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# Outfall Basin 44A Source Investigation Report

City of Portland Outfall Project ECSI No. 2425

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PREPARED BY



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# **Abbreviations and Acronyms**

APOC Area of Potential Concern BEHP bis(2-ethylhexyl)phthalate

BES Bureau of Environmental Services

City City of Portland

COI contaminants 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 United States Environmental Protection Agency

HYDRA Hydrological Data Retrieval and Alarm

JSCS Joint Source Control Strategy
LWG Lower Willamette Group
MRL method reporting limit
mg/Kg milligram(s) per kilogram

µg/Kg microgram(s) per kilogram

μg/L microgram(s) per liter

NPDES National Pollutant Discharge Elimination System

PA Preliminary Assessment

PAH polycyclic aromatic hydrocarbon

PCB polychlorinated biphenyl PST Pacific Standard Time

QAPP Quality Assurance Project Plan

RI remedial investigation

RM river mile

SAP sampling and analysis plan

SLV screening level value

SOP standard operating procedure

SVOC semivolatile organic compound

TOC total organic carbon
TSS total suspended solids

UIC underground injection control

WPCL Water Pollution and Control Laboratory

## Introduction

This report presents the results of the City of Portland (City) source investigation activities in Outfall Basin 44A. Outfall 44A discharges to the east bank of the Willamette River at river mile (RM) 11.2. 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, 2008a), which requested the City to investigate whether contaminant sources are discharging to the east bank of the river via Outfalls 43, 44, 44A, and 45. The results of this investigation do not indicate the presence of significant current sources of contaminants in Basin 44A, and further City source tracing activities are not needed in this basin.

## 1.1 Objective and Scope

The purpose of the investigation described in this report is to conduct a stormwater pathway screening evaluation of Basin 44A in accordance with the Portland Harbor Joint Source Control Strategy (JSCS) (DEQ/EPA, 2005, as amended 2007) to determine whether Basin 44A is a significant pathway for contaminant discharges from upland sources to the river. The investigation includes stormwater and sediment trap results from basin-level screening to evaluate the potential for sources to be present in the basin (Phase 1), as well as results from inline solids sampling at selected locations to assess a suspected source within the basin (Phase 2). The data are evaluated by comparison to JSCS screening level values and the ranges of concentrations detected in basins throughout Portland Harbor.

## 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 rationale, sequence, and chronology of the sampling and analytical activities conducted for this source investigation.
- Section 4: Stormwater Sampling and Analysis Describes the stormwater sampling location, storm events sampled, analytical program 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 are significant current sources of contaminants in the basin.
- *Section 7: Conclusions* Summarizes the findings from the source investigation.
- Section 8: References

## Background

#### 2.1 River Mile 11E

Inriver data (sediment, surface water, and tissue) collected by the Lower Willamette Group (LWG) indicates the presence of historic and potential current sources of contaminants to the east bank of the river between RM 11 and 11.6. To assist 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, the U.S. Environmental Protection Agency (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 (DEQ, 2008a).

The City compiled background information on City basins discharging to RM 11E 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 44A, three other City outfalls (Outfalls 43, 44, and 45), one Oregon Department of Transportation outfall, and approximately 13 private industrial outfalls also discharge to AOPC 25.

## 2.2 Conveyance System Configuration and Drainage Basin

Outfall 44A was built in 1974 and is a 72-inch combined sewer outfall with 115 acres of separated stormwater drainage area. Figure 1 depicts the current configuration of the Outfall 44A separated storm system and basin boundary. The stormwater conveyance system includes a number of branch lines that drain predominantly smaller properties along and east of N. Interstate Avenue and in the vicinity of N. Russell Avenue. The lower portion (west of Interstate 5) of Basin 44A is approximately 37 acres and is zoned industrial (light industrial and employment district). The upper half of the basin (east of Interstate 5) is primarily residential (zoned institutional and high-density), with some open space and commercial (zoned employment district) land uses.

Diversions of combined flow to Outfall 44A can occur during large stormwater runoff events. Land use in the combined sewer area is primarily single-family residential use, along with a lesser amount of commercial land use concentrated along major arterials such as NE Martin Luther King Jr. Boulevard. By the end of 2011, most of the storm drainage and all combined sewer drainage areas discharging to Outfall 44A will be diverted to the eastside tunnel and combined sewer overflows (CSOs) will no longer occur through this outfall.

### 2.3 Contaminants of Interest

During the development of the SAP for Basin 44A, available RM 11E sediment data were reviewed to identify contaminants of interest (COI) for the basin source investigation (BES,

2008). Elevated levels of PCBs, polycyclic aromatic hydrocarbons (PAHs), and DDT (and its breakdown products) were observed in the area, though 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 44A conveyance system include DEQ Cleanup Program sites, as listed in DEQ's Environmental Cleanup Site Information (ECSI) database, and facilities permitted by DEQ under the National Pollutant Discharge Elimination System (NPDES) industrial stormwater discharge permit program due to stormwater exposures to industrial operations. Two sites in Basin 44A are listed in the ECSI database and one site has been asked to join the DEQ Cleanup program: PacifiCorp's Knott Street Substation (part of the larger PacifiCorp – Albina Riverlots site, ECSI #5117), Tarr, Inc. (ECSI #1139), and Ross Island Sand & Gravel Co., Albina Plant Dock (ECSI # to be assigned). Two of these three sites have NPDES stormwater permits¹ (see Table 1). The locations of the ECSI and NPDES permit sites are shown on Figure 1. Information for these sites is summarized below.

- PacifiCorp (a.k.a. PP&L) Knott Street Substation (part of ECSI #5117): This substation is located in the primarily residential upper portion of Basin 44A. The site entered the DEQ Cleanup Program in December 2008. PacifiCorp submitted a Remedial Investigation (Pre-RI) Assessment work plan in February 2009 (Bridgewater, 2009a) and a final Preliminary Assessment (PA) report for the Knott Street Substation in October 2009 (Bridgewater, 2009b). Based on the information presented in the PA, the substation has been in operation for over 100 years and releases of PCB-containing oil have been documented at this site. In addition, historic operations on this site included a fire station, "wet wash laundry," and carpenter's shop, which could have resulted in releases of other contaminants. Stormwater infiltrates at the majority of the site. Runoff from two portions of the site currently drains to two drywells, which PacifiCorp is in the process of decommissioning (CH2M HILL, 2010). Dry well #1 is located in the western corner of the facility and serves as drainage for the active electrical components within the substation. Dry well #2 is located east of the active electrical component and drains a very small area (approximately 0.01 acres) of the western portion of the substation. Plans are underway to construct a new infiltration basin on site to capture stormwater runoff from the area draining to dry well #1; the area drained by dry well #2 will not be affected by the removal of the dry well (CH2M HILL, 2010). Fate and transport from site overland flows are being addressed as part of the Pre-RI Assessment to determine if further evaluation of the stormwater pathway is needed at this site.
- Tarr Inc. (ECSI #1139): This site is a bulk petroleum storage, packaging and distribution operation and is located in the lower portion of Basin 44A at 2429 N. Borthwick Avenue. According to information for this site on the ECSI database (DEQ, 2008b), extensive petroleum- and solvent-contaminated soil was discovered at this site in 1991 during decommissioning of an underground storage tank. Although some of the subsurface contamination was excavated, a "large volume" of contaminated soil could not be

<sup>&</sup>lt;sup>1</sup> KF Jacobsen & Co. operates on the Ross Island Sand & Gravel site.

removed due to risk to onsite structures, and the contaminated soil that was left in place was not adequately characterized for solvent contamination. In addition, an oil spill reportedly occurred in 1991 on a nearby gravel lot leased by the site operator for storage of empty oil trucks and tanks. The site joined DEQ's Voluntary Cleanup Program in January 2002 and completed a Phase II investigation in December 2002. Onsite and offsite vapors were identified in 2007; vapor treatment systems and additional offsite probes were installed in 2007 and 2008, respectively (DEQ, 2008b). No pathways for site COIs to the river have been identified (DEQ, 2010a). The site currently operates under an NPDES 1200-Z Industrial Stormwater permit and discharges to Basin 44A.

• Ross Island Sand & Gravel Co., Albina Plant Dock (ECSI # to be assigned): DEQ has identified this site as a location where a stormwater source control evaluation is needed (DEQ, 2010a). Site operations include recycled asphalt processing, hot mix asphalt production, and a concrete batch plant. Stormwater discharges from the site are regulated under an NPDES 1200-A Industrial Stormwater permit, issued to facilities with mining, quarrying, asphalt mix batch, or concrete batch operations. With the exception of a small portion of the stormwater conveyance system in the vicinity of the concrete batch plant, stormwater lines at this site discharge to the Basin 44A drainage system downstream of the planned diversion to the eastside tunnel.

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## Source Investigation Approach

The City's investigation activities in Basin 44A were conducted in two phases, as presented in the project-specific SAP and SAP amendment (BES, 2008; BES, 2009a)<sup>2</sup>. This section summarizes the overall approach and timeline of the phased investigation. Detailed descriptions of the sampling activities and analytical approach are provided in Section 4 (stormwater sampling) and Section 5 (stormwater solids sampling).

During Phase 1 of the investigation, the City collected stormwater grab samples and concurrent inline sediment trap samples at a location representative of the majority of the basin, as a screening step to identify future source investigation priorities for the City outfall basins discharging to the RM 11E area. Subsequent stormwater drainage system information obtained from the Ross Island Co. Albina Dock site during permit review and site inspection indicated that approximately 2 acres of site drainage area connects to Basin 44A downstream of the monitoring location utilized during Phase 1.³ The stormwater samples were collected during four storm events between November 2008 and March 2009. The sediment traps were deployed in October 2008 and removed in May 2009.

Phase 2 of the investigation entailed additional stormwater solids sampling in the upper portion of Basin 44A to evaluate whether contaminants are being discharged from the PacifiCorp Knott Street Substation, a suspected source within the basin. In preparation for the Phase 2 work (as described in the SAP amendment), the City reviewed available Phase 1 stormwater data, conducted field inspections, and evaluated conveyance system records to clarify locations of lateral connections from potential sources and areas of possible inline solids deposits in the vicinity of those sources. Based on this evaluation, two catch basins were selected for sampling at the locations described in Section 5. The catch basin solids samples were collected in April 2009.

Sample collection and handling procedures were conducted using the applicable standard operating procedures (SOPs)<sup>4</sup> included in the City's *Amended Programmatic Sampling and Analysis Plan* (Programmatic SAP) 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* (Programmatic QAPP) for the project (BES, 2007b).

 $<sup>^2</sup>$  The SAP was finalized in accordance with DEQ's comments and approval provided in a memorandum dated December 2, 2008 (DEQ, 2008c).

<sup>&</sup>lt;sup>3</sup> No access point to Basin 44A exists at or downstream of this connection.

<sup>&</sup>lt;sup>4</sup> The SOPs are established and maintained by the City's Field Operations section to standardize the data collection methodologies for a wide range of monitoring activities and thereby to maintain comparability and representativeness of the data produced.

