026	1.60	793	---	88.9
124	107/124	39.657	1.57	(1800)	---	178
125	86/87/97/108/119/125	36.387	1.57	(24600)	---	534
126		44.755	1.56	435	---	88.9
127		43.112	1.51	115	---	88.9
128	128/166	44.839	1.26	9480	---	178
129	129/138/163	43.548	1.26	56100	---	267
130		42.877	1.25	3670	---	88.9
131		39.959	1.22	823	---	88.9
132		40.445	1.26	17100	---	88.9
133		40.965	1.26	501	---	88.9
134	134/143	39.355	1.22	2350	---	178
135	135/151	38.198	1.27	7780	---	178
136		35.649	1.27	3290	---	88.9
137		43.095	1.25	4150	---	88.9
138	129/138/163	43.548	1.26	(56100)	---	267
139	139/140	39.758	1.25	966	---	178
140	139/140	39.758	1.25	(966)	---	178
141		42.458	1.15	6530	---	88.9
142		---	---	ND	---	88.9
143	134/143	39.355	1.22	(2350)	---	178
144		38.718	1.31	552	---	88.9

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-03 (FO105682)
Lab Sample ID 10131995003-2R
Filename P100729B_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	88.9
146		41.636	1.26	5410	---	88.9
147	147/149	39.137	1.27	26100	---	178
148		---	---	ND	---	88.9
149	147/149	39.137	1.27	(26100)	---	178
150		---	---	ND	---	88.9
151	135/151	38.198	1.27	(7780)	---	178
152		---	---	ND	---	88.9
153	153/168	42.257	1.30	32400	---	178
154		38.433	1.38	244	---	88.9
155		---	---	ND	---	88.9
156	156/157	47.807	1.26	7910	---	178
157	156/157	47.807	1.26	(7910)	---	178
158		43.950	1.27	5360	---	88.9
159		---	---	ND	---	88.9
160		---	---	ND	---	88.9
161		---	---	ND	---	88.9
162		46.130	1.19	121	---	88.9
163	129/138/163	43.548	1.26	(56100)	---	267
164		43.212	1.25	2800	---	88.9
165		---	---	ND	---	88.9
166	128/166	44.839	1.26	(9480)	---	178
167		46.633	1.23	2430	---	88.9
168	153/168	42.257	1.30	(32400)	---	178
169		---	---	ND	---	88.9
170		50.523	1.04	3730	---	88.9
171	171/173	46.868	1.06	1480	---	178
172		48.528	1.05	697	---	88.9
173	171/173	46.868	1.06	(1480)	---	178
174		45.761	1.05	3160	---	88.9
175		44.604	1.02	172	---	88.9
176		42.106	1.07	475	---	88.9
177		46.231	1.05	2280	---	88.9
178		43.967	1.05	631	---	88.9
179		41.200	1.07	1260	---	88.9
180	180/193	49.198	1.04	6510	---	178
181		46.650	0.95	89.4	---	88.9
182		---	---	ND	---	88.9
183	183/185	45.527	1.05	2620	---	178
184		---	---	ND	---	88.9
185	183/185	45.527	1.05	(2620)	---	178
186		---	---	ND	---	88.9
187		44.906	1.04	3210	---	88.9
188		---	---	ND	---	88.9
189		53.780	1.00	261	---	88.9
190		51.059	1.03	551	---	88.9
191		49.567	1.08	150	---	88.9
192		---	---	ND	---	88.9

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-03 (FO105682)
Lab Sample ID 10131995003-2R
Filename P100729B_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	49.198	1.04	(6510)	---	178
194		56.345	0.87	1050	---	133
195		53.478	0.93	372	---	133
196		51.881	0.83	432	---	133
197	197/200	---	---	ND	---	267
198	198/199	51.193	0.86	812	---	267
199	198/199	51.193	0.86	(812)	---	267
200	197/200	---	---	ND	---	267
201		47.253	0.82	150	---	133
202		46.331	0.92	187	---	133
203		52.082	0.89	474	---	133
204		---	---	ND	---	133
205		---	---	ND	---	133
206		59.491	0.79	482	---	133
207		---	---	ND	---	133
208		---	---	ND	---	133
209		62.120	0.76	134	---	133

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-03 (FO105682)
Lab Sample ID 10131995003-2R
Filename P100729B_12

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	2780
Total Trichloro Biphenyls	2820
Total Tetrachloro Biphenyls	39900
Total Pentachloro Biphenyls	223000
Total Hexachloro Biphenyls	196000
Total Heptachloro Biphenyls	27300
Total Octachloro Biphenyls	3480
Total Nonachloro Biphenyls	482
Decachloro Biphenyls	134
Total PCBs	496000

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTF0637-04 (FO105701)		
Lab Sample ID	10131995004-2R		
Filename	P100729B_11		
Injected By	BAL		
Total Amount Extracted	18.8 g	Matrix	Solid
% Moisture	42.1	Dilution	10
Dry Weight Extracted	10.9 g	Collected	04/16/2010
ICAL ID	P100729B03	Received	06/23/2010 10:03
CCal Filename(s)	P100729B_02	Extracted	07/26/2010 15:30
Method Blank ID	BLANK-25867	Analyzed	07/30/2010 09:58

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.612	3.04	2.0	0.981	49
13C-4-MoCB	3	13.110	2.96	2.0	1.28	64
13C-2,2'-DiCB	4	13.445	1.68	2.0	1.10	55
13C-4,4'-DiCB	15	21.712	1.67	2.0	1.37	69
13C-2,2',6-TrCB	19	17.974	1.09	2.0	1.16	58
13C-3,4,4'-TrCB	37	30.080	1.13	2.0	1.73	87
13C-2,2',6,6'-TeCB	54	22.031	0.80	2.0	1.46	73
13C-3,4,4',5-TeCB	81	37.409	0.78	2.0	1.39	69
13C-3,3',4,4'-TeCB	77	37.996	0.78	2.0	1.34	67
13C-2,2',4,6,6'-PeCB	104	28.604	1.54	2.0	1.71	86
13C-2,3,3',4,4'-PeCB	105	41.618	1.57	2.0	1.20	60
13C-2,3,4,4',5-PeCB	114	40.930	1.49	2.0	1.31	65
13C-2,3',4,4',5-PeCB	118	40.394	1.57	2.0	1.36	68
13C-2,3',4,4',5'-PeCB	123	40.058	1.52	2.0	1.38	69
13C-3,3',4,4',5-PeCB	126	44.804	1.48	2.0	0.877	44
13C-2,2',4,4',6,6'-HxCB	155	34.860	1.24	2.0	2.24	112
13C-HxCB (156/157)	156/157	47.856	1.27	4.0	2.35	59
13C-2,3',4,4',5,5'-HxCB	167	46.666	1.24	2.0	1.43	72
13C-3,3',4,4',5,5'-HxCB	169	51.261	1.22	2.0	0.913	46
13C-2,2',3,4',5,6,6'-HpCB	188	40.830	1.05	2.0	3.14	157
13C-2,3,3',4,4',5,5'-HpCB	189	53.867	1.02	2.0	1.87	93
13C-2,2',3,3',5,5',6,6'-OxCB	202	46.330	0.90	2.0	2.14	107
13C-2,3,3',4,4',5,5',6-OxCB	205	57.057	0.92	2.0	1.80	90
13C-2,2',3,3',4,4',5,5',6-NoCB	206	59.557	0.77	2.0	1.75	87
13C-2,2',3,3',4,4',5,5',6-NoCB	208	53.199	0.88	2.0	1.51	76
13C--DeCB	209	62.209	0.74	2.0	1.92	96
Cleanup Standards						
13C-2,4,4'-TrCB	28	25.418	1.14	2.0	1.77	89
13C-2,3,3',5,5'-PeCB	111	37.996	1.57	2.0	1.26	63
13C-2,2',3,3',5,5',6-HpCB	178	43.983	1.02	2.0	1.50	75
Recovery Standards						
13C-2,5-DiCB	9	16.405	1.73	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	27.565	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	35.145	1.55	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	43.563	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	56.389	0.93	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-04 (FO105701)
Lab Sample ID 10131995004-2R
Filename P100729B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.624	3.29	47.5	---	22.9
2		12.846	3.10	130	---	22.9
3		13.134	2.97	79.9	---	22.9
4		13.481	1.45	91.0	---	22.9
5		---	---	ND	---	22.9
6		17.016	1.52	207	---	22.9
7		---	---	ND	---	22.9
8		17.603	1.58	273	---	22.9
9		---	---	ND	---	22.9
10		---	---	ND	---	22.9
11		20.933	1.57	1790	---	138
12	12/13	21.317	1.50	119	---	45.9
13	12/13	21.317	1.50	(119)	---	45.9
14		---	---	ND	---	22.9
15		21.736	1.46	171	---	22.9
16		21.616	1.03	110	---	22.9
17		21.053	1.02	110	---	22.9
18	18/30	20.514	1.06	231	---	45.9
19		17.986	0.93	32.8	---	22.9
20	20/28	25.468	1.01	578	---	45.9
21	21/33	25.720	1.05	309	---	45.9
22		26.190	1.04	231	---	22.9
23		---	---	ND	---	22.9
24		---	---	ND	---	22.9
25		24.731	0.97	43.1	---	22.9
26	26/29	24.446	1.05	95.3	---	45.9
27		---	---	ND	---	22.9
28	20/28	25.468	1.01	(578)	---	45.9
29	26/29	24.446	1.05	(95.3)	---	45.9
30	18/30	20.514	1.06	(231)	---	45.9
31		25.100	1.02	509	---	22.9
32		22.299	1.07	103	---	22.9
33	21/33	25.720	1.05	(309)	---	45.9
34		---	---	ND	---	22.9
35		29.627	1.01	50.9	---	22.9
36		---	---	ND	---	22.9
37		30.097	1.01	267	---	22.9
38		---	---	ND	---	22.9
39		---	---	ND	---	22.9
40	40/41/71	29.862	0.78	575	---	138
41	40/41/71	29.862	0.78	(575)	---	138
42		29.326	0.82	257	---	45.9
43	43/73	---	---	ND	---	45.9
44	44/47/65	28.705	0.79	1900	---	138
45	45/51	25.519	0.80	114	---	91.7
46		---	---	ND	---	45.9
47	44/47/65	28.705	0.79	(1900)	---	138
48		28.470	0.77	145	---	45.9

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-04 (FO105701)
Lab Sample ID 10131995004-2R
Filename P100729B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	28.152	0.79	914	---	91.7
50	50/53	24.731	0.82	108	---	91.7
51	45/51	25.519	0.80	(114)	---	91.7
52		27.581	0.79	4350	---	45.9
53	50/53	24.731	0.82	(108)	---	91.7
54		---	---	ND	---	45.9
55		---	---	ND	---	45.9
56		34.038	0.78	838	---	45.9
57		---	---	ND	---	45.9
58		---	---	ND	---	45.9
59	59/62/75	---	---	ND	---	138
60		34.256	0.79	335	---	45.9
61	61/70/74/76	32.948	0.78	6230	---	183
62	59/62/75	---	---	ND	---	138
63		32.579	0.80	70.6	---	45.9
64		30.130	0.80	725	---	45.9
65	44/47/65	28.705	0.79	(1900)	---	138
66		33.317	0.75	1940	---	45.9
67		---	---	ND	---	45.9
68		---	---	ND	---	45.9
69	49/69	28.152	0.79	(914)	---	91.7
70	61/70/74/76	32.948	0.78	(6230)	---	183
71	40/41/71	29.862	0.78	(575)	---	138
72		---	---	ND	---	45.9
73	43/73	---	---	ND	---	45.9
74	61/70/74/76	32.948	0.78	(6230)	---	183
75	59/62/75	---	---	ND	---	138
76	61/70/74/76	32.948	0.78	(6230)	---	183
77		38.029	0.77	703	---	45.9
78		---	---	ND	---	45.9
79		36.352	0.74	218	---	45.9
80		---	---	ND	---	45.9
81		---	---	ND	---	45.9
82		37.576	1.57	2020	---	45.9
83		35.631	1.53	889	---	45.9
84		33.149	1.58	3430	---	45.9
85	85/116/117	37.073	1.52	2840	---	138
86	86/87/97/108/119/125	36.419	1.57	11500	---	275
87	86/87/97/108/119/125	36.419	1.57	(11500)	---	275
88	88/91	32.914	1.54	1530	---	91.7
89		33.669	1.69	112	---	45.9
90	90/101/113	35.161	1.56	13500	---	138
91	88/91	32.914	1.54	(1530)	---	91.7
92		34.524	1.57	2320	---	45.9
93	93/98/100/102	32.361	1.58	272	---	183
94		---	---	ND	---	45.9
95		31.975	1.56	8990	---	45.9
96		---	---	ND	---	45.9

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-04 (FO105701)
Lab Sample ID 10131995004-2R
Filename P100729B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	36.419	1.57	(11500)	---	275
98	93/98/100/102	32.361	1.58	(272)	---	183
99		35.782	1.56	6080	---	45.9
100	93/98/100/102	32.361	1.58	(272)	---	183
101	90/101/113	35.161	1.56	(13500)	---	138
102	93/98/100/102	32.361	1.58	(272)	---	183
103		---	---	ND	---	45.9
104		---	---	ND	---	45.9
105		41.635	1.57	8420	---	45.9
106		---	---	ND	---	45.9
107	107/124	39.689	1.51	767	---	91.7
108	86/87/97/108/119/125	36.419	1.57	(11500)	---	275
109		39.958	1.65	1500	---	45.9
110	110/115	37.258	1.56	19200	---	91.7
111		---	---	ND	---	45.9
112		---	---	ND	---	45.9
113	90/101/113	35.161	1.56	(13500)	---	138
114		40.964	1.51	425	---	45.9
115	110/115	37.258	1.56	(19200)	---	91.7
116	85/116/117	37.073	1.52	(2840)	---	138
117	85/116/117	37.073	1.52	(2840)	---	138
118		40.410	1.58	18000	---	45.9
119	86/87/97/108/119/125	36.419	1.57	(11500)	---	275
120		---	---	ND	---	45.9
121		---	---	ND	---	45.9
122		40.763	1.49	232	---	45.9
123		40.075	1.56	296	---	45.9
124	107/124	39.689	1.51	(767)	---	91.7
125	86/87/97/108/119/125	36.419	1.57	(11500)	---	275
126		44.821	1.59	253	---	45.9
127		---	---	ND	---	45.9
128	128/166	44.888	1.26	3510	---	91.7
129	129/138/163	43.597	1.25	23800	---	138
130		42.926	1.28	1530	---	45.9
131		40.008	1.23	400	---	45.9
132		40.494	1.26	7690	---	45.9
133		41.014	1.18	239	---	45.9
134	134/143	39.387	1.24	1390	---	91.7
135	135/151	38.214	1.24	4140	---	91.7
136		35.665	1.29	1870	---	45.9
137		43.144	1.27	1870	---	45.9
138	129/138/163	43.597	1.25	(23800)	---	138
139	139/140	39.807	1.32	459	---	91.7
140	139/140	39.807	1.32	(459)	---	91.7
141		42.490	1.43	2780	---	45.9
142		---	---	ND	---	45.9
143	134/143	39.387	1.24	(1390)	---	91.7
144		38.817	1.16	709	---	45.9

Conc = Concentration
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-04 (FO105701)
Lab Sample ID 10131995004-2R
Filename P100729B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	45.9
146		41.668	1.25	2420	---	45.9
147	147/149	39.169	1.24	13200	---	91.7
148		---	---	ND	---	45.9
149	147/149	39.169	1.24	(13200)	---	91.7
150		---	---	ND	---	45.9
151	135/151	38.214	1.24	(4140)	---	91.7
152		---	---	ND	---	45.9
153	153/168	42.306	1.24	14800	---	91.7
154		38.465	1.23	113	---	45.9
155		---	---	ND	---	45.9
156	156/157	47.856	1.26	3390	---	91.7
157	156/157	47.856	1.26	(3390)	---	91.7
158		43.983	1.27	2230	---	45.9
159		---	---	ND	---	45.9
160		---	---	ND	---	45.9
161		---	---	ND	---	45.9
162		46.247	1.20	107	---	45.9
163	129/138/163	43.597	1.25	(23800)	---	138
164		43.261	1.26	1090	---	45.9
165		---	---	ND	---	45.9
166	128/166	44.888	1.26	(3510)	---	91.7
167		46.683	1.23	1020	---	45.9
168	153/168	42.306	1.24	(14800)	---	91.7
169		---	---	ND	---	45.9
170		50.556	1.04	1790	---	45.9
171	171/173	46.917	1.09	729	---	91.7
172		48.578	1.01	345	---	45.9
173	171/173	46.917	1.09	(729)	---	91.7
174		45.811	1.07	1850	---	45.9
175		44.670	0.93	90.8	---	45.9
176		42.138	1.03	290	---	45.9
177		46.263	1.07	1210	---	45.9
178		44.016	1.04	389	---	45.9
179		41.232	1.08	837	---	45.9
180	180/193	49.248	1.05	3230	---	91.7
181		---	---	ND	---	45.9
182		---	---	ND	---	45.9
183	183/185	45.576	1.04	1490	---	91.7
184		---	---	ND	---	45.9
185	183/185	45.576	1.04	(1490)	---	91.7
186		---	---	ND	---	45.9
187		44.938	1.05	1830	---	45.9
188		---	---	ND	---	45.9
189		53.888	1.11	141	---	45.9
190		51.110	1.06	259	---	45.9
191		49.617	0.98	68.9	---	45.9
192		---	---	ND	---	45.9

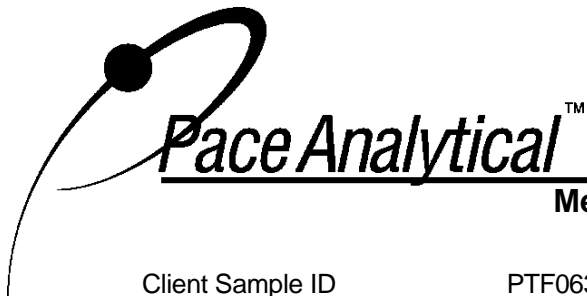
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTF0637-04 (FO105701)
Lab Sample ID 10131995004-2R
Filename P100729B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	49.248	1.05	(3230)	---	91.7
194		56.432	0.89	611	---	68.8
195		53.565	0.95	235	---	68.8
196		51.931	0.96	298	---	68.8
197	197/200	---	---	ND	---	138
198	198/199	51.244	0.93	555	---	138
199	198/199	51.244	0.93	(555)	---	138
200	197/200	---	---	ND	---	138
201		47.286	0.82	110	---	68.8
202		46.330	0.97	148	---	68.8
203		52.133	0.88	329	---	68.8
204		---	---	ND	---	68.8
205		---	---	ND	---	68.8
206		59.622	0.80	320	---	68.8
207		---	---	ND	---	68.8
208		53.242	0.73	90.7	---	68.8
209		62.230	0.71	93.1	---	68.8

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTF0637-04 (FO105701)
Lab Sample ID 10131995004-2R
Filename P100729B_11

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	257
Total Dichloro Biphenyls	2650
Total Trichloro Biphenyls	2670
Total Tetrachloro Biphenyls	19400
Total Pentachloro Biphenyls	103000
Total Hexachloro Biphenyls	88800
Total Heptachloro Biphenyls	14500
Total Octachloro Biphenyls	2290
Total Nonachloro Biphenyls	411
Decachloro Biphenyls	93.1
Total PCBs	234000

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-25744	Matrix	Solid
Filename	P100717A_10	Extracted	07/15/2010 15:45
Injected By	BAL	Analyzed	07/17/2010 17:26
Total Amount Extracted	10.2 g	Dilution	5
ICAL ID	P100717A02		
CCal Filename(s)	P100717A_01		

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	9.600	2.98	2.0	1.09	55
13C-4-MoCB	3	13.063	2.72	2.0	1.31	65
13C-2,2'-DiCB	4	13.447	1.67	2.0	1.10	55
13C-4,4'-DiCB	15	21.619	1.54	2.0	1.40	70
13C-2,2',6-TrCB	19	17.928	1.08	2.0	1.07	54
13C-3,4,4'-TrCB	37	29.944	1.07	2.0	1.46	73
13C-2,2',6,6'-TeCB	54	21.978	0.80	2.0	1.28	64
13C-3,4,4',5-TeCB	81	37.289	0.80	2.0	0.685	34
13C-3,3',4,4'-TeCB	77	37.893	0.84	2.0	0.573	29
13C-2,2',4,6,6'-PeCB	104	28.518	1.63	2.0	2.17	109
13C-2,3,3',4,4'-PeCB	105	41.482	1.59	2.0	1.32	66
13C-2,3,4,4',5-PeCB	114	40.811	1.56	2.0	1.30	65
13C-2,3',4,4',5-PeCB	118	40.274	1.54	2.0	1.20	60
13C-2,3',4,4',5'-PeCB	123	39.939	1.52	2.0	1.20	60
13C-3,3',4,4',5-PeCB	126	44.601	1.61	2.0	1.55	77
13C-2,2',4,4',6,6'-HxCB	155	34.774	1.27	2.0	1.42	71
13C-HxCB (156/157)	156/157	47.620	1.26	4.0	4.33	108
13C-2,3',4,4',5,5'-HxCB	167	46.446	1.29	2.0	2.10	105
13C-3,3',4,4',5,5'-HxCB	169	50.890	1.26	2.0	2.27	114
13C-2,2',3,4',5,6,6'-HpCB	188	40.761	1.03	2.0	0.790	39
13C-2,3,3',4,4',5,5'-HpCB	189	53.494	1.06	2.0	1.63	81
13C-2,2',3,3',5,5',6-OcCB	202	46.161	0.92	2.0	1.13	57
13C-2,3,3',4,4',5,5',6-OcCB	205	56.576	0.92	2.0	1.45	72
13C-2,2',3,3',4,4',5,5',6-NoCB	206	59.055	0.79	2.0	1.42	71
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.912	0.76	2.0	1.28	64
13C--DeCB	209	61.641	0.65	2.0	1.40	70

Cleanup Standards

13C-2,4,4'-TrCB	28	25.315	1.04	2.0	1.57	78
13C-2,3,3',5,5'-PeCB	111	37.893	1.59	2.0	0.993	50
13C-2,2',3,3',5,5',6-HpCB	178	43.846	1.02	2.0	1.47	74

Recovery Standards

13C-2,5-DiCB	9	16.406	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	27.462	0.82	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	35.042	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	43.410	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	55.951	0.93	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25744
Filename P100717A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.6
2		---	---	ND	---	24.6
3		---	---	ND	---	24.6
4		---	---	ND	---	24.6
5		---	---	ND	---	24.6
6		---	---	ND	---	24.6
7		---	---	ND	---	24.6
8		---	---	ND	---	24.6
9		---	---	ND	---	24.6
10		---	---	ND	---	24.6
11		---	---	ND	---	148
12	12/13	---	---	ND	---	49.3
13	12/13	---	---	ND	---	49.3
14		---	---	ND	---	24.6
15		---	---	ND	---	24.6
16		---	---	ND	---	24.6
17		---	---	ND	---	24.6
18	18/30	---	---	ND	---	49.3
19		---	---	ND	---	24.6
20	20/28	---	---	ND	---	49.3
21	21/33	---	---	ND	---	49.3
22		---	---	ND	---	24.6
23		---	---	ND	---	24.6
24		---	---	ND	---	24.6
25		---	---	ND	---	24.6
26	26/29	---	---	ND	---	49.3
27		---	---	ND	---	24.6
28	20/28	---	---	ND	---	49.3
29	26/29	---	---	ND	---	49.3
30	18/30	---	---	ND	---	49.3
31		24.997	1.06	31.9	---	24.6
32		---	---	ND	---	24.6
33	21/33	---	---	ND	---	49.3
34		---	---	ND	---	24.6
35		---	---	ND	---	24.6
36		---	---	ND	---	24.6
37		---	---	ND	---	24.6
38		---	---	ND	---	24.6
39		---	---	ND	---	24.6
40	40/41/71	---	---	ND	---	148
41	40/41/71	---	---	ND	---	148
42		---	---	ND	---	49.3
43	43/73	---	---	ND	---	98.5
44	44/47/65	---	---	ND	---	148
45	45/51	---	---	ND	---	98.5

Conc = Concentration
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R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25744
Filename P100717A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	49.3
47	44/47/65	---	---	ND	---	148
48		---	---	ND	---	49.3
49	49/69	---	---	ND	---	98.5
50	50/53	---	---	ND	---	98.5
51	45/51	---	---	ND	---	98.5
52		27.478	0.81	60.0	---	49.3
53	50/53	---	---	ND	---	98.5
54		---	---	ND	---	49.3
55		---	---	ND	---	49.3
56		---	---	ND	---	49.3
57		---	---	ND	---	49.3
58		---	---	ND	---	49.3
59	59/62/75	---	---	ND	---	148
60		---	---	ND	---	49.3
61	61/70/74/76	---	---	ND	---	197
62	59/62/75	---	---	ND	---	148
63		---	---	ND	---	49.3
64		---	---	ND	---	49.3
65	44/47/65	---	---	ND	---	148
66		---	---	ND	---	49.3
67		---	---	ND	---	49.3
68		---	---	ND	---	49.3
69	49/69	---	---	ND	---	98.5
70	61/70/74/76	---	---	ND	---	197
71	40/41/71	---	---	ND	---	148
72		---	---	ND	---	49.3
73	43/73	---	---	ND	---	98.5
74	61/70/74/76	---	---	ND	---	197
75	59/62/75	---	---	ND	---	148
76	61/70/74/76	---	---	ND	---	197
77		---	---	ND	---	49.3
78		---	---	ND	---	49.3
79		---	---	ND	---	49.3
80		---	---	ND	---	49.3
81		---	---	ND	---	49.3
82		---	---	ND	---	49.3
83		---	---	ND	---	49.3
84		---	---	ND	---	49.3
85	85/116/117	---	---	ND	---	148
86	86/87/97/108/119/125	---	---	ND	---	296
87	86/87/97/108/119/125	---	---	ND	---	296
88	88/91	---	---	ND	---	98.5
89		---	---	ND	---	49.3
90	90/101/113	---	---	ND	---	148

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25744
Filename P100717A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	98.5
92		---	---	ND	---	49.3
93	93/98/100/102	---	---	ND	---	197
94		---	---	ND	---	49.3
95		---	---	ND	---	49.3
96		---	---	ND	---	49.3
97	86/87/97/108/119/125	---	---	ND	---	296
98	93/98/100/102	---	---	ND	---	197
99		---	---	ND	---	49.3
100	93/98/100/102	---	---	ND	---	197
101	90/101/113	---	---	ND	---	148
102	93/98/100/102	---	---	ND	---	197
103		---	---	ND	---	49.3
104		---	---	ND	---	49.3
105		---	---	ND	---	49.3
106		---	---	ND	---	49.3
107	107/124	---	---	ND	---	98.5
108	86/87/97/108/119/125	---	---	ND	---	296
109		---	---	ND	---	49.3
110	110/115	---	---	ND	---	98.5
111		---	---	ND	---	49.3
112		---	---	ND	---	49.3
113	90/101/113	---	---	ND	---	148
114		---	---	ND	---	49.3
115	110/115	---	---	ND	---	98.5
116	85/116/117	---	---	ND	---	148
117	85/116/117	---	---	ND	---	148
118		---	---	ND	---	49.3
119	86/87/97/108/119/125	---	---	ND	---	296
120		---	---	ND	---	49.3
121		---	---	ND	---	49.3
122		---	---	ND	---	49.3
123		---	---	ND	---	49.3
124	107/124	---	---	ND	---	98.5
125	86/87/97/108/119/125	---	---	ND	---	296
126		---	---	ND	---	49.3
127		---	---	ND	---	49.3
128	128/166	---	---	ND	---	98.5
129	129/138/163	---	---	ND	---	148
130		---	---	ND	---	49.3
131		---	---	ND	---	49.3
132		---	---	ND	---	49.3
133		---	---	ND	---	49.3
134	134/143	---	---	ND	---	98.5
135	135/151	---	---	ND	---	98.5

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25744
Filename P100717A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	49.3
137		---	---	ND	---	49.3
138	129/138/163	---	---	ND	---	148
139	139/140	---	---	ND	---	98.5
140	139/140	---	---	ND	---	98.5
141		---	---	ND	---	49.3
142		---	---	ND	---	49.3
143	134/143	---	---	ND	---	98.5
144		---	---	ND	---	49.3
145		---	---	ND	---	49.3
146		---	---	ND	---	49.3
147	147/149	---	---	ND	---	98.5
148		---	---	ND	---	49.3
149	147/149	---	---	ND	---	98.5
150		---	---	ND	---	49.3
151	135/151	---	---	ND	---	98.5
152		---	---	ND	---	49.3
153	153/168	---	---	ND	---	98.5
154		---	---	ND	---	49.3
155		---	---	ND	---	49.3
156	156/157	---	---	ND	---	98.5
157	156/157	---	---	ND	---	98.5
158		---	---	ND	---	49.3
159		---	---	ND	---	49.3
160		---	---	ND	---	49.3
161		---	---	ND	---	49.3
162		---	---	ND	---	49.3
163	129/138/163	---	---	ND	---	148
164		---	---	ND	---	49.3
165		---	---	ND	---	49.3
166	128/166	---	---	ND	---	98.5
167		---	---	ND	---	49.3
168	153/168	---	---	ND	---	98.5
169		---	---	ND	---	49.3
170		---	---	ND	---	49.3
171	171/173	---	---	ND	---	98.5
172		---	---	ND	---	49.3
173	171/173	---	---	ND	---	98.5
174		---	---	ND	---	49.3
175		---	---	ND	---	49.3
176		---	---	ND	---	49.3
177		---	---	ND	---	49.3
178		---	---	ND	---	49.3
179		---	---	ND	---	49.3
180	180/193	---	---	ND	---	98.5

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25744
Filename P100717A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	49.3
182		---	---	ND	---	49.3
183	183/185	---	---	ND	---	98.5
184		---	---	ND	---	49.3
185	183/185	---	---	ND	---	98.5
186		---	---	ND	---	49.3
187		---	---	ND	---	49.3
188		---	---	ND	---	49.3
189		---	---	ND	---	49.3
190		---	---	ND	---	49.3
191		---	---	ND	---	49.3
192		---	---	ND	---	49.3
193	180/193	---	---	ND	---	98.5
194		---	---	ND	---	73.9
195		---	---	ND	---	73.9
196		---	---	ND	---	73.9
197	197/200	---	---	ND	---	148
198	198/199	---	---	ND	---	148
199	198/199	---	---	ND	---	148
200	197/200	---	---	ND	---	148
201		---	---	ND	---	73.9
202		---	---	ND	---	73.9
203		---	---	ND	---	73.9
204		---	---	ND	---	73.9
205		---	---	ND	---	73.9
206		---	---	ND	---	73.9
207		---	---	ND	---	73.9
208		---	---	ND	---	73.9
209		---	---	ND	---	73.9

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKER
Lab Sample ID BLANK-25744
Filename P100717A_10

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	31.9
Total Tetrachloro Biphenyls	60.0
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 91.9