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# **Stormwater Sampling and Analysis**

#### 4.1 Field Activities

The City conducted the stormwater sampling activities in accordance with the SAP (BES, 2008). Manhole ABC311 (located in the 72-inch main line) (Figure 1) was chosen as the sampling location in Basin 44A because it is located downstream of all connections to the basin conveyance system that were known at that time.<sup>5</sup> The location represents approximately 113 acres of the 115-acre separated storm system. In accordance with the JSCS, stormwater samples were collected during four storm events, two of which targeted "first-flush" conditions (broadly defined for the purposes of basin-level monitoring as being within the first 3 hours of observed runoff). Photographs of the sampling location and stormwater flow conditions are provided in Appendix A. Field notes taken 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 to determine if forecasted storms should be targeted for sampling. Based on the City's experience with stormwater monitoring in this region, smaller storms or those of shorter duration may not generate runoff at the outfall that would be representative of entire stormwater basins that have large areas or significant pervious components. To the extent practicable, project personnel adhered to sampling only those forecasted storms meeting the target storm criteria to help ensure that stormwater samples would be representative of stormwater runoff from the targeted drainage areas.

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 2 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 hourly rainfall data collected at the Albina rain gage (located at 2920 N. Larrabee Avenue)<sup>6</sup>

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<sup>&</sup>lt;sup>5</sup> The Ross Island Co. Albina Dock site (ECSI number to be assigned) was recently identified as connecting to Basin 44A downstream of the sample location at manhole ABC311.

<sup>&</sup>lt;sup>6</sup> Station #117 in the City's Hydrological Data Retrieval and Alarm (HYDRA) system rain gage network.

are shown on Figure 2. Brief descriptions of the storm events sampled are provided below. As described below, the target JSCS criteria for stormwater sampling were met for all four sampling events.

- November 20, 2008: 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 Time (PST), and the Basin 44A sample was collected at 9:56 a.m. By the time 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 and 8:00 p.m. that evening. The sample from this event is not considered to reflect first-flush conditions.
- December 12, 2008: 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. and the sample was collected at 11:20 a.m. By the time of sampling, 0.11 inches of rainfall had been recorded; a total of 0.44 inches was recorded by the time the event ended at approximately midnight on December 12th. The sample from this event is considered to reflect first-flush conditions.
- February 23, 2009: 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 at 8:00 a.m. on the morning of the 23rd and the sample was collected at approximately 2:55 p.m. By the conclusion of the sampling time, 0.36 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 sample is not considered to reflect first-flush conditions.
- March 23, 2009: 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 and 1:00 p.m. (PST) and peaked in intensity between 3:00 and 4:00 p.m. The sample was collected at 2:14 p.m. PST. Approximately 0.02 inches of rainfall had been recorded at the time of sampling. The rain event ended shortly after 11:00 p.m. on March 23; at that time a total of 0.16 inches of precipitation had been recorded by the Albina rain gage. The sample from this event is 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 sample was 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.

Based on these sampling conditions, the four stormwater samples are considered to meet the Basin 44A sampling objectives.

## 4.3 Analytical Approach

Stormwater samples were analyzed for PCB congeners, organochlorine pesticides, semivolatile organic compounds (SVOCs) (including PAHs and phthalates), total metals, and total

suspended solids (TSS) by the BES Water Pollution and Control Laboratory (WPCL) and subcontracted laboratories in accordance with the SAP.

## 4.4 Summary of Results

PCB congeners, pesticides, SVOCs, and metals were detected in one or more samples at low concentrations. Tables 3 and 4 summarize the laboratory analytical results for the stormwater samples and include the JSCS screening level values (SLVs) for reference. The total PCBs concentrations are displayed on Figure 3 along with solids data collected during Phase 2. The laboratory reports and data review memoranda for the samples were previously submitted to DEQ (BES, 2009b, 2009c, 2009d) and are included for reference in Appendix C. The stormwater data and solids data are evaluated in Section 6.

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## Stormwater Solids Sampling and Analysis

The City collected solids samples during the Phase 1 and Phase 2 source investigations. During Phase 1, sediment traps were deployed at the stormwater sampling location to collect a concurrent integrated solids sample for basin-level source screening. During Phase 2 sampling, two additional inline solids samples were collected from catch basins farther upstream in the conveyance system, adjacent to a suspected source to the basin. 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). Two sets of sediment traps were installed immediately downstream of Manhole ABC311 (see Figure 1) in the 72-inch main line on October 17, 2008. The sediment traps were inspected periodically, and accumulated sediments were removed on May 27, 2009. Approximately 1.0 to 1.5 inches of solids had accumulated in each of the four 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 the bottle contents at the City's WPCL and composited the samples to generate final solids samples for laboratory analysis. 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.

The volume of sample collected from the sediment traps was sufficient to conduct all laboratory analyses specified in the SAP on the primary sample, except for the full SVOC scan, and selected analyses on a duplicate sample.

### 5.1.2 Catch Basin Solids Sampling (Phase 2)

The City collected catch basin solids in Basin 44A on April 8, 2009, in accordance with the SAP (BES, 2008) and SAP amendment (BES, 2009a) at the following two locations (see Figure 1):

- Catch basin ADZ315 located on the north side of NE Russell Street adjacent to the driveway at the PacifiCorp Knott Street Substation.
- Catch basin APL263 located at the northwestern corner of the intersection between NE Rodney Avenue and NE Russell Street, adjacent to the southeast corner of the PacifiCorp Knott Street Substation.

The samples were homogenized and sieved at the WPCL using a #10 sieve; the sieved portions of the samples were submitted for analysis. This approach was developed to minimize potential dilution effects of road-deicing aggregate material applied to the rights-of-way in December 2008 (BES, 2009c).

## 5.2 Analytical Approach

In accordance with the SAP and SAP amendment, the solids samples were analyzed by the WPCL or subcontracted laboratories for PCB Aroclors, metals, SVOCs, total organic carbon (TOC), total solids, and grain size. In addition, the sediment trap samples were analyzed for pesticides and PCB congeners. Because of sample size limitations, the sediment trap samples were analyzed for PAHs and phthalates but not the full SVOC scan.

## 5.3 Summary of Results

PCBs, SVOCs, and metals were detected in one or more samples at low concentrations. Tables 5 and 6 summarize the laboratory analytical results for the solids samples and include the JSCS SLVs for reference. The total PCBs concentrations are displayed on Figure 3 along with stormwater data collected during Phase 1. The laboratory reports and data review memoranda for the solids samples were previously submitted to DEQ (BES, 2009e, 2009f) and are included for reference in Appendix C. Solids data are evaluated in Section 6 along with stormwater data collected during Phase 1.

## **Data Evaluation**

The objective of the Basin 44A investigation was to evaluate the potential presence of significant sources to the basin. Because the JSCS SLVs 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 and concentrations present in undeveloped natural areas and are below some NPDES benchmarks (e.g., NPDES 1200-Z permit benchmarks for metals are one to two orders-of-magnitude higher than the surface water SLVs). To assess if the data indicate sources to stormwater, the City evaluated the Basin 44A data set against 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 Basin-Level Screening

#### 6.1.1 Stormwater Data

Stormwater data for all analytes for which one or more stormwater sample concentrations exceeded the applicable JSCS SLVs (see Tables 3 and 4) were further evaluated to assess the potential need for further source tracing. This assessment was conducted on the geometric mean <sup>7</sup> of the concentrations to account for the inherent variability in stormwater data. The geometric mean concentrations first were compared to the applicable JSCS SLVs, and 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 concentration is greater than the SLV were compared to the following additional screening factors, as applicable: the DEQ default background concentrations (DEQ, 2002), the harborwide source tracing categories developed as part of the *Stormwater Evaluation Report* (BES, 2010), and NPDES 1200-Z permit benchmarks. The results of this screening are presented in Table 7.

The development of the harborwide source tracing categories in the *Stormwater Evaluation Report* (BES, 2010) 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 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. Rather than

<sup>&</sup>lt;sup>7</sup> 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, 2005), 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).

regenerate the statistical analyses for the purpose of evaluating the Basin 44A data, a simplified approach was used to generate conservative geomean concentrations for comparison purposes.<sup>8</sup> As indicated in Table 7 and summarized below, the stormwater data do not indicate potentially significant sources to the basin:

- *Total PCBs*: The basin geometric mean concentration is low relative to the range of harborwide values [i.e., falls into the lowest source tracing category defined in the *Stormwater Evaluation Report* (BES, 2010)].
- Metals: The basin geometric mean concentrations of arsenic, cadmium, copper, lead and
  zinc exceed the applicable JSCS SLVs. However, the arsenic, cadmium, and lead
  geometric mean concentrations are less than DEQ estimated background concentrations,
  and the copper geometric mean concentration falls in the lowest harborwide source
  tracing category. The zinc geometric mean concentration is just outside the lowest
  harborwide source tracing category and well below the DEQ NPDES permit benchmark.
- *PAHs*: The basin geometric mean concentrations for the individual PAHs listed are all less than the applicable SLV and are low relative to the range of harborwide values.
- For those analytes listed in Table 7 for which the basin geomean concentration exceeds the applicable SLV and for which no source tracing category is available (i.e., pesticides and pentachlorophenol), 9 further evaluation of the data indicates overall concentrations for the basin are low because the geometric mean only slightly exceeds the JSCS SLV, detections were few, and/or the data are qualified.

In addition, DEQ has compiled and graphed concentrations for selected contaminants detected in stormwater (and solids) from a larger number of industrial sites throughout the Portland Harbor and has provided the graphs in its *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (DEQ, 2010b) to assist with data evaluation. Comparison of the Basin 44A geometric mean concentrations that exceeded the JSCS SLVs to DEQ's guidance graphs for stormwater analytes (where available) indicates concentrations in Basin 44A are low in all cases.

### 6.1.2 Sediment Trap Data

Consistent with the stormwater data, analyte concentrations in the sediment trap samples are generally low and not indicative of significant sources in the basin. Although certain constituents were detected in the sediment trap samples at concentrations exceeding the JSCS

<sup>&</sup>lt;sup>8</sup> Geometric mean values were calculated using the following conventions: (1) averaging the concentrations (for each analyte) for the 12/12/2008 primary and duplicate samples to calculate a single concentration (for each analyte) for the 12/12/2008 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).

<sup>&</sup>lt;sup>9</sup> Based on a lack of sufficient harborwide data to conduct a robust statistical analysis (BES, 2010), source tracing categories were not developed for all analytes.

Toxicity SLVs, most average concentrations<sup>10</sup> were within an order-of-magnitude of the SLVs and most of the exceedances were slight (less than 2 times the SLV) (see Table 5).

The average concentrations of one PAH (naphthalene) and bis(2-ethylhexyl)phthalate (BEHP) exceed the Toxicity SLVs by more than a factor of 10 in the sediment trap samples. However, total PAHs and BEHP concentrations in the sediment trap samples are low relative to the range of concentrations detected in stormwater solids included in DEQ's Guidance for Evaluating the Stormwater Pathway at Upland Sites (DEQ, 2010b).