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-25867		
Filename	P100801A_08		
Injected By	BAL	Matrix	Solid
Total Amount Extracted	10.3 g	Extracted	07/26/2010 15:30
ICAL ID	P100801A04	Analyzed	08/01/2010 19:04
CCal Filename(s)	P100801A_03	Dilution	5

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.432	3.23	2.0	0.455	23	R
13C-4-MoCB	3	12.883	3.15	2.0	0.538	27	
13C-2,2'-DiCB	4	13.243	1.65	2.0	0.565	28	
13C-4,4'-DiCB	15	21.379	1.58	2.0	0.994	50	
13C-2,2',6-TrCB	19	17.701	1.04	2.0	0.726	36	
13C-3,4,4'-TrCB	37	29.710	1.08	2.0	1.29	64	
13C-2,2',6,6'-TeCB	54	21.710	0.79	2.0	0.933	47	
13C-3,4,4',5-TeCB	81	37.073	0.78	2.0	0.623	31	
13C-3,3',4,4'-TeCB	77	37.676	0.79	2.0	0.572	29	
13C-2,2',4,6,6'-PeCB	104	28.251	1.63	2.0	2.55	128	
13C-2,3,3',4,4'-PeCB	105	41.266	1.56	2.0	1.42	71	
13C-2,3,4,4',5-PeCB	114	40.611	1.55	2.0	1.38	69	
13C-2,3',4,4',5-PeCB	118	40.075	1.60	2.0	1.38	69	
13C-2,3',4,4',5'-PeCB	123	39.723	1.54	2.0	1.36	68	
13C-3,3',4,4',5-PeCB	126	44.402	1.53	2.0	1.65	83	
13C-2,2',4,4',6,6'-HxCB	155	34.540	1.24	2.0	1.43	72	
13C-HxCB (156/157)	156/157	47.387	1.26	4.0	4.86	122	
13C-2,3',4,4',5,5'-HxCB	167	46.213	1.26	2.0	2.23	112	
13C-3,3',4,4',5,5'-HxCB	169	50.640	1.28	2.0	2.48	124	
13C-2,2',3,4',5,6,6'-HpCB	188	40.511	1.05	2.0	0.704	35	
13C-2,3,3',4,4',5,5'-HpCB	189	53.220	1.02	2.0	1.62	81	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.928	0.92	2.0	1.02	51	
13C-2,3,3',4,4',5,5',6-OxCB	205	56.217	0.88	2.0	1.51	76	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.631	0.80	2.0	1.53	76	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.617	0.78	2.0	1.40	70	
13C--DeCB	209	61.154	0.70	2.0	1.62	81	
Cleanup Standards							
13C-2,4,4'-TrCB	28	25.081	1.08	2.0	1.37	69	
13C-2,3,3',5,5'-PeCB	111	37.693	1.65	2.0	1.32	66	
13C-2,2',3,3',5,5',6-HpCB	178	43.613	1.04	2.0	1.72	86	
Recovery Standards							
13C-2,5-DiCB	9	16.203	1.57	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	27.211	0.80	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.808	1.55	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	43.194	1.25	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.592	0.92	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

Results reported on a total weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25867
Filename P100801A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.3
2		---	---	ND	---	24.3
3		---	---	ND	---	24.3
4		---	---	ND	---	24.3
5		---	---	ND	---	24.3
6		---	---	ND	---	24.3
7		---	---	ND	---	24.3
8		---	---	ND	---	24.3
9		---	---	ND	---	24.3
10		---	---	ND	---	24.3
11		---	---	ND	---	146
12	12/13	---	---	ND	---	48.6
13	12/13	---	---	ND	---	48.6
14		---	---	ND	---	24.3
15		---	---	ND	---	24.3
16		---	---	ND	---	24.3
17		---	---	ND	---	24.3
18	18/30	---	---	ND	---	48.6
19		---	---	ND	---	24.3
20	20/28	---	---	ND	---	48.6
21	21/33	---	---	ND	---	48.6
22		---	---	ND	---	24.3
23		---	---	ND	---	24.3
24		---	---	ND	---	24.3
25		---	---	ND	---	24.3
26	26/29	---	---	ND	---	48.6
27		---	---	ND	---	24.3
28	20/28	---	---	ND	---	48.6
29	26/29	---	---	ND	---	48.6
30	18/30	---	---	ND	---	48.6
31		---	---	ND	---	24.3
32		---	---	ND	---	24.3
33	21/33	---	---	ND	---	48.6
34		---	---	ND	---	24.3
35		---	---	ND	---	24.3
36		---	---	ND	---	24.3
37		---	---	ND	---	24.3
38		---	---	ND	---	24.3
39		---	---	ND	---	24.3
40	40/41/71	---	---	ND	---	146
41	40/41/71	---	---	ND	---	146
42		---	---	ND	---	48.6
43	43/73	---	---	ND	---	97.2
44	44/47/65	---	---	ND	---	146
45	45/51	---	---	ND	---	97.2

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a total weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25867
Filename P100801A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	48.6
47	44/47/65	---	---	ND	---	146
48		---	---	ND	---	48.6
49	49/69	---	---	ND	---	97.2
50	50/53	---	---	ND	---	97.2
51	45/51	---	---	ND	---	97.2
52		27.244	0.74	59.0	---	48.6
53	50/53	---	---	ND	---	97.2
54		---	---	ND	---	48.6
55		---	---	ND	---	48.6
56		---	---	ND	---	48.6
57		---	---	ND	---	48.6
58		---	---	ND	---	48.6
59	59/62/75	---	---	ND	---	146
60		---	---	ND	---	48.6
61	61/70/74/76	---	---	ND	---	194
62	59/62/75	---	---	ND	---	146
63		---	---	ND	---	48.6
64		---	---	ND	---	48.6
65	44/47/65	---	---	ND	---	146
66		---	---	ND	---	48.6
67		---	---	ND	---	48.6
68		---	---	ND	---	48.6
69	49/69	---	---	ND	---	97.2
70	61/70/74/76	---	---	ND	---	194
71	40/41/71	---	---	ND	---	146
72		---	---	ND	---	48.6
73	43/73	---	---	ND	---	97.2
74	61/70/74/76	---	---	ND	---	194
75	59/62/75	---	---	ND	---	146
76	61/70/74/76	---	---	ND	---	194
77		---	---	ND	---	48.6
78		---	---	ND	---	48.6
79		---	---	ND	---	48.6
80		---	---	ND	---	48.6
81		---	---	ND	---	48.6
82		---	---	ND	---	48.6
83		---	---	ND	---	48.6
84		---	---	ND	---	48.6
85	85/116/117	---	---	ND	---	146
86	86/87/97/108/119/125	---	---	ND	---	292
87	86/87/97/108/119/125	---	---	ND	---	292
88	88/91	---	---	ND	---	97.2
89		---	---	ND	---	48.6
90	90/101/113	---	---	ND	---	146

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25867
Filename P100801A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	97.2
92		---	---	ND	---	48.6
93	93/98/100/102	---	---	ND	---	194
94		---	---	ND	---	48.6
95		---	---	ND	---	48.6
96		---	---	ND	---	48.6
97	86/87/97/108/119/125	---	---	ND	---	292
98	93/98/100/102	---	---	ND	---	194
99		---	---	ND	---	48.6
100	93/98/100/102	---	---	ND	---	194
101	90/101/113	---	---	ND	---	146
102	93/98/100/102	---	---	ND	---	194
103		---	---	ND	---	48.6
104		---	---	ND	---	48.6
105		---	---	ND	---	48.6
106		---	---	ND	---	48.6
107	107/124	---	---	ND	---	97.2
108	86/87/97/108/119/125	---	---	ND	---	292
109		---	---	ND	---	48.6
110	110/115	---	---	ND	---	97.2
111		---	---	ND	---	48.6
112		---	---	ND	---	48.6
113	90/101/113	---	---	ND	---	146
114		---	---	ND	---	48.6
115	110/115	---	---	ND	---	97.2
116	85/116/117	---	---	ND	---	146
117	85/116/117	---	---	ND	---	146
118		---	---	ND	---	48.6
119	86/87/97/108/119/125	---	---	ND	---	292
120		---	---	ND	---	48.6
121		---	---	ND	---	48.6
122		---	---	ND	---	48.6
123		---	---	ND	---	48.6
124	107/124	---	---	ND	---	97.2
125	86/87/97/108/119/125	---	---	ND	---	292
126		---	---	ND	---	48.6
127		---	---	ND	---	48.6
128	128/166	---	---	ND	---	97.2
129	129/138/163	---	---	ND	---	146
130		---	---	ND	---	48.6
131		---	---	ND	---	48.6
132		---	---	ND	---	48.6
133		---	---	ND	---	48.6
134	134/143	---	---	ND	---	97.2
135	135/151	---	---	ND	---	97.2

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25867
Filename P100801A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	48.6
137		---	---	ND	---	48.6
138	129/138/163	---	---	ND	---	146
139	139/140	---	---	ND	---	97.2
140	139/140	---	---	ND	---	97.2
141		---	---	ND	---	48.6
142		---	---	ND	---	48.6
143	134/143	---	---	ND	---	97.2
144		---	---	ND	---	48.6
145		---	---	ND	---	48.6
146		---	---	ND	---	48.6
147	147/149	---	---	ND	---	97.2
148		---	---	ND	---	48.6
149	147/149	---	---	ND	---	97.2
150		---	---	ND	---	48.6
151	135/151	---	---	ND	---	97.2
152		---	---	ND	---	48.6
153	153/168	---	---	ND	---	97.2
154		---	---	ND	---	48.6
155		---	---	ND	---	48.6
156	156/157	---	---	ND	---	97.2
157	156/157	---	---	ND	---	97.2
158		---	---	ND	---	48.6
159		---	---	ND	---	48.6
160		---	---	ND	---	48.6
161		---	---	ND	---	48.6
162		---	---	ND	---	48.6
163	129/138/163	---	---	ND	---	146
164		---	---	ND	---	48.6
165		---	---	ND	---	48.6
166	128/166	---	---	ND	---	97.2
167		---	---	ND	---	48.6
168	153/168	---	---	ND	---	97.2
169		---	---	ND	---	48.6
170		---	---	ND	---	48.6
171	171/173	---	---	ND	---	97.2
172		---	---	ND	---	48.6
173	171/173	---	---	ND	---	97.2
174		---	---	ND	---	48.6
175		---	---	ND	---	48.6
176		---	---	ND	---	48.6
177		---	---	ND	---	48.6
178		---	---	ND	---	48.6
179		---	---	ND	---	48.6
180	180/193	---	---	ND	---	97.2

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25867
Filename P100801A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	48.6
182		---	---	ND	---	48.6
183	183/185	---	---	ND	---	97.2
184		---	---	ND	---	48.6
185	183/185	---	---	ND	---	97.2
186		---	---	ND	---	48.6
187		---	---	ND	---	48.6
188		---	---	ND	---	48.6
189		---	---	ND	---	48.6
190		---	---	ND	---	48.6
191		---	---	ND	---	48.6
192		---	---	ND	---	48.6
193	180/193	---	---	ND	---	97.2
194		---	---	ND	---	72.9
195		---	---	ND	---	72.9
196		---	---	ND	---	72.9
197	197/200	---	---	ND	---	146
198	198/199	---	---	ND	---	146
199	198/199	---	---	ND	---	146
200	197/200	---	---	ND	---	146
201		---	---	ND	---	72.9
202		---	---	ND	---	72.9
203		---	---	ND	---	72.9
204		---	---	ND	---	72.9
205		---	---	ND	---	72.9
206		---	---	ND	---	72.9
207		---	---	ND	---	72.9
208		---	---	ND	---	72.9
209		---	---	ND	---	72.9

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKGM
Lab Sample ID BLANK-25867
Filename P100801A_08

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	59.0
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	59.0

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-25745	Matrix	Solid
Filename	P100720A_05	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	07/15/2010 15:45
ICAL ID	P100720A04	Analyzed	07/20/2010 11:11
CCal Filename(s)	P100720A_03	Injected By	SMT
Method Blank ID	BLANK-25744		

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.08	108	2.0	1.30	65	
3	1.0	1.08	108	2.0	1.47	74	
4	1.0	0.934	93	2.0	1.23	61	
15	1.0	1.04	104	2.0	1.69	84	
19	1.0	1.01	101	2.0	1.22	61	
37	1.0	1.08	108	2.0	1.70	85	
54	1.0	0.959	96	2.0	1.64	82	
81	1.0	0.936	94	2.0	0.779	39	
77	1.0	1.01	101	2.0	0.647	32	
104	1.0	0.938	94	2.0	2.94	147	R
105	1.0	1.02	102	2.0	1.76	88	
114	1.0	1.01	101	2.0	1.65	82	
118	1.0	1.10	110	2.0	1.54	77	
123	1.0	1.00	100	2.0	1.62	81	
126	1.0	1.02	102	2.0	2.20	110	
155	1.0	0.956	96	2.0	1.47	74	
156/157	2.0	2.05	102	4.0	5.66	142	R
167	1.0	1.01	101	2.0	2.71	135	
169	1.0	1.05	105	2.0	3.13	156	R
188	1.0	0.972	97	2.0	0.725	36	
189	1.0	1.01	101	2.0	1.97	98	
202	1.0	0.974	97	2.0	1.19	59	
205	1.0	1.02	102	2.0	1.83	92	
206	1.0	0.976	98	2.0	1.81	90	
208	1.0	0.997	100	2.0	1.53	77	
209	1.0	0.965	97	2.0	1.73	87	

R = Recovery outside of method 1668A control limits
 Nn = Result obtained from alternate analysis
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 * = See Discussion
 ng = Nanograms
 I = Interference

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-25868	
Filename	P100801A_05	Matrix
Total Amount Extracted	10.1 g	Solid
ICAL ID	P100801A04	Dilution
CCal Filename(s)	P100801A_03	Extracted
Method Blank ID	BLANK-25867	Analyzed
		07/26/2010 15:30
		08/01/2010 15:49
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.03	103	2.0	0.393	20	R
3	1.0	0.999	100	2.0	0.655	33	
4	1.0	0.990	99	2.0	0.651	33	
15	1.0	1.10	110	2.0	1.15	57	
19	1.0	0.989	99	2.0	0.877	44	
37	1.0	1.16	116	2.0	1.29	64	
54	1.0	0.978	98	2.0	1.08	54	
81	1.0	1.11	111	2.0	0.604	30	
77	1.0	1.12	112	2.0	0.553	28	
104	1.0	1.04	104	2.0	2.29	114	R
105	1.0	1.09	109	2.0	1.28	64	
114	1.0	1.10	110	2.0	1.23	61	
118	1.0	1.21	121	2.0	1.21	61	
123	1.0	1.09	109	2.0	1.23	62	
126	1.0	1.13	113	2.0	1.59	80	
155	1.0	0.978	98	2.0	1.32	66	
156/157	2.0	2.16	108	4.0	4.48	112	
167	1.0	1.12	112	2.0	2.05	103	
169	1.0	1.12	112	2.0	2.40	120	
188	1.0	0.984	98	2.0	0.656	33	
189	1.0	1.08	108	2.0	1.49	74	
202	1.0	1.03	103	2.0	0.963	48	
205	1.0	1.08	108	2.0	1.42	71	
206	1.0	1.12	112	2.0	1.38	69	
208	1.0	1.06	106	2.0	1.31	66	
209	1.0	1.04	104	2.0	1.45	73	

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-25746	Matrix	Solid
Filename	P100720A_06	Dilution	NA
Total Amount Extracted	10.5 g	Extracted	07/15/2010 15:45
ICAL ID	P100720A04	Analyzed	07/20/2010 12:16
CCal Filename(s)	P100720A03	Injected By	SMT
Method Blank ID	BLANK-25744		

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.13	113	2.0	1.26	63	
3	1.0	1.06	106	2.0	1.57	79	
4	1.0	0.981	98	2.0	1.25	62	
15	1.0	1.07	107	2.0	1.88	94	
19	1.0	0.989	99	2.0	1.22	61	
37	1.0	1.10	110	2.0	1.65	83	
54	1.0	0.949	95	2.0	1.57	78	
81	1.0	0.961	96	2.0	0.822	41	
77	1.0	0.971	97	2.0	0.721	36	
104	1.0	0.970	97	2.0	2.67	133	
105	1.0	1.04	104	2.0	1.40	70	
114	1.0	0.959	96	2.0	1.41	70	
118	1.0	1.06	106	2.0	1.34	67	
123	1.0	0.953	95	2.0	1.37	69	
126	1.0	1.00	100	2.0	1.77	88	
155	1.0	0.982	98	2.0	1.73	87	
156/157	2.0	2.01	101	4.0	5.29	132	
167	1.0	1.000	100	2.0	2.53	127	
169	1.0	0.968	97	2.0	2.96	148	R
188	1.0	0.975	97	2.0	0.777	39	
189	1.0	0.965	96	2.0	1.78	89	
202	1.0	0.977	98	2.0	1.20	60	
205	1.0	0.957	96	2.0	1.75	87	
206	1.0	0.967	97	2.0	1.69	85	
208	1.0	0.985	99	2.0	1.56	78	
209	1.0	0.961	96	2.0	1.65	83	

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-25869	
Filename	P100801A_06	Matrix
Total Amount Extracted	10.6 g	Solid
ICAL ID	P100801A04	Dilution
CCal Filename(s)	P100801A_03	Extracted
Method Blank ID	BLANK-25867	Analyzed
		07/26/2010 15:30
		08/01/2010 16:53
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.01	101	2.0	0.371	19	R
3	1.0	1.01	101	2.0	0.524	26	R
4	1.0	1.01	101	2.0	0.539	27	R
15	1.0	1.08	108	2.0	1.04	52	
19	1.0	0.970	97	2.0	0.766	38	
37	1.0	1.14	114	2.0	1.26	63	
54	1.0	0.954	95	2.0	0.978	49	
81	1.0	1.04	104	2.0	0.612	31	
77	1.0	1.11	111	2.0	0.551	28	R
104	1.0	1.02	102	2.0	2.33	117	
105	1.0	1.09	109	2.0	1.28	64	
114	1.0	1.04	104	2.0	1.26	63	
118	1.0	1.19	119	2.0	1.22	61	
123	1.0	1.02	102	2.0	1.22	61	
126	1.0	1.08	108	2.0	1.57	79	
155	1.0	0.993	99	2.0	1.32	66	
156/157	2.0	2.12	106	4.0	4.45	111	
167	1.0	1.09	109	2.0	2.05	103	
169	1.0	1.05	105	2.0	2.36	118	
188	1.0	0.987	99	2.0	0.705	35	
189	1.0	1.06	106	2.0	1.59	80	
202	1.0	1.02	102	2.0	1.04	52	
205	1.0	1.03	103	2.0	1.46	73	
206	1.0	1.04	104	2.0	1.47	73	
208	1.0	0.987	99	2.0	1.45	72	
209	1.0	1.01	101	2.0	1.53	76	

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-25745
Spike 1 Filename P100720A_05

Spike 2 ID LCSD-25746
Spike 2 Filename P100720A_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	108	113	4.5
4-MoCB	3	108	106	1.9
2,2'-DiCB	4	93	98	5.2
4,4'-DiCB	15	104	107	2.8
2,2',6-TrCB	19	101	99	2.0
3,4,4'-TrCB	37	108	110	1.8
2,2',6,6'-TeCB	54	96	95	1.0
3,3',4,4'-TeCB	77	101	97	4.0
3,4,4',5-TeCB	81	94	96	2.1
2,2',4,6,6'-PeCB	104	94	97	3.1
2,3,3',4,4'-PeCB	105	102	104	1.9
2,3,4,4',5-PeCB	114	101	96	5.1
2,3',4,4',5-PeCB	118	110	106	3.7
2,3,4,4',5'-PeCB	123	100	95	5.1
3,3',4,4',5-PeCB	126	102	100	2.0
2,2',4,4',6,6'-HxCB	155	96	98	2.1
(156/157)	156/157	102	101	1.0
2,3',4,4',5,5'-HxCB	167	101	100	1.0
3,3',4,4',5,5'-HxCB	169	105	97	7.9
2,2',3,4',5,6,6'-HpCB	188	97	97	0.0
2,3,3',4,4',5,5'-HpCB	189	101	96	5.1
2,2',3,3',5,5',6,6'-OcCB	202	97	98	1.0
2,3,3',4,4',5,5',6-OcCB	205	102	96	6.1
2,2',3,3',4,4',5,5',6-NoCB	206	98	97	1.0
2,2',3,3',4,5,5',6,6'-NoCB	208	100	99	1.0
Decachlorobiphenyl	209	97	96	1.0

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-25868
Spike 1 Filename P100801A_05

Spike 2 ID LCSD-25869
Spike 2 Filename P100801A_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	103	101	2.0
4-MoCB	3	100	101	1.0
2,2'-DiCB	4	99	101	2.0
4,4'-DiCB	15	110	108	1.8
2,2',6-TrCB	19	99	97	2.0
3,4,4'-TrCB	37	116	114	1.7
2,2',6,6'-TeCB	54	98	95	3.1
3,3',4,4'-TeCB	77	112	111	0.9
3,4,4',5-TeCB	81	111	104	6.5
2,2',4,6,6'-PeCB	104	104	102	1.9
2,3,3',4,4'-PeCB	105	109	109	0.0
2,3,4,4',5-PeCB	114	110	104	5.6
2,3',4,4',5-PeCB	118	121	119	1.7
2,3,4,4',5'-PeCB	123	109	102	6.6
3,3',4,4',5-PeCB	126	113	108	4.5
2,2',4,4',6,6'-HxCB	155	98	99	1.0
(156/157)	156/157	108	106	1.9
2,3',4,4',5,5'-HxCB	167	112	109	2.7
3,3',4,4',5,5'-HxCB	169	112	105	6.5
2,2',3,4',5,6,6'-HpCB	188	98	99	1.0
2,3,3',4,4',5,5'-HpCB	189	108	106	1.9
2,2',3,3',5,5',6,6'-OcCB	202	103	102	1.0
2,3,3',4,4',5,5',6-OcCB	205	108	103	4.7
2,2',3,3',4,4',5,5',6-NoCB	206	112	104	7.4
2,2',3,3',4,5,5',6,6'-NoCB	208	106	99	6.8
Decachlorobiphenyl	209	104	101	2.9

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

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***April 2010 Follow-Up
Inline Solids Grab Samples***



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Laboratory Data QA/QC Review Inline Solids Investigation City Outfall Basin 43

To: File
From: Andrew Davidson, GSI Water Solutions, Inc.
Date: June 30, 2010

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from source control investigation sampling and analyses conducted by the City of Portland (City) in April 2010. One inline solids grab sample (FO105484) was collected in Outfall Basin 43 on April 28, 2010 and submitted for analyses.

The laboratory analyses for this solids sample were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed below:

- BES WPCL
 - Total solids (TSS) – SM 2540G
 - Metals – EPA 6020
 - Polychlorinated Biphenyls (PCB) Aroclors – EPA 8082
- Test America (TA)
 - Total Organic Carbon – EPA 9060 MOD
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls (PCBs) as Congeners – EPA 1668A

The WPCL summary report and the subcontracted laboratories' data reports are attached for all analyses associated with this source control program sample. The WPCL summary report comments that unless otherwise noted, all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review of the analytical data is based on the available documentation provided by each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- 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
- Internal standard recoveries within accuracy control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within control limits

The results from the QA/QC review of the available information in the laboratory reports 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.

Analysis Holding Times

The samples were extracted and analyzed within the recommended method-specific holding times.

Method Blanks

Method blanks were analyzed during the subcontracted laboratory analyses of TOC and PCB congeners. PCB congeners 11 and 31 were detected at low concentrations in the associated method blank. The concentration of PCB congener 11 detected in the sample is less than 10 times the concentration detected in the method blank; therefore, the result is qualified with a “B” flag in the data summary table. This value should be considered biased high or possibly as a false positive. PCB congener 31 was detected in the sample at a concentration greater than 10 times the concentration detected in the method blank, and the result is not qualified. The total PCB congener value should be considered biased only slightly high. There is no reported detection of TOC in the associated method blank.

Internal Standard Recoveries

Isotopically-labeled internal standard recoveries were processed during the laboratory analysis of PCB congeners. Internal standard recoveries were within control limits with sixteen exceptions,

which are flagged “R” in the subcontracted laboratory report. Affected congeners are qualified with an “EST” flag on the data summary table in the report.

Total homolog and total PCB concentrations that include one or more estimated congener value(s) are considered biased only slightly high.

Laboratory Control/Duplicate Laboratory Control Samples

LC samples were processed during the laboratory analysis of TOC and PCB congeners. A DLC sample was processed during the PCB analysis. With the exception of isotopically-labeled PCB congeners 1, 3, 4, 77, and 81, all labeled analyte and spiked native analyte recoveries and relative percent differences were within laboratory control limits. Pace reports that these results indicate high degrees of accuracy and precision for these determinations.

Other

The WPCL reports that method reporting limits for the PCB Aroclor analysis are raised due to the low percent solids in the sample.

Matrix: SEDIMENT

Requested Analyses

Organics

General

Metals

Field Comments

OUTFALL 43

WPCL Sample I.D.

Location

Point Code	Sample Date	Sample Time	Sample Type
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FO105484

IL-43-ABC539-0410
N KERBY & WHEELER PL

436

4/28/10

1023

○

PCB Aroclors - LL

PCB Congeners (All 209 - Pad

TOC

Total Soldis

Total Metals (As, Cd, Cr, Cu, Hg, Pb, Ni, Ag, Zn)

Relinquished By: 1

Signature: 

Signature: 

100

1248

Received By: 10/20/2011

SECRET

Signature: _____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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Printed Name: _____

✓

Portland

100



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: **FO105484**

Sample Collected: 04/28/10 10:23
Sample Received: 04/28/10

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-43-ABC539-0410
N KERBY & WHEELER PL
Sample Point Code: 43_6
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AO03967
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MAW/PTB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Reporting limits are raised for PCB Aroclor analysis due to required dilution for quantitation of Aroclor 1260. This sample was re-analyzed in duplicate to verify the high level of Aroclor, with results of 23200 and 18200 ug/Kg.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	81.4	% W/W	0.01	SM 2540 G	04/29/10
METALS					
ARSENIC	6.24	mg/Kg dry wt	0.50	EPA 6020	05/10/10
CADMIUM	37.5	mg/Kg dry wt	0.10	EPA 6020	05/10/10
CHROMIUM	97.4	mg/Kg dry wt	0.50	EPA 6020	05/10/10
COPPER	235	mg/Kg dry wt	0.25	EPA 6020	05/10/10
LEAD	162	mg/Kg dry wt	0.10	EPA 6020	05/10/10
MERCURY	1.06	mg/Kg dry wt	0.010	EPA 6020	05/10/10
NICKEL	45.0	mg/Kg dry wt	0.25	EPA 6020	05/10/10
SILVER	0.54	mg/Kg dry wt	0.10	EPA 6020	05/10/10
ZINC	496	mg/Kg dry wt	0.50	EPA 6020	05/10/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<5000	µg/Kg dry wt	5000	EPA 8082	05/04/10
Aroclor 1221	<10000	µg/Kg dry wt	10000	EPA 8082	05/04/10
Aroclor 1232	<5000	µg/Kg dry wt	5000	EPA 8082	05/04/10
Aroclor 1248	<5000	µg/Kg dry wt	5000	EPA 8082	05/04/10
Aroclor 1254	<5000	µg/Kg dry wt	5000	EPA 8082	05/04/10
Aroclor 1260	40500	µg/Kg dry wt	5000	EPA 8082	05/04/10
Aroclor 1262	<5000	µg/Kg dry wt	5000	EPA 8082	05/04/10
Aroclor 1268	<5000	µg/Kg dry wt	5000	EPA 8082	05/04/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	15800	mg/Kg dry wt	100	EPA 9060 MOD	05/06/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	05/24/10

End of Report for Sample ID: FO105484

Report Date: 06/23/10

Validated By:

June 23, 2010

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203


RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 04/29/10 18:15.
The following list is a summary of the Work Orders contained in this report, generated on 06/23/10 11:25.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PTD0901	Portland Harbor	36238

TestAmerica Portland



Darrell Auvil For Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

06/23/10 11:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO105484	PTD0901-01	Soil	04/28/10 10:23	04/29/10 18:15

TestAmerica Portland



Darrell Auvil For Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203


Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/23/10 11:25

Organic Carbon, Total (TOC)
TestAmerica Connecticut

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTD0901-01 (FO105484)				Soil			Sampled: 04/28/10 10:23			
Total Organic Carbon - Duplicates	9060	15800	30.0	100	mg/Kg	1x	38079	05/06/10 14:35	05/06/10 14:35	

TestAmerica Portland



Darrell Auvil For Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/23/10 11:25

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 38079

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-38079-5)			QC Source:						Extracted: 04/29/10 14:08					
Total Organic Carbon - Duplicates	9060	5681	30.0	100	mg/Kg	1x	--	4110	138%	(28-172)	--	--	04/29/10 14:08	
Blank (220-38079-6)			QC Source:						Extracted: 04/29/10 14:14					
Total Organic Carbon - Duplicates	9060	ND	30.0	100	mg/Kg	1x	--	--	--	--	--	--	04/29/10 14:14	

TestAmerica Portland



Darrell Auvil For Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

06/23/10 11:25

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland



Darrell Auvil For Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave, Spokane, WA 99206-5302
9405 SW Nimbus Ave, Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **P100901**

CLIENT: <u>City of Portland</u>		INVOICE TO: <u>Charles Lytle</u>		TURNAROUND REQUEST	
REPORT TO: ADDRESS: <u>Jennifer Shackelford</u>		P.O. NUMBER: <u>36238</u>		in Business Days *	
PHONE: <u>FAX:</u>		PRESERVATIVE		Organic & Inorganic Analyses	
PROJECT NAME: <u>Portland Harbor Inland Samp.</u>		REQUESTED ANALYSES		Petroleum Hydrocarbon Analyses	
PROJECT NUMBER:				STD.	
SAMPLED BY:				OTHER Specify:	
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1. <u>F0105484</u>	<u>4/28/10</u> <u>1023</u>	<u>Sed</u>	<u>2</u>		
2. <u>F0105485</u>	<u>↓</u> <u>1141</u>	<u>↓</u>	<u>1</u>		
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

RELEASED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
<u>M. J. Shackelford</u>	<u>4/29/10</u>	<u>1523</u>	<u>Megan Harding</u>	<u>4/29/10</u>	<u>1523</u>
PRINT NAME: <u>Jennifer Shackelford</u>			PRINT NAME: <u>Megan Harding</u>		
RELEASED BY: <u>M. J. Shackelford</u>	<u>4/29/10</u>	<u>1523</u>	RECEIVED BY: <u>M. J. Shackelford</u>	<u>4/29/10</u>	<u>1523</u>
PRINT NAME: <u>M. J. Shackelford</u>			PRINT NAME: <u>M. J. Shackelford</u>		

ADDITIONAL REMARKS: * Please send to PACE

TEMP: 21 PAGE 21 OF 21

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PTD0901 Date/Time Received: 4/29/10 1815
Client Name and Project: COFP

Time Zone:

☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☒ PDT/PST ☐ AK ☐ OTHER

Unpacking Checks:

Cooler #(s): 1
Temperatures: 21

Digi #1 ☐ Digi #2 ☐ IR Gun ☒
☒ Plastic ☐ Glass

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
Other:

Initials: jm

N/A Yes No

- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. If ESI client, were temp blanks received? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Chain of Custody present? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Bottles received intact? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Sample is not multiphasic? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Proper Container and preservatives used? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. pH of all samples checked and meet requirements? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. HF Dilution required? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11. Did chain of custody agree with samples received? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12. Is the "Sampled by" section of the COC completed? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13. Were VOA/Oil Syringe samples without headspace? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 14. Were VOA vials preserved? <input type="checkbox"/> HCl <input type="checkbox"/> Sodium Thiosulfate <input type="checkbox"/> Ascorbic Acid |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 15. Did samples require preservation with sodium thiosulfate? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 16. If yes to #15, was the residual chlorine test negative? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 19. Are analyses with short holding times received in hold? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 20. Was Standard Turn Around (TAT) requested? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM. |

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PT00901

Login Checks:

Initials: jm

N/A Yes No

- ☒ ☒ ☐ 22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
- ☒ ☐ ☐ 23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
- ☐ ☒ ☐ 24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
- ☐ ☒ ☐ 25. Were special log in instructions read and followed?
- ☐ ☒ ☐ 26. Were tests logged checked against the COC?
- ☒ ☐ ☐ 27. Were rush notices printed and delivered?
- ☒ ☐ ☐ 28. Were short hold notices printed and delivered?
- ☐ ☒ ☐ 29. Were subcontract COCs printed?
- ☒ ☐ ☐ 30. Was HF dilution logged?