The highest total PCB congeners concentration detected in the parent sediment trap sample (169  $\mu g/Kg$ ) is approximately 4 times higher than the total PCB congeners concentration in the duplicate sample (40.6  $\mu g/Kg$ ) from the same location (note: both results are considered estimated because the relative percent difference of 123% is outside of acceptable control limits). The average concentration is considered low relative to the range of total PCBs concentrations detected at industrial sites discharging to the Portland Harbor (DEQ, 2010b). Additionally, the PCB Aroclor concentrations in both the parent and duplicate samples are low (31 and 15  $\mu g/Kg$ , respectively).

## 6.2 Source Tracing (Upper Basin Solids Data)

Results for solids samples from the two catch basins adjacent to the PacifiCorp Knott Street Substation do not indicate this site is a current contaminant source to the Basin 44A conveyance system. Although the total PCB Aroclor concentrations in the catch basin solids samples are slightly higher than the PCB Aroclor concentrations detected in the downstream sediment traps, the detections are not considered significant. Few constituents exceeded the JSCS Toxicity SLVs in either sample and, with the exception of BEHP, most of the exceedances were slight or within one order-of-magnitude of the SLV. For those analytes for which DEQ has compiled data for comparison (DEQ, 2010b), including BEHP, all analyte concentrations in the two catch basin solids samples from adjacent to the PacifiCorp Knott Street Substation are low relative to the range of concentrations detected in stormwater solids from Portland Harbor industrial sites. These results support the findings from the basin-scale screening of stormwater and solids that indicated no significant sources in the basin.

## 6.3 Evaluation of Potential Upland Sources

Two of the three potential upland sources identified in the basin — the PacifiCorp Knott Street Substation and Tarr, Inc. — connect upstream of the basin sampling location and the basin-level screening results do not indicate that significant contaminant sources are discharging to Basin 44A. Stormwater discharges from the Tarr site may be contributing to the zinc concentrations detected in City sediment trap and stormwater samples. Zinc permit benchmark exceedances have occurred at the site, though the majority of site stormwater samples detected zinc at concentrations between the SLV and the benchmark (36-600  $\mu$ g/L). In addition, results for the two catch basin samples collected in the upper basin for source tracing purposes confirm that the PacifiCorp substation does not appear to be a significant contaminant source via overland flows to these catch basins.

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<sup>&</sup>lt;sup>10</sup> Parent and duplicate sample average concentrations were calculated following guidelines used by the LWG for data reporting (Kennedy/Jenks, 2004).

Contributions to the Basin 44A conveyance system from the Ross Island Co. Albina Dock site are not reflected in the basin data set because the discharge point is downstream of manhole ABC311. The point of connection is also downstream of the planned diversion point for the Basin 44A flow to the eastside CSO tunnel. Recognizing that the site will continue to discharge to the river via Outfall 44A once the eastside tunnel has been completed, DEQ has requested the facility owners to evaluate the site's stormwater pathway.

#### **SECTION 7**

## **Conclusions**

Results of this source investigation do not indicate that significant current sources of PCBs or other contaminants of interest are discharging to the Basin 44A conveyance system. Specific 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 44A conveyance system.
- PCBs concentrations in stormwater and inline solids from this basin are low relative to concentrations for basins and industrial sites discharging to Portland Harbor.
- The overall stormwater and solids data set indicate concentrations of all other detected contaminants are generally low. Most individual sample concentrations were less than JSCS SLVs and, for those concentrations greater than the SLVs, the factors of exceedance are low.
- Stormwater data were compared to data harborwide in a manner similar to that utilized in the City *Stormwater Evaluation Report* (BES, 2010). Concentrations of all analytes in stormwater 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, 2010b), and other screening factors.
- For those analytes for which DEQ has compiled data for comparison (DEQ, 2010b), analyte concentrations in the sediment trap and catch basin solids are low relative to the range of concentrations detected in stormwater solids from Portland Harbor industrial sites.
- Contaminant concentrations in stormwater do not indicate potential future violations of City wastewater discharge limits and prohibitions.

With the scheduled completion of the eastside CSO tunnel in 2011, all stormwater collected in Basin 44A upgradient of the connection from the Ross Island Co. Albina Dock site will be captured by the tunnel and diverted to the municipal wastewater treatment facility. As the Ross Island Co. Albina Dock site will be the only drainage area discharging to Outfall 44A post-diversion, the City will evaluate site data collected as part of the DEQ-requested stormwater pathway evaluation to determine whether site source control implementation may be needed under DEQ or City authorities.

Based on these findings, the City concludes that no further source tracing efforts in Basin 44A are needed. The source investigation results presented in this report and plans for conveyance system diversion will support future DEQ decisions for this basin. The City anticipates requesting a DEQ decision following the development of a summary report that will refer to this investigation and cover the City outfall basins discharging to AOPC 25.

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## References

- BES. 2007a. Amended Programmatic Sampling and Analysis Plan, City of Portland Outfalls Remedial Investigation/Source Control Measures Project. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2007b. Amended Programmatic Quality Assurance Project Plan, City of Portland Outfalls Project, Revision to Programmatic Source Control Remedial Investigation Work Plan Appendix D. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2008. Albina Riverlots: City Basin Information and Source Investigation Approach. Technical Memorandum, to K. Tarnow (DEQ) from D. Sanders and L. Scheffler (BES). [Attachment A: City Source Investigations for Basins 43, 44, and 44A, Fall 2008 / Winter 2009 Sampling and Analysis Plan.] December 18, 2008.
- BES. 2009a. Subject: City of Portland Outfalls Project, Source Investigations for Basins 43, 44, and 44A, Amendment to Fall 2008 / Winter 2009 Sampling and Analysis Plan. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). February 5, 2009.
- BES. 2009b. Subject: City of Portland Source Investigations, Basins 43, 44, 44A, Quarterly Report Fourth Quarter 2008. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). January 14, 2009.
- BES. 2009c. Subject: City of Portland Source Investigations, Basins 43, 44, 44A, Quarterly Report First Quarter 2009. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). April 15, 2009.
- BES. 2009d. Subject: City of Portland Source Investigations, Basins 43, 44, 44A, Quarterly Report Second Quarter 2009. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). July 15, 2009.
- BES. 2009e. Subject: Analytical Data from Albina Riverlots Phase 2 Inline Solids Investigation. Transmittal to K. Tarnow (DEQ) from L. Scheffler (BES). June 10, 2009.
- BES. 2009f. Subject: City of Portland Source Investigations, Basins 43, 44, 44A, Quarterly Report Third Quarter 2009. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). October 16, 2009.
- BES. 2010. Stormwater Evaluation Report, City of Portland Outfall Project, ECSI No. 2425. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. February 2010.

- Bridgewater. 2009a. Pre-RI Assessment Work Plan for the PacifiCorp Knott Substation. Prepared for PacifiCorp Environmental Remediation Company. Prepared by Bridgewater Group, Inc. February 2009.
- Bridgewater. 2009b. Preliminary Assessment Report for the PacifiCorp Knott Substation. Prepared for PacifiCorp Environmental Remediation Company. Prepared by Bridgewater Group, Inc. October 2009.
- CH2M HILL. 2010. Knott Street Substation Dry Well Closure Plan. Technical Memorandum, prepared for PacifiCorp. May 3, 2010.
- DEQ. 2002. Default background concentrations for metals. Internal DEQ memorandum, to DEQ Cleanup Project Managers, from: Toxicology Workgroup. Dated October 28, 2002.
- DEQ. 2005. Fact Sheet and Class V Underground Injection Control (UIC) WPCF Permit Evaluation. Permit Number 102830. Permit File Number 111885. Permit issued to City of Portland on June 1, 2005.
- DEQ. 2006. NPDES General Permit Nos. 1200-Z and 1200-COLS. DEQ Memorandum from Annette Liebe to Permit Registrants and Water Quality Staff. Dated October 24, 2006. Available at: http://www.deq.state.or.us/wq/wqpermit/docs/general/npdes1200z/permit2012.pdf
- DEQ. 2008a. Re: City Outfall Investigations for Outfalls 43, 44, 44A, and 45. Letter to R. Applegate (BES) from K. Johnson (DEQ). August 13, 2008.
- DEQ, 2008b. DEQ Site Summary Full Report Details for ECSI Site ID 1139, Tarr Inc. DEQ Environmental Cleanup Site Information Database (ECSI), updated 2008; accessed June 9, 2010. http://www.deq.state.or.us/lq/ECSI/ecsidetailfull.asp?seqnbr=1139
- DEQ, 2008c. Re: Albina Riverlots: City Basin Information and Source Investigation Approach Technical Memorandum. Letter to Dawn Sanders and Linda Scheffler (BES) from Karen Tarnow (DEQ). December 2, 2008.
- DEQ. 2009a. Initial Evaluation of Historical Benchmark Data. Industrial Stormwater Advisory Committee Meeting 5: November 17, 2009. Jenine Camilleri and Paula Calvert, DEQ Stormwater Coordinators. Available at: http://www.deq.state.or.us/wq/stormwater/docs/Advisory/ISAChistdataEval.pdf
- DEQ. 2009b. Industrial stormwater permit requirements (e.g., 1200Z) 4th year of permit coverage conduct geometric mean benchmark evaluation to determine if individual permit required. *In* DEQ, 2009. What is Ahead for Oregon Stormwater Programs. Annette Liebe, DEQ. ACWA Stormwater Summit April 2009. Available at http://www.oracwa.org/files/news/478/ACWA-SW-Summit-April-2009---Liebe.pdf?PHPSESSID=c82812950f908127d5a7440b1710f3d7

- DEQ. 2009c. Overview of Monitoring Approaches. Industrial Stormwater Advisory Committee - Meeting 3: September 15, 2009. Jenine Camilleri and Paula Calvert, DEQ Stormwater Coordinators. Available from: http://www.deq.state.or.us/WQ/stormwater/docs/Advisory/MonitoringOverviewISAC2 0090915.pdf
- DEQ. 2010a. Update on Stormwater Source Control at the Portland Harbor Superfund Site. Prepared by the Oregon Department of Environmental Quality. September 2010.
- DEQ. 2010b. "Tool for Evaluating Stormwater Data" Appendix E to *Guidance for Evaluating the Stormwater Pathway at Upland Sites*. January 2009 (updated October 2010).
- DEQ and EPA. 2005 (amended 2007). Portland Harbor Joint Source Control Strategy. Prepared by the Oregon Department of Environmental Quality and the U.S. Environmental Protection Agency. December 2005 (Table 3-1 updated July 2007). Available online at <a href="http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/jointsource.htm">http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/jointsource.htm</a>.
- EPA. 2009. Portland Harbor Superfund Site; Administrative Order of Consent for Remedial Investigation and Feasibility Study; Docket No. CERCLA-10-2001-0240 Areas of Potential Concern. Letter from Chip Humphrey and Eric Blischke (EPA) to Robert Wyatt (Northwest Natural and Lower Willamette Group). June 23, 2009.
- Kennedy/Jenks. 2004. Portland Harbor RI/FS, Guidelines for Data Reporting, Data Averaging, and Treatment of Non-Detected Values for the Round 1 Database. June 10, 2004.
- LWG (Lower Willamette Group). 2007. Portland Harbor RI/FS, Compilation of Information for Sources between River Miles 11 and 11.6, East Bank of Portland Harbor. November 2007.

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Table 1: Current<sup>(1)</sup> and Historic NPDES Permits in Basin 44A

Address	Company	Permit Type and Time Period			Available Stormwater	Notes		
		Туре	Issue Date	Expiration Date <sup>(2)</sup>	Data Period			
	Priestly Oil & 120 Chemical Co.		10/30/1992	9/30/1996		1200-T to Priestly Oil & Chemical 10/30/92		
		1200-T	4/18/1995	9/30/1996	4/1995-2/2010	Name Changed to Tarr Acquisition, LLC 4/24/1995 Smal Mid-sized bulk petroleum tank farm for storage, packagir distribution of oils, lubes, solvents, & fuels. Has diesel fu		
2429 N. Borthwick	Tarr Acquisitions, LLC	1200-Z	8/18/1998	6/30/2002				
		1200-Z	10/10/2002	6/30/2007		gasoline cardlock station on site. DEQ File #100571		
		1200-Z	9/25/2007	6/30/2012				
	Lone Star Northwest	100-J	12/20/1990	12/31/1995		Site has Air Discharge Permit #26-1995 & dock dredge permit. Had 931 N River as address.		
1050 N. River	Glacier Northwest, Inc.	100-J	10/22/1996	7/31/2001	N/A	Name changed to Glacier NW ~2000. DEQ-not part of ISW Program 2001. Fueling onsite. DEQ File # 44571/C, see DEQ for data.		
	KF Jacobsen & Co IncPlant	1000	12/13/1997	6/30/2002		Site in use since 1927, receives aggregates by barge.		
		1200-A	4/20/2001	6/30/2007	N/A	Since 1990 taking in recycled asphalt (RAP) by truck. Shares site w/Ross Island Sand & Gravel. Grinding of RAP		
1208 N. River		1200-A	4/20/2001	6/30/2002		done onsite for use with paving mixes.		
		1200-A	unknown	6/30/2007		DEQ file # 105307		
		1200-A	11/20/2007	6/30/2012				

#### Notes:

ISW - City of Portland Industrial Stormwater Program.

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<sup>(1)</sup> Current permits are indicated in bold.

<sup>(2)</sup> Expiration date as shown on general permit. DEQ typically gives adminsitrative permit extension date until a new general permit can be issued.

Table 2 **Basin 44A Stormwater Sampling Event Summary** 

Storm Date and Time	Sample Type	Antecedent Dry Period (days) <sup>(1)</sup>	Minimum Forecasted Rainfall Total (Inches) <sup>(2)</sup>	First Flush Event? <sup>(3)</sup>
11/20/08 09:56 (PST)	Grab	6	0.29	No
12/12/08 11:20 (PST)	Grab	3	0.52	Yes
02/23/09 14:55 (PST)	Grab	7	0.37	No
03/23/09 15:14 (PDT)	Grab	5	0.21	Yes

#### Notes:

PST = Pacific Standard Time

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PDT = Pacific Daylight Time

(1) Days receiving less than 0.10 inches over 24 hours as recorded at the Albina Rain Gage, 2920 N. Larrabee Avenue. (2) Provided by Extended Range Forecasting, Inc.

Table 3 Basin 44A Stormwater Results

		Manhole ABC311 Downstream in 72" Line				JSCS Stormwater SLVs <sup>(1)</sup>			
		Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health	Human Health	
lass Analyte	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009	Fish Consumption <sup>(2)</sup>	Ingestion <sup>(3)</sup>	Ecological <sup>(4)</sup>
eld Measurements							1 ion consumption	ingestion	Ecological
Conductivity	μmhos/cm	43	38	NA	37	97			
pH	units	7	6.2	NA	7.3	7.5			
Temperature	Deg. C	10.7	7.2	NA	9.1	10.0			
otal Suspended Solids (SM 2540D)									
TSS	mg/L	13	118	105	209	140			
otal Metals (EPA 200.8)	Ť								
Arsenic	μg/L	0.47	0.85	0.91	1.36	1.19	0.14	0.045	150
Cadmium	μg/L μg/L	0.21	0.54	0.52	0.54	0.61	0.14	5	0.094
Chromium	μg/L μg/L	0.98	5.13	5.21	8.68	6.96		100	0.094
Copper	μg/L μg/L	9.89	29.2	29	31.7	44.8		1300	2.7
Lead	μg/L μg/L	3.05	12.5	12.9	30	11.6		15	0.54
Mercury <sup>(5)</sup>	μg/L	0.0089	0.025	0.018	0.023	0.019	0.146	2	0.77
Nickel	μg/L μg/L	1.37	3.53	3.44	6.05	11.80	4600	730	16
Silver	μg/L μg/L	0.10 U	0.10 U	0.10 U	0.05 0.10 U	0.67	4000	100	0.12
Zinc	μg/L μg/L	98.4	190	183	205	365	26000	5000	36
Zinc	нь п	70.4	170	103	203	303	20000	3000	30
sticides (EPA 8081A)									
4,4'-DDE	μg/L	NA	0.00053 U	0.000555 U	0.0050 Ui	0.0025 J	0.00031	0.28	0.011
4,4'-DDD	μg/L	NA	0.0030 U	0.00076 U	0.016	0.0012 J	0.00022	0.2	
4,4'-DDT	μg/L	NA	0.0011 U	0.0025 U	0.011 U	0.0025 U	0.00022	0.2	0.001
Estimated Total DDx <sup>(6)</sup>	μg/L	NA	ND	ND	0.016	0.0037 J		0.2	
Aldrin	μg/L	NA	0.0053	0.0053	0.0050 U	0.0025 U	0.00005	0.004	
alpha-BHC (α-BHC)	μg/L	NA	0.00053 U	0.00058 U	0.0050 U	0.0025 U	0.0049	0.011	2.2
beta-BHC (β-BHC)	μg/L	NA	0.0017 U	0.0018 U	0.0056 U	0.0025 U	0.017	0.037	
delta-BHC (δ-BHC)	μg/L	NA	0.0025 U	0.0031 U	0.0050 U	0.0025 U			
gamma-BHC (γ-BHC, Lindane)	μg/L	NA	0.00053 U	0.00052 U	0.058 U	0.0025 U	1.8	0.052	0.08
alpha-Chlordane (7)	μg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.038 U			
beta-Chlordane <sup>(7)</sup>	μg/L	NA	0.00063 U	0.00052 U	0.0050 U	0.0025 U			
Total Chlordane (8)	μg/L	NA	ND	ND	ND	ND	0.00081	0.19	0.0043
Dieldrin	μg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	0.000054	0.0042	0.056
Endosulfan I	μg/L	NA NA	0.00053 U	0.00052 U	0.013	0.0025 U	89	220	0.051
Endosulfan II	μg/L	NA NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	89	220	0.051
Endosulfan Sulfate	μg/L	NA.	0.0011 U	0.0011 U	0.0050 U	0.0019 J	89		
Endrin Endrin Aldehyde	μg/L	NA NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	0.06	2	0.036
Endrin Aldenyde Endrin Ketone	μg/L	NA NA	0.00053 U	0.00052 U	0.0032 J	0.0025 U	0.3		
Heptachlor	μg/L μg/L	NA NA	0.00084 U 0.0020 U	0.00052 U 0.0016 U	0.0064 0.0050 U	0.0025 U 0.0025 U	0.000079	0.015	0.0038
Heptachlor Epoxide	μg/L μg/L	NA NA	0.0020 U 0.0017	0.0016 U 0.00050 U	0.0050 U	0.0025 U 0.0025 U	0.000079	0.015	0.0038
Methoxychlor	μg/L μg/L	NA NA	0.0017 0.00053 U	0.00050 U	0.0050 U	0.0025 U	0.000039	40	0.0038
Toxaphene	μg/L μg/L	NA NA	0.00033 U 0.073 U	0.00052 U 0.087 U	0.0030 U	0.0023 U	0.00028	0.061	0.002
			0.013 0	0.007 0	V.23 U	0.15 0	0.00020	0.001	0.0002
ychlorinated Biphenyl Congeners (PCB Total PCBs (9)(10)	s) (ΕΡΑ 1668Α μg/L	0.00171	0.0194	0.0281	0.0340	ND	0.000064	0.034	0.014
10411 CB3	PB	0.001/1	5.0174	0.0201	0.0540	ND	0.00001	0.054	0.01-7

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Table 3 Basin 44A Stormwater Results