Labeling and Storage Checks:

Initials: jm

N/A Yes No

- ☐ ☒ ☐ 31. Were the subcontracted samples/containers put in Sx fridge?
- ☒ ☐ ☐ 32. Were sample bottles and COC double checked for dissolved/filtered metals?
- ☐ ☒ ☐ 33. Did the sample ID, Date, and Time from label match what was logged?
- ☒ ☐ ☐ 34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
- ☒ ☐ ☐ 35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
- ☒ ☐ ☐ 36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Report Prepared for:

Howard Holmes
Test America-Portland
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

June 8, 2010

Report Information:

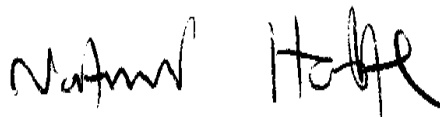
Pace Project #: 10127952
Sample Receipt Date: 05/04/2010
Client Project #: PTD0901
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:



June 08, 2010

Nate Habte, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
natnael.habte@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 25-75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The recoveries of the isotopically-labeled PCB internal standards in the sample extract ranged from 2-104%. With sixteen exceptions, the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1668A. Since the quantification of the native congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained. The sample was also analyzed at a dilution to bring selected analytes within the range of the mass spectrometer. The affected congeners were flagged "DN2" to note that they were dilutions from a secondary analysis.

In some cases, interferences affected the determination of PCB congeners. The affected congeners were flagged "I" where the isotope ratios were found to be outside of the target range for this method.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain low levels of two PCB congeners. The samples contained these congeners at levels over an order of magnitude higher than found in the method blank. In general, levels less than ten times the background are not considered statistically different from the background. This demonstrates that levels measured in the sample extract were not be significantly impacted by the sample cleanup procedures.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds were recovered at 94-126%, with relative percent differences of 0.0-7.9%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN00064_2000
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennessee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PTD0901

10127952

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone : (612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: _____ °C Ice: Y / N

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: 5/25 Initials: HZ

Analysis	Units	Expires	Comments
Sample ID: PTD0901-01 (FO105484 - Soil)			
		Sampled: 04/28/10 10:23	001
1668 Coplanar PCBs - SUB	<u>ug/g</u>	10/25/10 10:23	***209 Congeners*** to Pace
Containers Supplied:			
4 oz. jar (B)			

Released By

Date/Time

Received By

Date/Time

Report No.....10127952_1068A

Received By

Date/Time Page 5 of 25 Page 1 of 1



Sample Condition Upon Receipt

Client Name:

Test America

Project #

10127952

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 4170 7525 3758

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals Intact: ☐ yes ☐ noPacking Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ OtherTemp Blank: Yes ☒ No

Thermometer Used 80344042 or 179425

Type of Ice: Wet ☒ Blue ☐ None☐ Samples on Ice, cooling process has begun

Cooler Temperature

1.3

Biological Tissue Is Frozen: Yes ☐ No

Date and Initials of person examining contents: 3/4/10 SC

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	SL	
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: Theresa Morrison Date/Time: 5/12/10

Comments/ Resolution:

Project Manager Review:

NAH

Date:

5/10/10

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PTD0901-01(FO105484)		
Lab Sample ID	10127952001		
Filename	P100527A_08		
Injected By	CVS		
Total Amount Extracted	12.2 g	Matrix	Solid
% Moisture	16.8	Dilution	NA
Dry Weight Extracted	10.1 g	Collected	04/28/2010 10:23
ICAL ID	P100527A02	Received	05/04/2010 10:03
CCal Filename(s)	P100527A_01	Extracted	05/24/2010 13:00
Method Blank ID	BLANK-25062	Analyzed	05/27/2010 11:57

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	6.359	2.78	2.0	0.0475	2	R
13C-4-MoCB	3	9.128	2.70	2.0	0.288	14	R
13C-2,2'-DiCB	4	9.439	1.52	2.0	0.260	13	R
13C-4,4'-DiCB	15	17.095	1.62	2.0	0.790	39	
13C-2,2',6-TrCB	19	13.561	1.10	2.0	0.596	30	
13C-3,4,4'-TrCB	37	25.189	1.09	2.0	1.09	55	
13C-2,2',6,6'-TeCB	54	17.409	0.83	2.0	0.814	41	
13C-3,4,4',5-TeCB	81	32.383	0.78	2.0	1.16	58	
13C-3,3',4,4'-TeCB	77	32.953	0.77	2.0	1.16	58	
13C-2,2',4,6,6'-PeCB	104	23.831	1.61	2.0	1.09	55	
13C-2,3,3',4,4'-PeCB	105	36.524	1.58	2.0	1.15	58	
13C-2,3,4,4',5-PeCB	114	35.870	1.58	2.0	1.09	55	
13C-2,3',4,4',5-PeCB	118	35.401	1.64	2.0	1.16	58	
13C-2,3',4,4',5'-PeCB	123	35.032	1.58	2.0	1.18	59	
13C-3,3',4,4',5-PeCB	126	39.677	1.59	2.0	1.01	51	
13C-2,2',4,4',6,6'-HxCB	155	30.018	1.22	2.0	1.07	54	
13C-HxCB (156/157)	156/157	42.678	1.27	4.0	1.60	40	
13C-2,3',4,4',5,5'-HxCB	167	41.555	1.25	2.0	0.852	43	
13C-3,3',4,4',5,5'-HxCB	169	45.932	1.29	2.0	0.737	37	
13C-2,2',3,4',5,6,6'-HpCB	188	35.887	1.06	2.0	2.07	104	
13C-2,3,3',4,4',5,5'-HpCB	189	48.449	1.06	2.0	1.31	66	
13C-2,2',3,3',5,5',6,6'-OxCB	202	41.270	0.92	2.0	1.92	96	
13C-2,3,3',4,4',5,5',6-OxCB	205	51.014	0.87	2.0	1.31	66	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	52.781	0.81	2.0	1.41	71	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	47.910	0.80	2.0	1.41	71	
13C--DeCB	209	54.548	0.72	2.0	1.14	57	
Cleanup Standards							
13C-2,4,4'-TrCB	28	20.712	1.06	2.0	1.22	61	
13C-2,3,3',5,5'-PeCB	111	33.070	1.52	2.0	1.61	80	
13C-2,2',3,3',5,5',6-HpCB	178	38.989	1.04	2.0	1.28	64	
Recovery Standards							
13C-2,5-DiCB	9	12.135	1.63	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	22.825	0.81	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	30.253	1.60	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	38.553	1.42	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	50.561	0.98	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTD0901-01(FO105484)
Lab Sample ID 10127952001
Filename P100527A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		6.371	2.95	132	---	24.7
2		8.912	3.27	32.7	---	24.7
3		9.140	3.20	80.6	---	24.7
4		9.463	1.62	326	---	24.7
5		---	---	ND	---	24.7
6		12.686	1.45	208	---	24.7
7		12.387	1.29 I	---	32.8	24.7
8		13.249	1.51	853	---	24.7
9		12.171	1.33	64.5	---	24.7
10		---	---	ND	---	24.7
11		16.388	1.51	246	---	148
12	12/13	16.736	1.55	122	---	49.4
13	12/13	16.736	1.55	(122)	---	49.4
14		---	---	ND	---	24.7
15		17.131	1.53	1570	---	24.7
16		17.035	1.08	379	---	24.7
17		16.496	1.05	663	---	24.7
18	18/30	16.005	1.09	1040	---	49.4
19		13.585	1.05	197	---	24.7
20	20/28	20.746	1.03	6090	---	49.4
21	21/33	20.997	1.03	1220	---	49.4
22		21.433	1.04	769	---	24.7
23		---	---	ND	---	24.7
24		---	---	ND	---	24.7
25		20.041	0.99	296	---	24.7
26	26/29	19.773	1.04	815	---	49.4
27		16.772	1.09	105	---	24.7
28	20/28	20.746	1.03	(6090)	---	49.4
29	26/29	19.773	1.04	(815)	---	49.4
30	18/30	16.005	1.09	(1040)	---	49.4
31		20.410	1.03	3970	---	24.7
32		17.694	1.07	1600	---	24.7
33	21/33	20.997	1.03	(1220)	---	49.4
34		19.253	1.04	26.4	---	24.7
35		24.787	1.00	111	---	24.7
36		---	---	ND	---	24.7
37		25.223	1.02	2080	---	24.7
38		---	---	ND	---	24.7
39		23.697	1.06	40.6	---	24.7
40	40/41/71	25.038	0.79	8540	---	148
41	40/41/71	25.038	0.79	(8540)	---	148
42		24.485	0.78	3760	---	49.4
43	43/73	---	---	ND	---	98.8
44	44/47/65	23.915	0.79	30500	---	148
45	45/51	20.897	0.78	6010	---	98.8
46		21.148	0.79	754	---	49.4
47	44/47/65	23.915	0.79	(30500)	---	148
48		23.680	0.79	1430	---	49.4

Conc = Concentration
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R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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NA = Not Applicable
NC = Not Calculated
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RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTD0901-01(FO105484)
Lab Sample ID 10127952001
Filename P100527A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	23.378	0.79	20100	---	98.8
50	50/53	20.041	0.79	4960	---	98.8
51	45/51	20.897	0.78	(6010)	---	98.8
52		22.858	0.78	70300	---	49.4
53	50/53	20.041	0.79	(4960)	---	98.8
54		17.442	0.79	447	---	49.4
55		---	---	ND	---	49.4
56		29.130	0.79	10900	---	49.4
57		27.017	0.70	710	---	49.4
58		---	---	ND	---	49.4
59	59/62/75	24.284	0.81	1210	---	148
60		29.348	0.77	2150	---	49.4
61	61/70/74/76	28.073	0.78	90900	---	198
62	59/62/75	24.284	0.81	(1210)	---	148
63		27.721	0.78	894	---	49.4
64		25.273	0.78	8750	---	49.4
65	44/47/65	23.915	0.79	(30500)	---	148
66		28.425	0.78	45000	---	49.4
67		27.453	0.75	335	---	49.4
68		26.581	0.81	367	---	49.4
69	49/69	23.378	0.79	(20100)	---	98.8
70	61/70/74/76	28.073	0.78	(90900)	---	198
71	40/41/71	25.038	0.79	(8540)	---	148
72		26.262	0.79	298	---	49.4
73	43/73	---	---	ND	---	98.8
74	61/70/74/76	28.073	0.78	(90900)	---	198
75	59/62/75	24.284	0.81	(1210)	---	148
76	61/70/74/76	28.073	0.78	(90900)	---	198
77		32.970	0.77	5300	---	49.4
78		---	---	ND	---	49.4
79		31.460	0.77	3990	---	49.4
80		---	---	ND	---	49.4
81		32.366	1.29 I	---	231	49.4
82		32.567	1.56	29900	---	49.4
83		30.706	1.56	14000	---	49.4
84		28.241	1.58	63400	---	49.4
85	85/116/117	32.098	1.56	47300	---	148
86	86/87/97/108/119/125	31.460	1.58	211000	---	297
87	86/87/97/108/119/125	31.460	1.58	(211000)	---	297
88	88/91	28.040	1.58	31300	---	98.8
89		28.761	1.56	1390	---	49.4
90	90/101/113	30.342	1.57	660000	DN2	14800
91	88/91	28.040	1.58	(31300)	---	98.8
92		29.666	1.57	112000	---	49.4
93	93/98/100/102	27.503	1.59	8260	---	198
94		26.631	1.57	2030	---	49.4
95		27.174	1.56	498000	DN2	4940
96		24.217	1.62	1410	---	49.4

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference

ng's = Nanograms

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTD0901-01(FO105484)
Lab Sample ID 10127952001
Filename P100527A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	31.460	1.58	(211000)	---	297
98	93/98/100/102	27.503	1.59	(8260)	---	198
99		30.873	1.58	134000	---	49.4
100	93/98/100/102	27.503	1.59	(8260)	---	198
101	90/101/113	30.342	1.57	(660000) DN2	---	14800
102	93/98/100/102	27.503	1.59	(8260)	---	198
103		26.430	1.58	5310	---	49.4
104		23.848	1.56	82.1	---	49.4
105		36.541	1.57	86300	---	49.4
106		---	---	ND	---	49.4
107	107/124	34.713	1.58	16100	---	98.8
108	86/87/97/108/119/125	31.460	1.58	(211000)	---	297
109		34.948	1.56	16500	---	49.4
110	110/115	32.338	1.58	417000 DN2	---	9880
111		---	---	ND	---	49.4
112		---	---	ND	---	49.4
113	90/101/113	30.342	1.57	(660000) DN2	---	14800
114		35.904	1.55	3240	---	49.4
115	110/115	32.338	1.58	(417000) DN2	---	9880
116	85/116/117	32.098	1.56	(47300)	---	148
117	85/116/117	32.098	1.56	(47300)	---	148
118		35.456	1.56	293000 DN2	---	4940
119	86/87/97/108/119/125	31.460	1.58	(211000)	---	297
120		33.573	1.59	1120	---	49.4
121		29.314	1.56	73.1	---	49.4
122		35.720	1.58	3580	---	49.4
123		35.066	1.59	4100	---	49.4
124	107/124	34.713	1.58	(16100)	---	98.8
125	86/87/97/108/119/125	31.460	1.58	(211000)	---	297
126		39.677	1.55	1980	---	49.4
127		38.101	1.58	510	---	49.4
128	128/166	39.761	1.29	95800	---	98.8
129	129/138/163	38.591	1.25	1870000 DN2	---	14800
130		37.883	1.26	52300	---	49.4
131		34.982	1.28	7840	---	49.4
132		35.490	1.23	501000 DN2	---	4940
133		36.038	1.26	15000	---	49.4
134	134/143	34.378	1.29	59900	---	98.8
135	135/151	33.310	1.26	928000 DN2	---	9880
136		30.706	1.27	270000	---	49.4
137		38.101	1.25	11500	---	49.4
138	129/138/163	38.591	1.25	(1870000) DN2	---	14800
139	139/140	34.814	1.28	6840	---	98.8
140	139/140	34.814	1.28	(6840)	---	98.8
141		37.535	1.25	429000 DN2	---	4940
142		---	---	ND	---	49.4
143	134/143	34.378	1.29	(59900)	---	98.8
144		33.825	1.28	105000	---	49.4