			Manhole ABC311					JSCS Stormwater SLVs <sup>(1)</sup>			
			Downstream in 72" Line								
			Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health	Human Health		
Class	Analyte	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009	Fish Consumption <sup>(2)</sup>	Ingestion <sup>(3)</sup>	Ecological <sup>(4)</sup>	
Polycy	clic aromatic hydrocarbons (PAHs) (I	EPA 8270-SI	M)					•			
	Acenaphthene	μg/L	0.0194 U	0.0194 U	0.0194 U	0.0777 U	0.0194 U	990	0.2	520	
	Acenaphthylene	μg/L	0.0380	0.0312	0.0287	0.0777 U	0.0194 U		0.2		
	Anthracene	μg/L	0.0194 U	0.0194 U	0.112	0.0777 U	0.0194 U	40000	0.2	0.73	
	Benzo(a)anthracene	μg/L	0.00971 U	0.0312	0.0231	0.0553	0.00971 U	0.018	0.092	0.027	
	Benzo(a)pyrene	μg/L	0.00971 U	0.0383	0.0263	0.0556	0.00971 U	0.018	0.0092	0.014	
	Benzo(b)fluoranthene	μg/L	0.00971 U	0.0516	0.0362	0.079	0.00971 U	0.018	0.092		
	Benzo(g,h,i)perylene	μg/L	0.0194 U	0.0704	0.0527	0.0878	0.00971 U		0.2		
	Benzo(k)fluoranthene	μg/L	0.00971 U	0.0372	0.0271	0.0572	0.00971 U	0.018	0.2		
	Chrysene	μg/L	0.016	0.0906	0.0468	0.158	0.0288	0.018	0.2		
	Dibenzo(a,h)anthracene	μg/L	0.0097 U	0.0104	0.00971 U	0.0388 U	0.00971 U	0.018	0.0092		
	Fluoranthene	μg/L	0.0334	0.192	0.144	0.233	0.0536	140	0.2		
	Fluorene	μg/L	0.0194 U	0.0194	0.0365	0.0777 U	0.0194 U	5300	0.2	3.9	
	Indeno(1,2,3-cd)pyrene	μg/L	0.00971 U	0.0326	0.0216	0.0458	0.00971 U	0.018	0.092		
	Naphthalene	μg/L	0.0648	0.781	0.551	0.358	0.0488	-	0.2	620	
	Phenanthrene	μg/L	0.0342	0.139	0.163	0.169	0.0533		0.2		
	Pyrene	μg/L	0.0349	0.0962	0.0523	0.16	0.0843	4000	0.2		
	Total PAHs <sup>(10)</sup>	μg/L	0.2213	1.6211	1.3213	1.4587	0.2688				
Polycy	clic aromatic hydrocarbons (PAHs) (E	EPA 8270C)									
	Acenaphthene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	990	0.2	520	
	Acenaphthylene	μg/L	0.220 U	1.1 U	1.1 U	2.1 U	0.2 U		0.2		
	Anthracene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	40000	0.2	0.73	
	Benzo(a)anthracene	μg/L	0.22 U	1.1 U	0.057 J	2.1 U	0.2 U	0.018	0.092	0.027	
	Benzo(a)pyrene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.0092	0.014	
	Benzo(b)fluoranthene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.092		
	Benzo(g,h,i)perylene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U		0.2		
	Benzo(k)fluoranthene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.2		
	Chrysene	μg/L	0.22 U	1.1 U	0.15 J	2.1 U	0.2 U	0.018	0.2		
	Dibenzo(a,h)anthracene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.0092		
	Fluoranthene	μg/L	0.220 U	0.22 J	0.2 J	<b>0.44</b> J	0.2 U	140	0.2		
	Fluorene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	5300	0.2	3.9	
	Indeno(1,2,3-cd)pyrene	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.092		
	Naphthalene	μg/L	0.08 J	0.54 J	<b>0.93</b> J	0.93 J	0.2 U	-	0.2	620	
	Phenanthrene	μg/L	0.033 J	0.19 J	<b>0.24</b> J	0.26 J	0.2 U		0.2		
	Pyrene (10)	μg/L	0.04 J	0.28 J	0.24	0.57 J	0.2 U	4000	0.2		
	Total PAHs <sup>(10)</sup>	μg/L	0.15 J	1.23 J	1.817 J	2.2 J	ND				
Phthala	ates (EPA 8270-SIM)										
	Bis(2-ethylhexyl)phthalate	μg/L	1.05	2.24	2.13	4.38	1.34	2.2	4.8	3	
	Butylbenzylphthalate	μg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	1900	7300	3	
	Di-n-butylphthalate	μg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	4500	3700	3	
	Di-n-octylphthalate	μg/L	0.97 U	0.579	0.971 U	1.94 U	0.971 U		1500	3	
	Diethylphthalate	μg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	44000	29000	3	
	Dimethylphthalate	μg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	1100000	370000	3	
Phthala	ates (EPA 8270C)										
	(BEHP)	μg/L	0.66 J	<b>3.6</b> J	3.9	<b>5.8</b> J	1.1	2.2	4.8	3	
	Butyl Benzyl Phthalate	μg/L	0.27	1.1 U	0.43	2.1 U	0.2 U	1900	7300	3	
	Di-n-butyl phthalate	μg/L	0.24	0.31 J	0.32 J	2.1 U	0.2 U	4500	3700	3	
	Di-n-octyl phthalate	μg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U		1500	3	
	Diethyl phthalate	μg/L	0.18 J	1.1 U	1.1 U	2.1 U	0.23	44000	29000	3	
	Dimethyl phthalate	μg/L	0.19 J	1.1 U	1.1 U	2.1 U	0.097 J	1100000	370000	3	

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Table 3 Basin 44A Stormwater Results

Manhole ABC311 JSCS Stormwater SLVs<sup>(1)</sup> Downstream in 72" Line Event 2 Event 1 Event 2 Event 3 Event 4 Duplicate FO081412 FO081480 FO095221 FO095376 FO081482 Human Health Human Health Class Analyte Units 11/20/2008 12/12/2008 12/12/2008 2/23/2009 3/23/2009 Fish Consumption(2) Ingestion(3) Ecological(4) SVOCs (EPA 8270C) 1,2,4-Trichlorobenzene μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 70 8.2 110 1,2-Dichlorobenzene 0.22 U 1.1 U 0.21 U 2.1 U 0.2 U 1300 49 763 μg/L 1,3-Dichlorobenzene 0.22 U 1.1 U 0.21 U 2.1 U 0.2 U 960 14 763 μg/L 1,4-Dichlorobenzene 0.22 U 1.1 U 0.21 U 2.1 U 0.2 U 190 2.8 763 μg/L 2,4,5-Trichlorophenol  $\mu g/L$ 0.53 U 2.6 U 2.6 U 5.1 U 0.5 U 3600 3700 2,4,6-Trichlorophenol  $\mu g/L$ 0.53 U 2.6 U 2.6 U 5.1 U 0.5 U 2.4 6.1 970 2,4-Dichlorophenol  $\mu g/L$ 0.53 U 2.6 U 2.6 U 5.1 U 0.5 U 290 110 365 2,4-Dimethylphenol 730  $\mu g/L$ 4.3 U 21 U 21 U 41 U 4 U 850 --2.4-Dinitrophenol 73 μg/L 4.3 U 21 U 21 U 41 U 4 U 5300 150 2.4-Dinitrotoluene μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 3.4 73 --2.6-Dinitrotoluene μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 37 --2-Chloronaphthalene μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 1600 490 2.6 U 2-Chlorophenol 0.53 U 0.52 U 5.1 U 0.5 U 150 30 2000 μg/L 2-Methylnaphthalene 0.22 U 0.2 2.1 1.1 U 1.1 U 2.1 U 0.2 U  $\mu g/L$ 0.47 J 2-Methylphenol μg/L 0.25 J 2.6 U 5.1 U 0.5 U 180 13 2-Nitroaniline 0.22 U μg/L 1.1 U 1.1 U 2.1 U 0.2 U 110 2-Nitrophenol 0.10 J 2.6 U 2.6 U 5.1 U 0.5 U 1100 150 μg/L 3,3'-Dichlorobenzidine 2.1 U μg/L 2.2 U 11 U 21 U 2 U 0.028 0.15 763 3-Nitroaniline μg/L 1.1 U 5.1 U 5.2 U 11 U 1 U 3.2 4,6-Dinitro-2-methylphenol  $\mu g/L$ 2.2 U 11 U 11 U 21 U 2 U 280 μg/L 4-Bromophenylphenyl ether 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 4-Chloro-3-methylphenol 0.53 U 2.6 U 2.6 U 5.1 U 0.5 U μg/L 4-Chloroaniline 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U μg/L 4-Chlorophenyl phenyl ether 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 0.06 μg/L 4-Methylphenol μg/L 0.65 0.7 J 0.69 5.1 U 0.5 U 180 4-Nitroaniline 5.2 U 11 U μg/L 1.1 U 5.1 U 1 U 3.2 μg/L 4-Nitrophenol 2.2 U 11 U 21 U 2 U 150 11 U 290 51 U 150000 Benzoic acid 1.7 J 6.1 J 5.9 J 2.7 J 42  $\mu g/L$ Benzyl alcohol  $\mu g/L$ 3.20 0.8 J 0.97 5.1 U 0.5 U 11000 8.6 Bis(2-chloroethoxy) methane μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U Bis(2-chloroethyl) ether μg/L 0.22 U 1.1 U 0.21 U 2.1 U 0.2 U 0.53 0.06 Bis(2-chloroisopropyl) ether μg/L 0.22 U 1.1 U 0.21 U 2.1 U 0.2 U 0.95 Dibenzofuran μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 12 3.7 Hexachlorobenzene  $\mu g/L$ 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 0.00029 0.042 100 Hexachlorobutadiene μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 18 0.86 9.3 Hexachlorocyclopentadiene μg/L 1.1 U 5.1 U 5.2 U 11 U 1 U 1100 50 Hexachloroethane μg/L 0.22 U 1.1 U 0.21 U 2.1 U 0.2 U 3.3 4.8 540 Isophorone μg/L 0.22 U 1.1 U 1.1 U 2.1 U 0.2 U 960

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Table 3 Basin 44A Stormwater Results

#### Manhole ABC311 JSCS Stormwater SLVs(1) Downstream in 72" Line Event 2 Event 2 Event 3 Event 4 Event 1 Duplicate FO081412 FO081480 FO095221 FO095376 FO081482 Human Health Human Health Class Analyte Units 11/20/2008 12/12/2008 12/12/2008 2/23/2009 3/23/2009 Fish Consumption(2) Ingestion(3) Ecological(4) 0.22 U 0.2 U 690 Nitrobenzene 1.1 U 0.21 U 2.1 U $\mu g/L$ 3.4 N-Nitrosodi-n-propylamine 0.22 U 0.21 U 0.51 0.0096 μg/L 1.1 U 2.1 U 0.2 U N-Nitrosodiphenylamine μg/L 0.220 U 1.1 U 1.1 U 2.1 U 0.2 U 6 14 210 Pentachlorophenol μg/L 0.47 J 5.1 U 5.2 U 11 U 0.86 J 3 0.56 15 Phenol 0.38 J 1700000 μg/L 0.80 0.56 J 5.1 U 0.76 11000 2560

#### Notes:

NA = Not analyzed

ND = Not detected

umhos/cm = micromhos per centimeter

 $\mu$ g/L = Micrograms per liter

mg/L = Milligrams per liter

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

**bold** = Concentration exceeds DEQ's SLV

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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

<sup>--</sup> No JSCS screening level available

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

<sup>(2)</sup> 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

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

<sup>(4)</sup> 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

<sup>(5)</sup>Mercury analysis by WPCL SOP M-10.02

<sup>(6)</sup>Estimated Total DDx is the sum of DDE, DDD and DDT

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

<sup>(8)</sup>Total Chlordane is the sum of alpha- and beta-Chlordane

<sup>(9)</sup> See Table 4 for individual congener results

<sup>(10)</sup> Total PCBs and PAHs are calcualted by assigning "0" to undetected constituents

Table 4
Basin 44A Stormwater - PCB Congeners Results

Manhole ABC311

JSCS Stormwater SLVs<sup>(2)</sup>

		Downstream in 72" Line							S Stormwater SL vs	
			Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health	Human Health	
IUPAC Number <sup>(1)</sup>	Chemical Name	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009	Fish Consumption (3)	Ingestion <sup>(4)</sup>	Ecological <sup>(5)</sup>
Chlorinated Biphenyl Con	geners (EPA 1668A)									
PCB 1	2-MoCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 2	3-MoCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 3	4-MoCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	-		
PCB 4	2,2'-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	-		
PCB 5	2,3-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 6	2,3'-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 7	2,4-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 8	2,4'-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000364 U	0.000251 U			
PCB 9	2,5-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000294 U	0.000251 U			
PCB 10	2,6-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000294 U	0.000251 U			
PCB 11	3,3'-DiCB	μg/L	0.000581 U	0.000653	0.000778	0.00293	0.00151 U			
PCB 12/13	3,4-DiCB + 3,4'-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.00502 U			
PCB 14	3,5-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 15	4,4'-DiCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 16	2,2',3-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000250	0.000251 U			
PCB 17	2,2',4-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000269	0.000251 U			
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000530	0.00502 U		**	
PCB 19	2,2',6-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	μg/L	0.000581 U	0.000606 U	0.000605 U	0.000916	0.00502 U		**	
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000522	0.00502 U			
PCB 22	2,3,4'-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000399	0.000251 U			
PCB 23	2,3,5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 24	2,3,6-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 25	2,3',4-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 26/29	2,3',5-TriCB + 2,4,5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.00502 U			
PCB 27	2,3',6-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			-
PCB 31	2,4',5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000775	0.000251 U			
PCB 32	2,4',6-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 34	2',3,5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 35	3,3',4-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			-
PCB 36	3,3',5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 37	3,4,4'-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000284	0.000251 U			
PCB 38	3,4,5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 39	3,4',5-TriCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U			
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4-TeCB + 2,3',4',6-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.00149 U	0.00151 U			
PCB 42	2,2',3,4'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 43	2,2',3,5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6-TeCB	μg/L	0.000581 U	0.000606 U	0.000605 U	0.00149 U	0.00151 U	-		-
PCB 45/51	2,2',3,6-TeCB + 2,2',4,6'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U			
PCB 46	2,2',3,6'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 48	2,2',4,5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	-		
PCB 50/53	2,2',4,6-TeCB + 2,2',5,6'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	-		-
PCB 52	2,2',5,5'-TeCB	μg/L	0.000485 U	0.000614	0.000730	0.00122	0.000502 U	-		-
PCB 54	2,2',6,6'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 55	2,3,3',4-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 56	2,3,3',4'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			

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Table 4
Basin 44A Stormwater - PCB Congeners Results

## Manhole ABC311 Downstream in 72" Line

JSCS Stormwater SLVs<sup>(2)</sup>

				Down	stream in 72''	Line		350	29 Stormwater SL vs	
					Event 2			<del>-</del>		
			Event 1	Event 2	Duplicate	Event 3	Event 4			
			FO081412	FO081480	FO081482	FO095221	FO095376			
(I)								Human Health	Human Health	
IUPAC Number <sup>(1)</sup>	Chemical Name	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009	Fish Consumption (3)	Ingestion <sup>(4)</sup>	Ecological <sup>(5)</sup>
PCB 57	2,3,3',5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			-
PCB 58	2,3,3',5'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 59/62/75	2,3,3',6-TeCB + 2,3,4,6-TeCB + 2,4,4',6-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.00149 U	0.00151 U			
PCB 60	2,3,4,4'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			-
PCB 61/70/74/76	2,3,4,5-TeCB + 2,3',4',5-TeCB + 2,4,4',5-TeCB + 2',3,4,5-	μg/L	0.000485 U	0.000634	0.000713	0.00199 U	0.00201 U			
PCB 63	2,3,4',5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 64	2,3,4',6-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 66	2,3',4,4'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000862	0.000502 U			
PCB 67	2,3',4,5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 68	2,3',4,5'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 72	2,3',5,5'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 73	2,3',5',6-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 77	3,3',4,4'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 78	3,3',4,5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 79	3,3',4,5'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 80	3,3',5,5'-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 81	3,4,4',5-TeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 82	2,2',3,3',4-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 83	2,2',3,3',5-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 84	2,2',3,3',6-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000516	0.000502 U			
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6-PeCB	μg/L	0.000581 U	0.000606 U	0.000605 U	0.00149 U	0.00151 U			
	2,2',3,4,5-PeCB + 2,2',3,4,5'-PeCB + 2,2',3',4,5-PeCB +	μg/L	0.000301 0	0.000000 0	0.0000000	0.00143 0		<del></del>		
PCB 86/87/97/108/119/125	2,3,3',4,5'-PeCB + 2,3',4,4',6-PeCB + 2',3,4,5,6'-PeCB	μg/L	0.000969 U	0.00101 U	0.00101 U	0.00299 U	0.00301 <sup>U</sup>			
PCB 88/91	2,2',3,4,6-PeCB + 2,2',3,4',6-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00301 0.00100 U	-		
PCB 89	2,2',3,4,6'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000337 U	0.000502 U	-		
PCB 90/101/113	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6-PeCB	μg/L	0.000485 U	0.00131	0.00180	0.00208	0.000302 U	-		
PCB 92	2,2',3,5,5'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
1 00 92	2,2',3,5,6-PeCB + 2,2',3',4,6-PeCB + 2,2',4,4',6-PeCB +	μg/L	0.000403 0	0.000303 0	0.000304 0	0.000430 0		<del></del>		
PCB 93/98/100/102	2,2',4,5,6'-PeCB	μg/L	0.000727 U	0.000757 U	0.000756 U	0.00199 U	0.00201 <sup>U</sup>			
PCB 94	2,2',3,5,6'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			-
PCB 95	2,2',3,5',6-PeCB	μg/L	0.000485 U	0.000971	0.00138	0.00166	0.000502 U			
PCB 96	2,2',3,6,6'-PeCB	μg/L	0.000485 U	0.000571 0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 99	2,2',4,4',5-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000436 0	0.000502 U	-		
PCB 103	2,2',4,5',6-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 104	2,2',4,6,6'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 105	2,3,3',4,4'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 0	0.000502 U	-		-
PCB 106	2,3,3',4,5-PeCB	μg/L μg/L	0.000485 U	0.000505 U	0.000504 U	0.000765 0.000498 U	0.000502 U			
PCB 107/124	2,3,3',4',5-PeCB + 2',3,4,5,5'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000302 U	-		
PCB 107/124	2,3,3',4,6-PeCB	μg/L μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U			
PCB 110/115	2,3,3',4',6-PeCB + 2,3,4,4',6-PeCB		0.000485 0	0.000505 0	0.000504 0	0.000498 0	0.000502 U			
PCB 110/115	2,3,3',5,5'-PeCB	μg/L	0.000617 0.000485 U	0.00125 0.000505 U	0.00155 0.000504 U	0.000997 0.000498 U	0.00100 U			
PCB 112	2,3,3',5,6-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	<u> </u>		
PCB 114		μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
	2,3,4,4',5-PeCB	μg/L								
PCB 118	2,3',4,4',5-PeCB	μg/L	0.000542	0.000761	0.000900	0.00167	0.000502 U	-		-
PCB 120	2,3',4,5,5'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		-
PCB 121	2,3',4,5',6-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 122	2',3,3',4,5-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 123	2',3,4,4',5-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 126	3,3',4,4',5-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 127	3,3',4,5,5'-PeCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	μg/L	0.000969 U	0.00101 U	0.00101 U	0.000997 U	0.00100 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	0.000552	0.00238	0.00321	0.00319	0.00100 U			

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Table 4
Basin 44A Stormwater - PCB Congeners Results

## Manhole ABC311 Downstream in 72" Line

JSCS Stormwater SLVs<sup>(2)</sup>

				Down	stream in 72"	Line		_		
					Event 2					
			Event 1	Event 2	Duplicate	Event 3	Event 4			
			FO081412	FO081480		FO095221	FO095376			
					FO081482			Human Health	Human Health	
IUPAC Number <sup>(1)</sup>	Chemical Name	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009	Fish Consumption(3)	Ingestion(4)	Ecological <sup>(5)</sup>
PCB 130	2,2',3,3',4,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 131	2,2',3,3',4,6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 132	2,2',3,3',4,6'-HxCB	μg/L	0.000485 U	0.000747	0.00108	0.00109	0.000502 U			-
PCB 133	2,2',3,3',5,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U		-	
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6-HxCB	μg/L	0.000494 U	0.00102	0.00150	0.000997 U	0.00100 U			
PCB 136	2,2',3,3',6,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000545	0.000397 U	0.000502 U			
PCB 137	2,2',3,4,4',5-HxCB	μg/L μg/L	0.000485 U	0.000505 U	0.000545 0.000504 U	0.000498 U	0.000502 U			
PCB 137 PCB 139/140	2,2',3,4,4',6-HxCB + 2,2',3,4,4',6'-HxCB		0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 139/140 PCB 141		μg/L	0.000485 U	0.000505 U	0.000504 0	0.000997 0	0.00100 U	<u> </u>		
PCB 141 PCB 142	2,2',3,4,5,5'-HxCB	μg/L			0.000697 0.000504 U	0.000521 0.000498 U				
	2,2',3,4,5,6-HxCB	μg/L	0.000485 U	0.000505 U			0.000502 U	-		
PCB 144	2,2',3,4,5',6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 145	2,2',3,4,6,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 146	2,2',3,4',5,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 147/149	2,2',3,4',5,6-HxCB + 2,2',3,4',5',6-HxCB	μg/L	0.000485 U	0.00208	0.00297	0.00234	0.00100 U	-		
PCB 148	2,2',3,4',5,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 150	2,2',3,4',6,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 152	2,2',3,5,6,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6-HxCB	μg/L	0.000581 U	0.00229	0.00300	0.00257	0.00100 U			
PCB 154	2,2',4,4',5,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 155	2,2',4,4',6,6'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 156/157	2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	μg/L	0.000969 U	0.00101 U	0.00101 U	0.000997 U	0.00100 U			
PCB 158	2,3,3',4,4',6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 159	2,3,3',4,5,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 160	2,3,3',4,5,6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 161	2,3,3',4,5',6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 162	2,3,3',4',5,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 164	2,3,3',4',5',6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 165	2,3,3',5,5',6-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 167	2,3',4,4',5,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		_
PCB 169	3,3',4,4',5,5'-HxCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	_		
PCB 170	2,2',3,3',4,4',5-HpCB	μg/L	0.000485 U	0.000774	0.00106	0.000859	0.000502 U		-	
PCB 171/173	2,2',3,3',4,4',6-HpCB + 2,2',3,3',4,5,6-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U		-	
PCB 172	2,2',3,3',4,5,5'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000397 U	0.000502 U			
PCB 174	2,2',3,3',4,5,6'-HpCB	μg/L	0.000485 U	0.000303 0	0.000304 0	0.00102	0.000502 U	-		
PCB 175	2,2',3,3',4,5',6-HpCB	μg/L	0.000485 U	0.000719 0.000505 U	0.000598 0.000504 U	0.00102 0.000498 U	0.000502 U			
PCB 176	2,2',3,3',4,6,6'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 177	2,2',3,3',4',5,6-HpCB		0.000485 U	0.000505 U	0.000584	0.000498 0	0.000502 U			
PCB 178		μg/L	0.000485 U	0.000505 U	0.000504 U	0.000335 0.000498 U	0.000502 U			
PCB 178 PCB 179	2,2',3,3',5,5',6-HpCB	μg/L								
	2,2',3,3',5,6,6'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	μg/L	0.000485 U	0.00166	0.00217	0.00196	0.00100 U			
PCB 181	2,2',3,4,4',5,6-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 182	2,2',3,4,4',5,6'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			-
PCB 183/185	2,2',3,4,4',5',6-HpCB + 2,2',3,4,5,5',6-HpCB	μg/L	0.000485 U	0.000533	0.000718	0.000997 U	0.00100 U			-
PCB 184	2,2',3,4,4',6,6'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 186	2,2',3,4,5,6,6'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 187	2,2',3,4',5,5',6-HpCB	μg/L	0.000485 U	0.000946	0.00121	0.00104	0.000502 U	-		
PCB 188	2,2',3,4',5,6,6'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 189	2,3,3',4,4',5,5'-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		
PCB 190	2,3,3',4,4',5,6-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 191	2,3,3',4,4',5',6-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U			
PCB 192	2,3,3',4,5,5',6-HpCB	μg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	-		