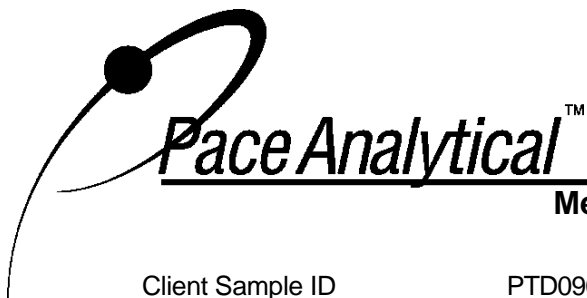
Conc = Concentration
EML = Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
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ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTD0901-01(FO105484)
Lab Sample ID 10127952001
Filename P100527A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		31.024	1.10	139	---	49.4
146		36.692	1.27	188000	---	49.4
147	147/149	34.249	1.24	1800000 DN2	---	9880
148		32.668	1.27	1010	---	49.4
149	147/149	34.249	1.24	(1800000) DN2	---	9880
150		30.371	1.24	1320	---	49.4
151	135/151	33.310	1.26	(928000) DN2	---	9880
152		30.152	1.27	455	---	49.4
153	153/168	37.368	1.23	1900000 DN2	---	9880
154		33.540	1.27	7000	---	49.4
155		---	---	ND	---	49.4
156	156/157	42.678	1.25	114000	---	98.8
157	156/157	42.678	1.25	(114000)	---	98.8
158		38.939	1.26	123000	---	49.4
159		40.800	1.29	4410	---	49.4
160		---	---	ND	---	49.4
161		---	---	ND	---	49.4
162		41.119	1.23	7240	---	49.4
163	129/138/163	38.591	1.25	(1870000) DN2	---	14800
164		38.235	1.26	95400	---	49.4
165		---	---	ND	---	49.4
166	128/166	39.761	1.29	(95800)	---	98.8
167		41.589	1.26	47000	---	49.4
168	153/168	37.368	1.23	(1900000) DN2	---	9880
169		45.932	1.59 I	---	932	49.4
170		45.348	1.04	747000 DN2	---	4940
171	171/173	41.790	1.04	270000	---	98.8
172		43.450	1.04	128000	---	49.4
173	171/173	41.790	1.04	(270000)	---	98.8
174		40.771	1.04	865000 DN2	---	4940
175		39.643	1.05	42600	---	49.4
176		37.095	1.05	122000	---	49.4
177		41.207	1.04	466000 DN2	---	4940
178		39.006	1.04	191000	---	49.4
179		36.261	1.04	379000 DN2	---	4940
180	180/193	44.141	1.05	1740000 DN2	---	9880
181		41.555	1.01	1820	---	49.4
182		---	---	ND	---	49.4
183	183/185	40.587	1.04	546000 DN2	---	9880
184		36.793	1.05	231	---	49.4
185	183/185	40.587	1.04	(546000) DN2	---	9880
186		---	---	ND	---	49.4
187		39.966	1.05	1030000 DN2	---	4940
188		35.904	1.04	449	---	49.4
189		48.471	1.04	26900	---	49.4
190		45.848	1.05	167000	---	49.4
191		44.456	1.05	37000	---	49.4
192		---	---	ND	---	49.4

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTD0901-01(FO105484)
Lab Sample ID 10127952001
Filename P100527A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	44.141	1.05	(1740000) DN2	---	9880
194		50.583	0.89	357000	---	74.1
195		48.169	0.89	114000	---	74.1
196		46.686	0.90	203000	---	74.1
197	197/200	43.182	0.90	61400	---	148
198	198/199	46.049	0.90	364000	---	148
199	198/199	46.049	0.90	(364000)	---	148
200	197/200	43.182	0.90	(61400)	---	148
201		42.209	0.90	49800	---	74.1
202		41.303	0.91	58300	---	74.1
203		46.887	0.90	214000	---	74.1
204		---	---	ND	---	74.1
205		51.057	0.90	18000	---	74.1
206		52.803	0.78	65300	---	74.1
207		48.880	0.78	9990	---	74.1
208		47.953	0.79	11300	---	74.1
209		54.570	0.72	1670	---	74.1

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTD0901-01(FO105484)
Lab Sample ID 10127952001
Filename P100527A_08

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	245
Total Dichloro Biphenyls	3390
Total Trichloro Biphenyls	19400
Total Tetrachloro Biphenyls	318000
Total Pentachloro Biphenyls	2660000
Total Hexachloro Biphenyls	8640000
Total Heptachloro Biphenyls	6760000
Total Octachloro Biphenyls	1440000
Total Nonachloro Biphenyls	86600
Decachloro Biphenyls	1670
Total PCBs	19900000

ND = Not Detected

Results reported on a total weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-25062	Matrix	Solid
Filename	P100527B_07	Extracted	05/24/2010 13:00
Injected By	BAL	Analyzed	05/28/2010 01:52
Total Amount Extracted	10.1 g	Dilution	NA
ICAL ID	P100527B03		
CCal Filename(s)	P100527B_02		

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	6.371	2.99	2.0	0.0625	3	R
13C-4-MoCB	3	9.139	3.15	2.0	0.231	12	R
13C-2,2'-DiCB	4	9.427	1.67	2.0	0.226	11	R
13C-4,4'-DiCB	15	17.082	1.64	2.0	0.719	36	
13C-2,2',6-TrCB	19	13.548	1.15	2.0	0.574	29	
13C-3,4,4'-TrCB	37	25.206	1.04	2.0	0.787	39	
13C-2,2',6,6'-TeCB	54	17.374	0.82	2.0	0.861	43	
13C-3,4,4',5-TeCB	81	32.584	0.80	2.0	0.508	25	
13C-3,3',4,4'-TeCB	77	33.137	0.75	2.0	0.524	26	
13C-2,2',4,6,6'-PeCB	104	23.814	1.55	2.0	2.16	108	
13C-2,3,3',4,4'-PeCB	105	36.743	1.68	2.0	1.22	61	
13C-2,3,4,4',5-PeCB	114	36.106	1.50	2.0	1.13	56	
13C-2,3',4,4',5-PeCB	118	35.586	1.62	2.0	1.15	58	
13C-2,3',4,4',5'-PeCB	123	35.250	1.62	2.0	1.11	55	
13C-3,3',4,4',5-PeCB	126	39.828	1.67	2.0	1.48	74	
13C-2,2',4,4',6,6'-HxCB	155	30.119	1.32	2.0	1.11	56	
13C-HxCB (156/157)	156/157	42.746	1.28	4.0	3.07	77	
13C-2,3',4,4',5,5'-HxCB	167	41.673	1.28	2.0	1.47	74	
13C-3,3',4,4',5,5'-HxCB	169	45.915	1.30	2.0	1.78	89	
13C-2,2',3,4',5,6,6'-HpCB	188	36.072	1.04	2.0	0.724	36	
13C-2,3,3',4,4',5,5'-HpCB	189	48.406	1.08	2.0	1.32	66	
13C-2,2',3,3',5,5',6,6'-OxCB	202	41.371	0.90	2.0	1.15	57	
13C-2,3,3',4,4',5,5',6-OxCB	205	50.949	0.89	2.0	1.31	66	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	52.674	0.79	2.0	1.33	67	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	47.889	0.79	2.0	1.34	67	
13C--DeCB	209	54.419	0.70	2.0	1.20	60	
Cleanup Standards							
13C-2,4,4'-TrCB	28	20.712	1.06	2.0	1.38	69	
13C-2,3,3',5,5'-PeCB	111	33.272	1.68	2.0	1.53	76	
13C-2,2',3,3',5,5',6-HpCB	178	39.141	1.05	2.0	1.85	92	
Recovery Standards							
13C-2,5-DiCB	9	12.134	1.62	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	22.791	0.79	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	30.387	1.67	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	38.671	1.26	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	50.475	0.96	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
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RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25062
Filename P100527B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.7
2		---	---	ND	---	24.7
3		---	---	ND	---	24.7
4		---	---	ND	---	24.7
5		---	---	ND	---	24.7
6		---	---	ND	---	24.7
7		---	---	ND	---	24.7
8		---	---	ND	---	24.7
9		---	---	ND	---	24.7
10		---	---	ND	---	24.7
11		16.375	1.43	157	---	148
12	12/13	---	---	ND	---	49.4
13	12/13	---	---	ND	---	49.4
14		---	---	ND	---	24.7
15		---	---	ND	---	24.7
16		---	---	ND	---	24.7
17		---	---	ND	---	24.7
18	18/30	---	---	ND	---	49.4
19		---	---	ND	---	24.7
20	20/28	---	---	ND	---	49.4
21	21/33	---	---	ND	---	49.4
22		---	---	ND	---	24.7
23		---	---	ND	---	24.7
24		---	---	ND	---	24.7
25		---	---	ND	---	24.7
26	26/29	---	---	ND	---	49.4
27		---	---	ND	---	24.7
28	20/28	---	---	ND	---	49.4
29	26/29	---	---	ND	---	49.4
30	18/30	---	---	ND	---	49.4
31		20.376	1.06	26.1	---	24.7
32		---	---	ND	---	24.7
33	21/33	---	---	ND	---	49.4
34		---	---	ND	---	24.7
35		---	---	ND	---	24.7
36		---	---	ND	---	24.7
37		---	---	ND	---	24.7
38		---	---	ND	---	24.7
39		---	---	ND	---	24.7
40	40/41/71	---	---	ND	---	148
41	40/41/71	---	---	ND	---	148
42		---	---	ND	---	49.4
43	43/73	---	---	ND	---	98.7
44	44/47/65	---	---	ND	---	148
45	45/51	---	---	ND	---	98.7

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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Results reported on a dry weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25062
Filename P100527B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	49.4
47	44/47/65	---	---	ND	---	148
48		---	---	ND	---	49.4
49	49/69	---	---	ND	---	98.7
50	50/53	---	---	ND	---	98.7
51	45/51	---	---	ND	---	98.7
52		---	---	ND	---	49.4
53	50/53	---	---	ND	---	98.7
54		---	---	ND	---	49.4
55		---	---	ND	---	49.4
56		---	---	ND	---	49.4
57		---	---	ND	---	49.4
58		---	---	ND	---	49.4
59	59/62/75	---	---	ND	---	148
60		---	---	ND	---	49.4
61	61/70/74/76	---	---	ND	---	197
62	59/62/75	---	---	ND	---	148
63		---	---	ND	---	49.4
64		---	---	ND	---	49.4
65	44/47/65	---	---	ND	---	148
66		---	---	ND	---	49.4
67		---	---	ND	---	49.4
68		---	---	ND	---	49.4
69	49/69	---	---	ND	---	98.7
70	61/70/74/76	---	---	ND	---	197
71	40/41/71	---	---	ND	---	148
72		---	---	ND	---	49.4
73	43/73	---	---	ND	---	98.7
74	61/70/74/76	---	---	ND	---	197
75	59/62/75	---	---	ND	---	148
76	61/70/74/76	---	---	ND	---	197
77		---	---	ND	---	49.4
78		---	---	ND	---	49.4
79		---	---	ND	---	49.4
80		---	---	ND	---	49.4
81		---	---	ND	---	49.4
82		---	---	ND	---	49.4
83		---	---	ND	---	49.4
84		---	---	ND	---	49.4
85	85/116/117	---	---	ND	---	148
86	86/87/97/108/119/125	---	---	ND	---	296
87	86/87/97/108/119/125	---	---	ND	---	296
88	88/91	---	---	ND	---	98.7
89		---	---	ND	---	49.4
90	90/101/113	---	---	ND	---	148

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25062
Filename P100527B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	98.7
92		---	---	ND	---	49.4
93	93/98/100/102	---	---	ND	---	197
94		---	---	ND	---	49.4
95		---	---	ND	---	49.4
96		---	---	ND	---	49.4
97	86/87/97/108/119/125	---	---	ND	---	296
98	93/98/100/102	---	---	ND	---	197
99		---	---	ND	---	49.4
100	93/98/100/102	---	---	ND	---	197
101	90/101/113	---	---	ND	---	148
102	93/98/100/102	---	---	ND	---	197
103		---	---	ND	---	49.4
104		---	---	ND	---	49.4
105		---	---	ND	---	49.4
106		---	---	ND	---	49.4
107	107/124	---	---	ND	---	98.7
108	86/87/97/108/119/125	---	---	ND	---	296
109		---	---	ND	---	49.4
110	110/115	---	---	ND	---	98.7
111		---	---	ND	---	49.4
112		---	---	ND	---	49.4
113	90/101/113	---	---	ND	---	148
114		---	---	ND	---	49.4
115	110/115	---	---	ND	---	98.7
116	85/116/117	---	---	ND	---	148
117	85/116/117	---	---	ND	---	148
118		---	---	ND	---	49.4
119	86/87/97/108/119/125	---	---	ND	---	296
120		---	---	ND	---	49.4
121		---	---	ND	---	49.4
122		---	---	ND	---	49.4
123		---	---	ND	---	49.4
124	107/124	---	---	ND	---	98.7
125	86/87/97/108/119/125	---	---	ND	---	296
126		---	---	ND	---	49.4
127		---	---	ND	---	49.4
128	128/166	---	---	ND	---	98.7
129	129/138/163	---	---	ND	---	148
130		---	---	ND	---	49.4
131		---	---	ND	---	49.4
132		---	---	ND	---	49.4
133		---	---	ND	---	49.4
134	134/143	---	---	ND	---	98.7
135	135/151	---	---	ND	---	98.7

Conc = Concentration
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EMPC = Estimated Maximum Possible Concentration
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R = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25062
Filename P100527B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	49.4
137		---	---	ND	---	49.4
138	129/138/163	---	---	ND	---	148
139	139/140	---	---	ND	---	98.7
140	139/140	---	---	ND	---	98.7
141		---	---	ND	---	49.4
142		---	---	ND	---	49.4
143	134/143	---	---	ND	---	98.7
144		---	---	ND	---	49.4
145		---	---	ND	---	49.4
146		---	---	ND	---	49.4
147	147/149	---	---	ND	---	98.7
148		---	---	ND	---	49.4
149	147/149	---	---	ND	---	98.7
150		---	---	ND	---	49.4
151	135/151	---	---	ND	---	98.7
152		---	---	ND	---	49.4
153	153/168	---	---	ND	---	98.7
154		---	---	ND	---	49.4
155		---	---	ND	---	49.4
156	156/157	---	---	ND	---	98.7
157	156/157	---	---	ND	---	98.7
158		---	---	ND	---	49.4
159		---	---	ND	---	49.4
160		---	---	ND	---	49.4
161		---	---	ND	---	49.4
162		---	---	ND	---	49.4
163	129/138/163	---	---	ND	---	148
164		---	---	ND	---	49.4
165		---	---	ND	---	49.4
166	128/166	---	---	ND	---	98.7
167		---	---	ND	---	49.4
168	153/168	---	---	ND	---	98.7
169		---	---	ND	---	49.4
170		---	---	ND	---	49.4
171	171/173	---	---	ND	---	98.7
172		---	---	ND	---	49.4
173	171/173	---	---	ND	---	98.7
174		---	---	ND	---	49.4
175		---	---	ND	---	49.4
176		---	---	ND	---	49.4
177		---	---	ND	---	49.4
178		---	---	ND	---	49.4
179		---	---	ND	---	49.4
180	180/193	---	---	ND	---	98.7