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Table 4
Basin 44A Stormwater - PCB Congeners Results

## Manhole ABC311 JSCS Stormwater SLVs(2) Downstream in 72" Line Event 2 Event 1 Event 2 Event 3 Event 4 Duplicate FO081412 FO081480 FO095221 FO095376 FO081482 Human Health Human Health IUPAC Number<sup>(1)</sup> Chemical Name Units 11/20/2008 12/12/2008 12/12/2008 2/23/2009 3/23/2009 Fish Consumption (3) Ingestion<sup>(4)</sup> Ecological<sup>(5)</sup> PCB 194 2,2',3,3',4,4',5,5'-OcCB 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U μg/L PCB 195 2,2',3,3',4,4',5,6-OcCB 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U μg/L PCB 196 2,2',3,3',4,4',5,6'-OcCB μg/L 0.000679 U 0.000707 U 0.000705 U 0.000747 U 0.000753 U --PCB 197/200 2,2',3,3',4,4',6,6'-OcCB + 2,2',3,3',4,5,6,6'-OcCB 0.00242 U 0.00252 U 0.00252 U 0.00149 U 0.00151 U μg/L PCB 198/199 2,2',3,3',4,5,5',6-OcCB + 2,2',3,3',4,5,5',6'-OcCB 0.000485 U 0.000505 U 0.000516 0.00149 U 0.00151 U μg/L PCB 201 0.000485 U 0.000753 U 2,2',3,3',4,5',6,6'-OcCB 0.000505 U 0.000504 U 0.000747 U μg/L PCB 202 0.000485 U 0.000747 U 0.000753 U 2,2',3,3',5,5',6,6'-OcCB μg/L 0.000505 U 0.000504 U PCB 203 0.000485 U 0.000504 U 0.000747 U 2,2',3,4,4',5,5',6-OcCB μg/L 0.000505 U 0.000753 U PCB 204 2.2'.3.4.4'.5.6.6'-OcCB 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U μg/L PCB 205 2,3,3',4,4',5,5',6-OcCB 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U μg/L 2,2',3,3',4,4',5,5',6-NoCB PCB 206 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U μg/L PCB 207 2,2',3,3',4,4',5,6,6'-NoCB μg/L 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U PCB 208 2,2',3,3',4,5,5',6,6'-NoCB μg/L 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U ------PCB 209 Decachlorobiphenyl μg/L 0.000485 U 0.000505 U 0.000504 U 0.000747 U 0.000753 U Total Monochlorobiphenvls μq/L ND ND ND ND Total Dichlorobiphenyls ND 0.000653 0.000778 0.00329 ND μg/L Total Trichlorobiphenyls ND ND ND 0.00394 ND μg/L Total Tetrachlorobiphenyls μg/L ND 0.00125 0.00144 0.00208 ND Total Pentachlorobiphenyls μg/L 0.00116 0.00430 0.00563 0.00960 ND ------0.0130 0.00971 Total Hexachlorobiphenyls μg/L 0.000552 0.00852 ND Total Heptachlorobiphenyls μg/L ND 0.00463 0.00674 0.00542 ND Total Octachlorobiphenvls ND ND 0.000516 ND ND ND μg/L Total Nonachlorobiphenyls ND ND ND μg/L ND ND Total Decachlorobiphenyls μg/L μg/L ND ND ND ND ND Total PCBs 0.00171 0.0194 0.0281 0.0340 0.000064 ND 0.034 0.014

## 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

-Highlighted value has been selected by DEQ for initial upland source control screening evaluations

bold = Concentration exceeds DEQ SLV.

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<sup>(1)</sup>IUPAC = International Union of Pure and Applied Chemistry

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

<sup>(3)</sup> 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

<sup>(4)</sup> The SLVs for chemicals in water for human ingestion represent the most conservative value between EPA's MCLs and Region 9 PRGs

<sup>(5)</sup> 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

Table 5 Basin 44A Inline Solids Results

	Sediment Trap Samples Catch Basin Samples (Upper Basin)							
		Manhole ABC311 Downstream of manhole in 72" line ST1: F0095662	Duplicate Manhole ABC311 ST1: FO095677	Parent/Duplicate Sample Average <sup>(2)</sup> ST1: F0095662 & F0095677	Catch Basin ADZ315 NE Russell St. at Substation Driveway FO095477	Catch Basin APL263 NW Corner of NE Russell and NE Rodney Intersection FO095478	-	SCS <sup>(1)</sup> g Level Value
Class Analyte	Units	6/2/2009	6/2/2009	6/2/2009	4/8/2009	4/8/2009	Toxicity	Bioaccumulation
Polychlorinated Biphenyl Congeners (PCBs) (E	EPA 1668M						-	
Total PCBs <sup>(1</sup>	<sup>7)(8)</sup> μg/Kg	169 <sup>(9)</sup>	40.6 (9)	104.8	NA	NA	676	0.39
D 1 11 1 1 1 1 1 1 (ED) 1 0003								
Polychlorinated Biphenyl Aroclors (EPA 8082) Aroclor 1016	μg/Kg	10 U	10 U	10	10 U	30 U	530	
Aroclor 1221	μg/Kg μg/Kg	20 U	20 U	20	20 U	60 U		
Aroclor 1221 Aroclor 1232	μg/Kg	10 U	10 U	10	10 U	30 U		
Aroclor 1242	μg/Kg	10 U	10 U	10	10 U	30 U		
Aroclor 1248	μg/Kg	10 U	10 U	10	10 U	30 U	1500	
Aroclor 1254	μg/Kg	11	10 U <sup>7</sup>	11	25	30 U	300	
Aroclor 1260	μg/Kg μg/Kg	20	15	18	51	72	200	
Aroclor 1260 Aroclor 1262	μg/Kg μg/Kg	10 U	10 U	10	10 U	30 U	200	<del></del>
Aroclor 1268	μg/Kg μg/Kg	10 U	10 U	10	10 U	30 U		
Total PCBs <sup>(7)</sup>		31 (11)	15 (11)	23	76	72	676	0.39
	100	31	13	43	70	14	070	0.57
Polynuclear Aromatic Hydrocarbons (EPA 827								
2-Methylnaphthalene	μg/Kg	NA	NA	NA	290 U	450 U	200	
Acenaphthene	μg/Kg	103 U	104 U	104 U	75.3 U	234 U	300	
Acenaphthylene	μg/Kg	103 U	104 U	104 U	75.3 U	234 U	200	
Anthracene	μg/Kg	103 U	104 U	104 U	75.3 U	234 U	845	
Benzo(a)anthracene	μg/Kg	159	159	159	92.3	234 U	1050	
Benzo(a)pyrene	μg/Kg	175	194	185	131	234 U	1450	
Benzo(b)fluoranthene	μg/Kg	254	254 290	254	180 224	254 297	300	
Benzo(g,h,i)perylene Benzo(k)fluoranthene	μg/Kg μg/Kg	283 165	290 175	287 170	123	297 234 U	13000	
Chrysene		355	351	353	211	455	1290	
Dibenzo(a,h)anthracene	μg/Kg μg/Kg	103 U	104 U	104 U	75.3 U	234 U	1300	
Dibenzofuran	μg/Kg μg/Kg	NA	NA	NA	290 U	450 U		
Fluoranthene	μg/Kg	532	497	515	223	588	2230	37000
Fluorene	μg/Kg	103 U	104 U	104 U	75.3 U	234 U	536	
Indeno(1,2,3-cd)pyrene	μg/Kg	161	166	164	126	234 U	100	
Naphthalene	μg/Kg	8,240 (12)	3,750 (12)	5,995	75.3 U	234 U	561	
Phenanthrene	μg/Kg	285	328	307	114	427	1170	
Pyrene	μg/Kg	400	383	392	233	648	1520	1900
Total PAH		11.009	6,547	8,778	1.657	2,669		
-	100	,	-,		-,00	_,,,,,		
Polynuclear Aromatic Hydrocarbons (EPA 827								
2-Methylnaphthalene	μg/Kg	NA	NA	NA	290 U	450 U	200	
Acenaphthene	μg/Kg	NA	NA	NA	290 U	450 U	300	
Acenaphthylene	μg/Kg	NA	NA	NA	290 U	450 U	200	
Anthracene	μg/Kg	NA	NA	NA	290 U	450 U	845	
Benzo(a)anthracene	μg/Kg	NA	NA	NA	130 J	160 J	1050	
Benzo(a)pyrene	μg/Kg	NA	NA	NA	170 J	450 U	1450	
Benzo(b)fluoranthene	μg/Kg	NA NA	NA NA	NA NA	320	340 J 420 J	300	
Benzo(g,h,i)perylene Benzo(k)fluoranthene	μg/Kg	NA NA	NA NA	NA NA	340 81 J	420 J 130 J	13000	
Chrysene	μg/Kg μg/Kg	NA NA	NA NA	NA NA	81 J 160 J	450	13000	
Dibenzo(a,h)anthracene	μg/Kg μg/Kg	NA NA	NA NA	NA NA	290 U	450 U	1300	
Dibenzo(a,n)anthracene Dibenzofuran	μg/Kg μg/Kg	NA NA	NA NA	NA NA	290 U	450 U	1300	
Fluoranthene	μg/Kg μg/Kg	NA NA	NA NA	NA NA	290 U 280 J	570	2230	37000
Fluorene	μg/Kg μg/Kg	NA NA	NA NA	NA NA	290 U	450 J	536	
Indeno(1,2,3-cd)pyrene	μg/Kg	NA NA	NA NA	NA NA	240 J	210 J	100	<del></del>
Naphthalene	μg/Kg	NA NA	NA NA	NA NA	290 U	470	561	
Phenanthrene	μg/Kg	NA	NA	NA	130 J	320 J	1170	
Pyrene	μg/Kg	NA	NA	NA	300	750	1520	1900
Total PAH		NA	NA	NA	2151 J	4270 J		
	10 -0			- 10-5				

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Table 5 Basin 44A Inline Solids Results