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-25062
Filename P100527B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	49.4
182		---	---	ND	---	49.4
183	183/185	---	---	ND	---	98.7
184		---	---	ND	---	49.4
185	183/185	---	---	ND	---	98.7
186		---	---	ND	---	49.4
187		---	---	ND	---	49.4
188		---	---	ND	---	49.4
189		---	---	ND	---	49.4
190		---	---	ND	---	49.4
191		---	---	ND	---	49.4
192		---	---	ND	---	49.4
193	180/193	---	---	ND	---	98.7
194		---	---	ND	---	74.0
195		---	---	ND	---	74.0
196		---	---	ND	---	74.0
197	197/200	---	---	ND	---	148
198	198/199	---	---	ND	---	148
199	198/199	---	---	ND	---	148
200	197/200	---	---	ND	---	148
201		---	---	ND	---	74.0
202		---	---	ND	---	74.0
203		---	---	ND	---	74.0
204		---	---	ND	---	74.0
205		---	---	ND	---	74.0
206		---	---	ND	---	74.0
207		---	---	ND	---	74.0
208		---	---	ND	---	74.0
209		---	---	ND	---	74.0

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKSB
Lab Sample ID BLANK-25062
Filename P100527B_07

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	157
Total Trichloro Biphenyls	26.1
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	183

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-25063	Matrix	Solid
Filename	P100527B_04	Dilution	5
Total Amount Extracted	10.0 g	Extracted	05/24/2010 13:00
ICAL ID	P100527B03	Analyzed	05/27/2010 22:49
CCal Filename(s)	P100527B_02	Injected By	BAL
Method Blank ID	BLANK-25062		

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.08	108	2.0	0.125	6	R
3	1.0	1.09	109	2.0	0.296	15	R
4	1.0	1.11	111	2.0	0.321	16	R
15	1.0	1.06	106	2.0	0.755	38	
19	1.0	1.05	105	2.0	0.604	30	
37	1.0	1.01	101	2.0	0.715	36	
54	1.0	1.04	104	2.0	0.905	45	
81	1.0	1.05	105	2.0	0.447	22	R
77	1.0	1.05	105	2.0	0.457	23	R
104	1.0	0.966	97	2.0	2.30	115	
105	1.0	1.09	109	2.0	1.19	59	
114	1.0	1.12	112	2.0	1.08	54	
118	1.0	1.26	126	2.0	1.12	56	
123	1.0	1.07	107	2.0	1.07	54	
126	1.0	0.965	97	2.0	1.47	73	
155	1.0	1.01	101	2.0	1.09	55	
156/157	2.0	2.09	105	4.0	3.34	84	
167	1.0	1.08	108	2.0	1.56	78	
169	1.0	1.03	103	2.0	1.95	97	
188	1.0	1.00	100	2.0	0.617	31	
189	1.0	1.03	103	2.0	1.27	64	
202	1.0	0.947	95	2.0	1.07	53	
205	1.0	0.994	99	2.0	1.33	67	
206	1.0	0.966	97	2.0	1.42	71	
208	1.0	1.01	101	2.0	1.43	72	
209	1.0	1.11	111	2.0	1.27	63	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms

I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-25064	
Filename	P100527B_05	Matrix
Total Amount Extracted	10.1 g	Solid
ICAL ID	P100527B03	Dilution
CCal Filename(s)	P100527B_02	Extracted
Method Blank ID	BLANK-25062	Analyzed
		05/24/2010 13:00
		05/27/2010 23:50
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.15	115	2.0	0.123	6	R
3	1.0	1.13	113	2.0	0.319	16	R
4	1.0	1.15	115	2.0	0.337	17	R
15	1.0	1.10	110	2.0	0.777	39	
19	1.0	1.04	104	2.0	0.662	33	
37	1.0	1.01	101	2.0	0.730	36	
54	1.0	1.01	101	2.0	0.924	46	
81	1.0	1.08	108	2.0	0.436	22	R
77	1.0	1.02	102	2.0	0.454	23	R
104	1.0	0.986	99	2.0	2.25	112	
105	1.0	1.18	118	2.0	1.11	56	
114	1.0	1.10	110	2.0	1.03	52	
118	1.0	1.22	122	2.0	1.08	54	
123	1.0	1.07	107	2.0	1.06	53	
126	1.0	0.940	94	2.0	1.44	72	
155	1.0	0.968	97	2.0	1.09	54	
156/157	2.0	2.11	105	4.0	3.18	80	
167	1.0	1.07	107	2.0	1.52	76	
169	1.0	1.00	100	2.0	1.88	94	
188	1.0	0.997	100	2.0	0.605	30	
189	1.0	1.01	101	2.0	1.23	61	
202	1.0	0.990	99	2.0	1.02	51	
205	1.0	1.02	102	2.0	1.31	66	
206	1.0	0.995	99	2.0	1.35	67	
208	1.0	1.01	101	2.0	1.36	68	
209	1.0	1.12	112	2.0	1.18	59	

R = Recovery outside of method 1668A control limits
 Nn = Result obtained from alternate analysis
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 * = See Discussion
 ng = Nanograms
 I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America-Portland

Spike 1 ID LCS-25063
Spike 1 Filename P100527B_04

Spike 2 ID LCSD-25064
Spike 2 Filename P100527B_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	108	115	6.3
4-MoCB	3	109	113	3.6
2,2'-DiCB	4	111	115	3.5
4,4'-DiCB	15	106	110	3.7
2,2',6-TrCB	19	105	104	1.0
3,4,4'-TrCB	37	101	101	0.0
2,2',6,6'-TeCB	54	104	101	2.9
3,3',4,4'-TeCB	77	105	102	2.9
3,4,4',5-TeCB	81	105	108	2.8
2,2',4,6,6'-PeCB	104	97	99	2.0
2,3,3',4,4'-PeCB	105	109	118	7.9
2,3,4,4',5-PeCB	114	112	110	1.8
2,3',4,4',5-PeCB	118	126	122	3.2
2,3,4,4',5'-PeCB	123	107	107	0.0
3,3',4,4',5-PeCB	126	97	94	3.1
2,2',4,4',6,6'-HxCB	155	101	97	4.0
(156/157)	156/157	105	105	0.0
2,3',4,4',5,5'-HxCB	167	108	107	0.9
3,3',4,4',5,5'-HxCB	169	103	100	3.0
2,2',3,4',5,6,6'-HpCB	188	100	100	0.0
2,3,3',4,4',5,5'-HpCB	189	103	101	2.0
2,2',3,3',5,5',6,6'-OcCB	202	95	99	4.1
2,3,3',4,4',5,5',6-OcCB	205	99	102	3.0
2,2',3,3',4,4',5,5',6-NoCB	206	97	99	2.0
2,2',3,3',4,5,5',6,6'-NoCB	208	101	101	0.0
Decachlorobiphenyl	209	111	112	0.9

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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Phase 2 Stormwater Sampling
Event 5: December 7, 2010



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 43

To: File
From: Andrew Davidson, GSI Water Solutions, Inc. (GSI)
Date: January 3, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) in December 2010. Three stormwater samples (W10L058-01, W10L058-02, W10L058-03) were collected in City Outfall Basin 43 on December 7, 2010 and submitted for analyses.

The laboratory analyses for these samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL). The following analyses were conducted:

- BES WPCL
 - Polychlorinated Biphenyls (PCBs) Aroclors (Low-level) – EPA 8082
 - Total Suspended Solids (TSS) – SM 2540D

The WPCL summary report is attached for all analyses associated with these source control program samples.

The following QA/QC review of the analytical data is based on the available documentation supplied from WPCL. The QA/QC review of the analytical data consisted of reviewing the following elements for the laboratory report, if applicable and/or available:

- 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
- Internal standard recoveries within accuracy control limits

- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits

The results from the QA/QC review of the laboratory report 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.

Analysis Holding Times

The samples were extracted and analyzed within the acceptable holding times for all analyses.

Method Blanks

A method blank was processed during the laboratory analysis of PCB Aroclors. No analytes were detected in the method blank.

Surrogate Recoveries

Surrogate recoveries were completed during the analysis of PCB Aroclors. All surrogate analytes were recovered within method specified control limits.

Laboratory Control Sample / Duplicate Laboratory Control Samples

LC and DLC samples were processed during the analysis of PCB Aroclors. LC/DLC sample recoveries and relative percent differences (RPDs) were within laboratory control limits.

Other

WPCL reports that a trace amount of Aroclor 1260 was evident in sample W10L058-01, calculated at less than the method detection limit concentration.

A laboratory duplicate of sample W10L058-01 was analyzed for TSS. The RPD for the sample and laboratory duplicate was within laboratory control limits.



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



14 December 2010
Linda Scheffler
Director's Office
RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 12/07/10 19:37. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Renee Chauvin
Laboratory Coordinator QA/QC



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



LABORATORY ANALYSIS REPORT

Project:	Portland Harbor	Client:	Director's Office
Work Order:	W10L058	Project Mgr:	Linda Scheffler
Received:	12/07/10 19:37	WQDB #:	Janus329
Collected By:	FO		

Sample	Laboratory ID	Matrix	Type	Sample Collection Date Start	End	Qualifier
43_SW2	W10L058-01	Stormwater	Grab	12/07/10 17:28	12/07/10 17:28	
43_SW5	W10L058-02	Stormwater	Grab	12/07/10 17:03	12/07/10 17:03	
43_SW6	W10L058-03	Stormwater	Grab	12/07/10 17:10	12/07/10 17:10	

Case Narrative

PCB Aroclor analysis:

A trace amount of Aroclor 1260 was evident in sample W10L058-01, calculated at less than the MDL concentration. (Note - the low level MRL reported for these samples is equal to the MDL.)

Analyte	Result	MRL	Units	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------	-----	-------	----------	-------	----------	----------	--------	-----------

General Chemistry

Total Suspended Solids

43_SW2 : W10L058-01								Sampled: 12/07/10 17:28
Total suspended solids	9	2	mg/L		B10L139	12/08/10	12/09/10	SM 2540D
43_SW5 : W10L058-02								Sampled: 12/07/10 17:03
Total suspended solids	6	2	mg/L		B10L139	12/08/10	12/09/10	SM 2540D
43_SW6 : W10L058-03								Sampled: 12/07/10 17:10
Total suspended solids	13	2	mg/L		B10L139	12/08/10	12/09/10	SM 2540D

Reported:12/14/10 14:03

Renee Chauvin, Laboratory Coordinator QA/QC

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W10L058**

Client: **Director's Office**
Project Mgr: **Linda Scheffler**

Analyte	Result	MRL	Units	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------	-----	-------	----------	-------	----------	----------	--------	-----------

Polychlorinated Biphenyls (PCBs)

PCB Aroclors by GC-ECD

43_SW2 : W10L058-01

Sampled: 12/07/10 17:28

Aroclor 1016/1242	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1221	ND	0.0500	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1232	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1248	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1254	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1260	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1262	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1268	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	0.0368	0.0500	74%	41-107.6	B10L155	12/09/10	12/13/10	EPA 8082
Decachlorobiphenyl	0.0369	0.0500	74%	8.3-153	B10L155	12/09/10	12/13/10	EPA 8082

43_SW5 : W10L058-02

Sampled: 12/07/10 17:03

Aroclor 1016/1242	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1221	ND	0.0500	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1232	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1248	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1254	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1260	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1262	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1268	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	0.0370	0.0500	74%	41-107.6	B10L155	12/09/10	12/13/10	EPA 8082
Decachlorobiphenyl	0.0399	0.0500	80%	8.3-153	B10L155	12/09/10	12/13/10	EPA 8082

43_SW6 : W10L058-03

Sampled: 12/07/10 17:10

Aroclor 1016/1242	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1221	ND	0.0500	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1232	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1248	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1254	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1260	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1262	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Aroclor 1268	ND	0.0250	ug/L	1	B10L155	12/09/10	12/13/10	EPA 8082
Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	0.0378	0.0500	76%	41-107.6	B10L155	12/09/10	12/13/10	EPA 8082
Decachlorobiphenyl	0.0375	0.0500	75%	8.3-153	B10L155	12/09/10	12/13/10	EPA 8082

Reported:12/14/10 14:03

Renee Chauvin, Laboratory Coordinator QA/QC

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City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W10L058**

Client: **Director's Office**
Project Mgr: **Linda Scheffler**

General Chemistry - Quality Control Report

Analyte	Result	MRL	Units	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Suspended Solids - Batch B10L139									
Duplicate (B10L139-DUP1) Source: W10L058-01									
Total suspended solids	10	2	mg/L	9			9 (20)	12/08/10 :12/09/10	

Polychlorinated Biphenyls (PCBs) - Quality Control Report

Analyte	Result	MRL	Units	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
PCB Aroclors by GC-ECD - Batch B10L155									
Blank (B10L155-BLK1)									
Aroclor 1016/1242	ND	0.0250	ug/L					12/09/10 :12/13/10	
Aroclor 1221	ND	0.0500	ug/L					12/09/10 :12/13/10	
Aroclor 1232	ND	0.0250	ug/L					12/09/10 :12/13/10	
Aroclor 1248	ND	0.0250	ug/L					12/09/10 :12/13/10	
Aroclor 1254	ND	0.0250	ug/L					12/09/10 :12/13/10	
Aroclor 1260	ND	0.0250	ug/L					12/09/10 :12/13/10	
Aroclor 1262	ND	0.0250	ug/L					12/09/10 :12/13/10	
Aroclor 1268	ND	0.0250	ug/L					12/09/10 :12/13/10	
Surrogate									
Decachlorobiphenyl	0.0415		ug/L	0.0500		83 (8.3-153)		12/09/10 :12/13/10	
Tetrachloro-m-xylene	0.0285		ug/L	0.0500		57 (41-107.6)		12/09/10 :12/13/10	

LCS (B10L155-BS1)

Aroclor 1016/1242	0.1050	0.0250	ug/L	0.125		84 (64-122.7)		12/09/10 :12/13/10	
Aroclor 1260	0.1096	0.0250	ug/L	0.125		88 (65.4-122.8)		12/09/10 :12/13/10	
Surrogate									
Decachlorobiphenyl	0.0438		ug/L	0.0500		88 (8.3-153)		12/09/10 :12/13/10	
Tetrachloro-m-xylene	0.0295		ug/L	0.0500		59 (41-107.6)		12/09/10 :12/13/10	

LCS Dup (B10L155-BSD1)

Aroclor 1016/1242	0.1195	0.0250	ug/L	0.125		96 (64-122.7)	13 (20)	12/09/10 :12/13/10	
Aroclor 1260	0.1198	0.0250	ug/L	0.125		96 (65.4-122.8)	9 (20)	12/09/10 :12/13/10	
Surrogate									
Decachlorobiphenyl	0.0489		ug/L	0.0500		98 (8.3-153)		12/09/10 :12/13/10	
Tetrachloro-m-xylene	0.0324		ug/L	0.0500		65 (41-107.6)		12/09/10 :12/13/10	

Reported:12/14/10 14:03

Renee Chauvin, Laboratory Coordinator QA/QC

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W10L058**

Client: Director's Office
Project Mgr: Linda Scheffler

Qualifiers and Definitions

DET	Analyte Detected
ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
NR	Not Reportable
dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery
RPD	Relative Percent Difference

Reported:12/14/10 14:03

Renee Chauvin, Laboratory Coordinator QA/QC

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
Sample Custodian: (503) 823-5696
General Lab: (503) 823-5681



City of Portland
Chain-of-Custody

Bureau of Environmental Services



Date: 12/7/10

Work Order #: W10L-058

Collected By: MJS, PTB

Client Name: Director's Office

Matrix: Stormwater

Project Name: Portland Harbor

Requested Analyses

Lab Number	Special Instructions:			Sample			PCB Aroclors (Low-level)	TSS	# of Containers	Remarks
	Location ID	Sample Date	Sample Time	Sample Type						
01	43_SW2	12/7/10	1728	G			•	•		ABC539
02	43_SW5	↓	1703	G			•	•		ABC499
03	43_SW6	↓	1710	G			•	•		ABC500
04										
05										
06										
07										
08										
09										
10										

Inquired By: Signature: <i>Matt Sullivan</i> Date: 12/7/10 Printed Name: Matt Sullivan	Relinquished By: Signature: <i>Matt Sullivan</i> Date: 12/8/10 Printed Name: Matt Sullivan	Received By: Signature: <i>Matt Sullivan</i> Date: 12/8/10 Printed Name: Matt Sullivan
---	---	---

⊗ Samples stored in Sample Receiving Fridge overnight

***January 2011 Follow-Up
Inline Solids Samples***



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 Inline Solids Investigation City Outfall Basin 43

To: File
From: Nancy East-Smith, GSI Water Solutions, Inc. (GSI)
Date: March 29, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) in January 2011. One inline solids composite sample (43_6 from MH ABC539) was collected in Outfall Basin 43 on January 11, 2011 and submitted for analyses.

The laboratory analyses for this source control program sample were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories under work order W112090. The following laboratories conducted the analyses listed:

- BES WPCL
 - Total Solids (TS)– SM 2540D
 - Polychlorinated Biphenyls (PCBs) – EPA 8082
- TestAmerica Laboratories, Inc. (TA)
 - Total Organic Carbon (TOC) – EPA 9060

The WPCL laboratory report and the subcontracted laboratory report for all analyses associated with this sampling event are attached.

The following QA/QC review of the analytical data is based on the available documentation provided by WPCL and the subcontracted laboratories. The QA/QC review of the analytical data consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times

- Chemicals of interest detected in method blanks
- Surrogate and/or internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits
- Relative percent difference (RPD) for duplicate sample results conducted by the laboratory within laboratory control limits.

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The TA sample control checklist identifies the chain-of-custody was present for sample delivery to the subcontracted laboratory. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

Samples for all analyses were extracted and analyzed within the recommended method-specific holding times.

Surrogate Recoveries

Surrogate recoveries were completed during the PCB analysis. All surrogate recoveries were within laboratory control limits.

Method Blanks

Method blanks were processed during the PCB and TOC analyses. No analytes were detected in the method blanks.

Matrix Spike/Matrix Spike Duplicates

MS/MSD samples were processed during the PCB analysis. All MS/MSD recoveries and RPDs were within acceptance limits.

Laboratory Control Samples

A LC sample was processed during analysis of PCBs and by TA, the subcontracted laboratory, for analysis of TOC. All recoveries were within method-specified control limits.

Laboratory Duplicate

The laboratory processed a duplicate analysis for TS. The RPD was within the acceptance limits.

Other

The detection limits were elevated for the PCB analysis. The WPCL report notes that the sample required dilution due to high levels of target analytes. The WPCL case narrative for W11A090 states that in addition to the Aroclor 1260 reported, some 1248 and 1254 could also be present at low concentrations.



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



26 January 2011
Linda Scheffler
Director's Office
RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 01/11/11 11:14. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Renee Chauvin
Laboratory Coordinator QA/QC



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



LABORATORY ANALYSIS REPORT

Project: **Portland Harbor** Client: Director's Office
Work Order: **W11A090** Project Mgr: Linda Scheffler
Received: 01/11/11 11:14 WQDB #: Janus329
Collected By: FO

Sample	Laboratory ID	Matrix	Type	Sample Collection Date Start	End	Qualifier
43_6	W11A090-01	Sediment	Composite	01/11/11 09:35	01/11/11 09:35	

Case Narrative

PCBs:
In addition to the Aroclor 1260 reported, some 1248 or 1254 could also be present at low concentration.

Analyte	Result	MRL	Units	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------	-----	-------	----------	-------	----------	----------	--------	-----------

43_6 : W11A090-01

Sampled: 01/11/11 09:35

General Chemistry

Total solids	85.1	0.01	% W/W		B11A150	01/11/11	01/12/11	SM 2540G	
--------------	------	------	-------	--	---------	----------	----------	----------	--

Polychlorinated Biphenyls (PCBs)

PCB Aroclors by GC-ECD

Aroclor 1016/1242	ND	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2
Aroclor 1221	ND	100	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2
Aroclor 1232	ND	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2
Aroclor 1248	ND	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2
Aroclor 1254	ND	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2
Aroclor 1260	489	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2, N
Aroclor 1262	ND	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2
Aroclor 1268	ND	50.0	ug/kg dry	5	B11A233	01/18/11	01/19/11	EPA 8082	D2

Surrogate	Result	Expected	%Rec	Limits(%)					
Tetrachloro-m-xylene	14.9	21.4	70%	62.5-132	B11A233	01/18/11	01/19/11	EPA 8082	
Decachlorobiphenyl	16.5	21.4	77%	43.5-150	B11A233	01/18/11	01/19/11	EPA 8082	

Reported:01/26/11 08:12

Renee Chauvin, Laboratory Coordinator QA/QC

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City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W11A090**

Client: **Director's Office**
Project Mgr: **Linda Scheffler**

General Chemistry - Quality Control Report

Analyte	Result	MRL	Units	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
---------	--------	-----	-------	-------------	---------------	---------------	-------------	--------------------	-----------

Total Solids - Batch B11A150

Duplicate (B11A150-DUP1)

Source: W11A090-01

Total solids	85.5	0.01	% W/W	85.1			0.5 (20)	01/11/11 :01/12/11	
--------------	------	------	-------	------	--	--	----------	--------------------	--

Polychlorinated Biphenyls (PCBs) - Quality Control Report

Analyte	Result	MRL	Units	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
---------	--------	-----	-------	-------------	---------------	---------------	-------------	--------------------	-----------

PCB Aroclors by GC-ECD - Batch B11A233

Blank (B11A233-BLK1)

Aroclor 1016/1242	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1221	ND	20.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1232	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1248	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1254	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1260	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1262	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Aroclor 1268	ND	10.0	ug/kg wet					01/18/11 :01/19/11	
Surrogate									
Decachlorobiphenyl	17.1		ug/kg wet	20.0		86 (43.5-150)		01/18/11 :01/19/11	
Tetrachloro-m-xylene	16.8		ug/kg wet	20.0		84 (62.5-132)		01/18/11 :01/19/11	

LCS (B11A233-BS1)

Aroclor 1016/1242	83.51	10.0	ug/kg wet	100		84 (80-120)		01/18/11 :01/19/11	
Aroclor 1260	80.10	10.0	ug/kg wet	100		80 (64.1-133.6)		01/18/11 :01/19/11	
Surrogate									
Decachlorobiphenyl	15.5		ug/kg wet	20.0		78 (43.5-150)		01/18/11 :01/19/11	
Tetrachloro-m-xylene	15.2		ug/kg wet	20.0		76 (62.5-132)		01/18/11 :01/19/11	

Matrix Spike (B11A233-MS1)

Source: W11A090-01

Aroclor 1016/1242	119.1	50.0	ug/kg dry	113	ND	106 (55.2-135.4)		01/18/11 :01/19/11	
Aroclor 1260	550.4	50.0	ug/kg dry	113	489.3	54 (19.6-166.5)		01/18/11 :01/19/11	
Surrogate									
Decachlorobiphenyl	16.2		ug/kg dry	22.5		72 (43.5-150)		01/18/11 :01/19/11	
Tetrachloro-m-xylene	14.1		ug/kg dry	22.5		63 (62.5-132)		01/18/11 :01/19/11	

Matrix Spike Dup (B11A233-MSD1)

Source: W11A090-01

Reported:01/26/11 08:12

Renee Chauvin, Laboratory Coordinator QA/QC

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City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W11A090**

Client: Director's Office
Project Mgr: Linda Scheffler

Polychlorinated Biphenyls (PCBs) - Quality Control Report

Analyte	Result	MRL	Units	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
---------	--------	-----	-------	-------------	---------------	---------------	-------------	--------------------	-----------

PCB Aroclors by GC-ECD - Batch B11A233

Matrix Spike Dup (B11A233-MSD1)

Source: W11A090-01

Aroclor 1016/1242	121.5	50.0	ug/kg dry	112	ND	109 (55.2-135.4)	2 (20)	01/18/11 :01/19/11	
Aroclor 1260	646.8	50.0	ug/kg dry	112	489.3	141 (19.6-166.5)	16 (20)	01/18/11 :01/19/11	
Surrogate									
Decachlorobiphenyl	17.3		ug/kg dry	22.3		78 (43.5-150)		01/18/11 :01/19/11	
Tetrachloro-m-xylene	14.4		ug/kg dry	22.3		65 (62.5-132)		01/18/11 :01/19/11	

Qualifiers and Definitions

D2	The sample required dilution due to high levels of target analytes.
N	Refer to case narrative.
DET	Analyte Detected
ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
NR	Not Reportable
dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery
RPD	Relative Percent Difference

Reported:01/26/11 08:12

Renee Chauvin, Laboratory Coordinator QA/QC

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Bureau of Environmental Services

Client Name: **Director's Office**
Project Name: **Portland Harbor**

Matrix: Sediment

Project Name: Portland Harbor

Requested Analyses

[illegible]

Acquished By:

Signature: *Attorneys* Date: *1/11/11*

Signature: _____ Date: 11/11/12

Relinquished By:

Signature:

Received By:

Printed Name: _____
Signature: _____

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503) 906-9200

TestAmerica Job ID: PUA0289

TestAmerica Sample Delivery Group: PUA0289
Client Project/Site: W11A090
Client Project Description: Portland Harbor

For:

City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

Attn: Renee Chauvin



Authorized for release by:
1/25/2011 4:30 PM

Darrell Auvil
Project Manager
darrell.auvil@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all 2003 NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.



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Sample Summary

Client: City of Portland Water Pollution Laboratory
Project/Site: W11A090

TestAmerica Job ID: PUA0289

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PUA0289-01	W11A090-01 (43_6)	Sediment	01/11/11 09:35	01/11/11 16:39

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Qualifier Definition/Glossary

Client: City of Portland Water Pollution Laboratory
Project/Site: W11A090

TestAmerica Job ID: PUA0289
SDG: PUA0289

Glossary

Glossary	Glossary Description
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Detection Summary

Client: City of Portland Water Pollution Laboratory
Project/Site: W11A090

TestAmerica Job ID: PUA0289
SDG: PUA0289

Client Sample ID: W11A090-01 (43_6)Lab Sample ID: PUA0289-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon - Duplicates	15600		100	30.0	mg/Kg	1		9060	total

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Analytical Data

Client: City of Portland Water Pollution Laboratory
Project/Site: W11A090

TestAmerica Job ID: PUA0289
SDG: PUA0289

Method: 9060 - Organic Carbon, Total (TOC)

Client Sample ID: W11A090-01 (43_6)					Lab Sample ID: PUA0289-01				
Date Collected: 01/11/11 09:35					Matrix: Sediment				
Date Received: 01/11/11 16:39									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	15600		100	30.0	mg/Kg		01/18/11 20:29	01/18/11 20:29	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Quality Control Data

Client: City of Portland Water Pollution Laboratory
Project/Site: W11A090

TestAmerica Job ID: PUA0289
SDG: PUA0289

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: 220-47194-6

Matrix: Soil

Analysis Batch: 47194

Client Sample ID: 220-47194-6

Prep Type: total

Prep Batch: 47194_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		100	30.0	mg/Kg		01/18/11 17:08	01/18/11 17:08	1

Lab Sample ID: 220-47194-5

Matrix: Soil

Analysis Batch: 47194

Client Sample ID: 220-47194-5

Prep Type: total

Prep Batch: 47194_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	Limits
Total Organic Carbon - Duplicates	4110	5237		mg/Kg		127	28 - 172

Certification Summary

Client: City of Portland Water Pollution Laboratory
Project/Site: W11A090

TestAmerica Job ID: PUA0289
SDG: PUA0289

Laboratory	Authority	Program	EPA Region	Certification ID	Expiration Date
TestAmerica Portland		USDA		P330-07-XXXXXX	11/13/10
TestAmerica Portland	Alaska	Alaska UST	10	UST-012	12/26/10
TestAmerica Portland	Alaska	State Program	10	OR00040	04/21/11
TestAmerica Portland	California	State Program	9	2597	09/30/11
TestAmerica Portland	Oregon	NELAC	10	OR100021	01/09/11
TestAmerica Portland	Washington	State Program	10	C586	06/23/11
TestAmerica Connecticut		NRC		06-30139-01	02/28/15
TestAmerica Connecticut		USDA		S-70244	02/20/11
TestAmerica Connecticut	Connecticut	State Program	1	PH-0497	12/31/12
TestAmerica Connecticut	Massachusetts	State Program	1	M-CT023	06/30/11
TestAmerica Connecticut	New Jersey	NELAC	2	CT410	06/30/11
TestAmerica Connecticut	New York	NELAC	2	10602	04/01/11
TestAmerica Connecticut	Rhode Island	State Program	1	LAO00226	12/30/11

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W11A090

PVA0289

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle using P.O.# 30001516

RECEIVING LABORATORY:

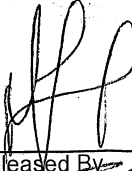
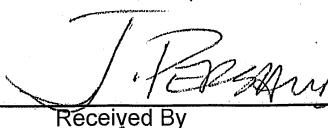
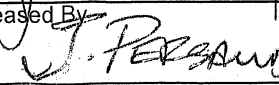
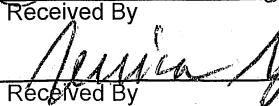
TestAmerica
9405 SW Nimbus Ave
Beaverton, OR 97008
Phone : (503) 906-9200
Fax: (503) 906-9210

WPCL Project Name
Portland Harbor

TURNAROUND REQUEST

☒ Standard
☐ Rush _ day(s)

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W11A090-01	Solid	Sampled: 01/11/11 09:35		
Out-TOC Solid	01/26/11 17:00	01/25/11 09:35		
Containers Supplied: G jar amber 4 oz (C)				

Released By 	Date 1/11/11 @ 1525	Received By 	Date 1/11/11 @ 1525
Released By 	Date 1/11/11 1639	Received By 	Date 1/11/11 1639

4-3

Portland Sample Control Checklist

Work Order #: PVA0289 Date/Time Received: 1/11/11 1639
 Client Name: City of Portland
 Project Name: W11A090
 Time Zone: ☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☒ PDT/PST ☐ AK ☐ OTHER

Unpacking Checks:

Cooler (s): 1
 Temperature (s): 4-3

Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☒ Plastic ☐ Glass)

Raytek ☐ (☐ Plastic ☐ Glass)

Ice used: (circle one) GEL LOOSE BLUE OTHER: _____ Initials: dm

N/A Yes No

- ☒ ☐ ☐ 1. If ESI client, were temp blanks received? If no, document on NOD.
- ☒ ☐ ☐ 2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
- ☒ ☐ ☐ 3. Chain of Custody present? Along with "received by" & "relinquished by" signatures with date & time? If no, document on NOD.
- ☒ ☐ ☐ 4. Bottles received intact? If no, document on NOD.
- ☒ ☐ ☐ 5. Sample is not multiphasic? If no, document on NOD.
- ☐ ☒ ☐ 6. Sampler name/signature documented on COC?
- ☒ ☐ ☐ 7. Proper Container and preservatives used? If no, document on NOD.
- ☒ ☐ ☐ 8. pH of all samples checked and meet requirements? If no, document on NOD.
- ☒ ☐ ☐ 9. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
- ☒ ☐ ☐ 10. HF Dilution required?
- ☒ ☐ ☐ 11. Sufficient volume provided for all analysis and requested MS/MSD? If no, document on NOD and consult PM before proceeding.
- ☒ ☐ ☐ 12. Did chain of custody agree with samples received? If no, document on NOD.
- ☒ ☐ ☐ 13. Were VOA samples received without headspace?
- ☐ ☒ ☐ 14. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 17. Are analyses with short holding times received in hold?
- ☐ ☒ ☐ 18. Were special log- in instructions read and followed?

Checklist Reviewed: _____ Log-in initials: dm Labeler initials: dm