			Sediment Trap Sample	s	Catch Basin Sam	ples (Upper Basin)		
		Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Duplicate Manhole ABC311 ST1: FO095677	Parent/Duplicate Sample Average <sup>(2)</sup> ST1: FO095662 & FO095677	Catch Basin ADZ315 NE Russell St. at Substation Driveway FO095477	Catch Basin APL263 NW Corner of NE Russell and NE Rodney Intersection FO095478	-	SCS <sup>(1)</sup> g Level Value
Class Analyte	Units	6/2/2009	6/2/2009	6/2/2009	4/8/2009	4/8/2009	Toxicity	Bioaccumulation
Phthalates (EPA8270C SIM)								<u>.</u>
Bis(2-ethylhexyl) phthalate (BEHP)	μg/Kg	26,600	19,700	23,150	3,000	26,100	800	330
Butyl Benzyl Phthalate	μg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U		
Diethyl phthalate	μg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U	600	
Dimethyl phthalate	μg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U		
Di-n-butyl phthalate	μg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U	100	60
Di-n-octyl phthalate	μg/Kg	7,740 U	5,200 U	6470 U	1,510 U	11,700 U		
Phthalates (EPA8270C)								
Bis(2-ethylhexyl) phthalate (BEHP)	μg/Kg	NA	NA	NA	2,000 J	13,000	800	330
Butyl Benzyl Phthalate	μg/Kg μg/Kg	NA NA	NA NA	NA NA	2,000 J	450 U		
Diethyl phthalate	μg/Kg μg/Kg	NA NA	NA NA	NA NA	290 U	450 U	600	
Dimethyl phthalate	μg/Kg μg/Kg	NA NA	NA NA	NA NA	87 J	350 J		
Di-n-butyl phthalate	μg/Kg μg/Kg	NA NA	NA NA	NA NA	280 J	900 U	100	60
Di-n-octyl phthalate	μg/Kg μg/Kg	NA NA	NA NA	NA NA	290 U	450 U		
	μg/Kg	IIA	INA	IVA	270 0	430 0	<del></del>	<del></del>
Semivolatile Organic Compounds (EPA8270C)								
1,2,4-Trichlorobenzene	μg/Kg	NA	NA	NA	290 U	450 U	9200	
1,2-Dichlorobenzene	μg/Kg	NA	NA	NA	290 U	450 U	1700	
1,3-Dichlorobenzene	μg/Kg	NA	NA	NA	290 U	450 U	300	
1,4-Dichlorobenzene	μg/Kg	NA	NA	NA	290 U	450 U	300	
2,4,5-Trichlorophenol	μg/Kg	NA	NA	NA	290 U	450 U		
2,4,6-Trichlorophenol	μg/Kg	NA	NA	NA	290 U	450 U		
2,4-Dichlorophenol	μg/Kg	NA	NA	NA	290 U	450 U		
2,4-Dimethylphenol	μg/Kg	NA	NA	NA	1500 U	2300 U		
2,4-Dinitrophenol	μg/Kg	NA	NA	NA	5,700 U	9,000 U		
2,4-Dinitrotoluene	μg/Kg	NA	NA	NA	290 U	450 U		
2,6-Dinitrotoluene	μg/Kg	NA	NA	NA	290 U	450 U		
2-Chloronaphthalene	μg/Kg	NA	NA	NA	290 U	450 U		
2-Chlorophenol	μg/Kg	NA	NA	NA	290 U	450 U		
2-Methyl-4,6-dinitrophenol	μg/Kg	NA	NA	NA	2,900 U	4,500 U		
2-Methylphenol	μg/Kg	NA	NA	NA	290 U	450 U		
2-Nitroaniline	μg/Kg	NA	NA	NA	570 U	900 U		
2-Nitrophenol	μg/Kg	NA	NA	NA	290 U	450 U		
3,3'-Dichlorobenzidine	μg/Kg	NA	NA	NA	2,900 U	4,500 U		
3-Nitroaniline	μg/Kg	NA	NA	NA	570 U	900 U		
4-Bromophenylphenyl ether	μg/Kg	NA	NA	NA	290 U	450 U		
4-Chloro-3-methylphenol	μg/Kg	NA	NA	NA	290 U	450 U		
4-Chloroaniline	μg/Kg	NA	NA	NA	290 U	450 U		
4-Chlorophenyl phenyl ether	μg/Kg	NA	NA	NA	290 U	450 U		
4-Methylphenol	μg/Kg	NA	NA	NA	290 U	290 J		

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Table 5 Basin 44A Inline Solids Results

			S	Sediment Trap Sample	s				
			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Duplicate Manhole ABC311 ST1: FO095677	Parent/Duplicate Sample Average <sup>(2)</sup> ST1: FO095662 & FO095677	Catch Basin ADZ315 NE Russell St. at Substation Driveway FO095477	Catch Basin APL263 NW Corner of NE Russell and NE Rodney Intersection FO095478		SCS <sup>(1)</sup> g Level Value
Class	Analyte	Units	6/2/2009	6/2/2009	6/2/2009	4/8/2009	4/8/2009	Toxicity	Bioaccumulation
	4-Nitroaniline	ıg/Kg	NA	NA	NA	570 U	900 U		
	4-Nitrophenol µ	ıg/Kg	NA	NA	NA	2,900 U	4,500 U		
	Benzoic acid µ	ıg/Kg	NA	NA	NA	5,700 U	9,000 U		
	Benzyl alcohol µ	ıg/Kg	NA	NA	NA	570 U	900 U		
	Bis(2-chloroethoxy) methane	ıg/Kg	NA	NA	NA	290 U	450 U		
	Bis(2-chloroethyl) ether µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	Bis(2-chloroisopropyl) ether µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	Hexachlorobenzene µ	ıg/Kg	NA	NA	NA	290 U	450 U	100	19
	Hexachlorobutadiene µ	ıg/Kg	NA	NA	NA	290 U	450 U	600	
	Hexachlorocyclopentadiene µ	ıg/Kg	NA	NA	NA	1500 U	2300 U	400	
	Hexachloroethane µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	Isophorone µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	Nitrobenzene µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	N-Nitrosodi-n-propylamine µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	N-Nitrosodiphenylamine µ	ıg/Kg	NA	NA	NA	290 U	450 U		
	Pentachlorophenol µ	ıg/Kg	NA	NA	NA	2,900 U	2,800 J	1000	250
		ıg/Kg	NA	NA	NA	850 U	230 J	50	

## Notes:

- J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U = The analyte was not detected above the reported sample quantification limit.

NA = Not analyzed or not applicable.

ND = Not detected.

-- No JSCS screening level available.

 $\mu g/Kg = Micrograms$  per kilogram.

mg/Kg = Milligrams per kilogram.

= concentration exceeds JSCS Toxicity Screening Level Value

**bold** = concentration exceeds JSCS Bioaccumulation Screening Level Value

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

<sup>(2)</sup> The average concentration for the parent and duplicate samples was calculated following guidelines used by the LWG for data reporting (Kennedy/Jenks, 2004).

<sup>(3)</sup> The mercury concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 134%)

 $<sup>^{\</sup>rm (4)}$  Estimated Total DDx is the sum of DDE, DDD and DDT

 $<sup>^{(5)}</sup>$  Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane

<sup>(6)</sup> Total Chlordane is the sum of alpha-, and beta-isomers

<sup>&</sup>lt;sup>(7)</sup> Total PCBs and PAHs are calculated by assigning "0" to undetected constituents

<sup>&</sup>lt;sup>(8)</sup> Individual congener results are summarized in Table 5

<sup>(9)</sup> The PCB congener concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 123%)

<sup>&</sup>lt;sup>(10)</sup>A trace level of Aroclor 1254 was evident at a concentration below the MRL

<sup>(11)</sup> The PCB Aroclor concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 70%)

<sup>(12)</sup> The naphthalene concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 75%)

Table 6
Basin 44A Inline Solids - PCB Congeners Results

			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Manhole ABC311 Duplicate ST1: FO095677	Screen	JSCS <sup>(2)</sup> ing Level Value
IUPAC Number <sup>(1)</sup>	Chemical Name	Units	6/2/2009	6/2/2009	Toxicity	Bioaccumulation
	Congeners (EPA 1668A)					
PCB 1	2-MoCB	μg/Kg	0.0294 U	0.0287 U		
PCB 2	3-MoCB	μg/Kg	0.0294 U	0.0287 U		
PCB 3	4-MoCB	μg/Kg	0.0294 U	0.0287 U		
PCB 4	2,2'-DiCB	μg/Kg	0.279	0.0707		
PCB 5	2,3-DiCB	μg/Kg	0.0294 U 0.0882	0.0287 U		
PCB 6 PCB 7	2,3'-DiCB 2,4-DiCB	μg/Kg μg/Kg	0.0882 0.0294 U	0.0287 U 0.0287 U		
PCB 8	2,4'-DiCB	μg/Kg μg/Kg	0.0294 U	0.0287 0		
PCB 9	2,5-DiCB	μg/Kg μg/Kg	0.0294 U	0.0287 U		
PCB 10	2,6-DiCB	μg/Kg	0.0294 U	0.0287 U		
PCB 11	3,3'-DiCB	μg/Kg	1.82	0.474		
PCB 12/13	3,4-DiCB + 3,4'-DiCB	μg/Kg	0.0588 U	0.0575 U		
PCB 14	3,5-DiCB	μg/Kg	0.0294 U	0.0287 U		
PCB 15	4,4'-DiCB	μg/Kg	0.377	0.0848		
PCB 16	2,2',3-TriCB	μg/Kg	0.940	0.150		
PCB 17	2,2',4-TriCB	μg/Kg	0.730	0.119		
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	μg/Kg	1.59	0.263		
PCB 19	2,2',6-TriCB	μg/Kg	0.208	0.0450		
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	μg/Kg	2.20	0.398		
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	μg/Kg	1.34	0.250		
PCB 22	2,3,4'-TriCB	μg/Kg	0.912	0.173		
PCB 23	2,3,5-TriCB	μg/Kg	0.0294 U	0.0287 U		
PCB 24	2,3,6-TriCB	$\mu g/Kg$	0.0294 U	0.0287 U		
PCB 25	2,3',4-TriCB	μg/Kg	0.142	0.0287 U		
PCB 26/29	2,3',5-TriCB + 2,4,5-TriCB	μg/Kg	0.366	0.0627		
PCB 27	2,3',6-TriCB	μg/Kg	0.115	0.0287 U		
PCB 31	2,4',5-TriCB	μg/Kg	1.86	0.326		
PCB 32	2,4',6-TriCB	μg/Kg	0.538	0.0960		
PCB 34	2',3,5-TriCB	μg/Kg	0.0294 U	0.0287 U		
PCB 35	3,3',4-TriCB	μg/Kg	0.0651	0.0287 U		
PCB 36	3,3',5-TriCB	μg/Kg	0.0294 U	0.0287 U		
PCB 37	3,4,4'-TriCB	μg/Kg	0.922	0.156		
PCB 38	3,4,5-TriCB	μg/Kg	0.0294 U	0.0287 U		
PCB 39	3,4',5-TriCB	μg/Kg	0.0294 U	0.0287 U		
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4-TeCB + 2,3',4',6-TeCB	μg/Kg	1.30	0.175		
PCB 42	2,2',3,4'-TeCB	μg/Kg	0.555	0.0737		
PCB 43	2,2',3,5-TeCB	μg/Kg	0.0870	0.0575 U		
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6-TeCB	μg/Kg	3.23	0.210		
PCB 45/51	2,2',3,6-TeCB + 2,2',4,6'-TeCB	μg/Kg μg/Kg	1.06	0.119		
PCB 46 PCB 48	2,2',3,6'-TeCB 2.2',4,5-TeCB	μg/Kg μg/Kg	0.161 0.439	0.0575 U 0.0575 U		
	2,2',4,5'-TeCB + 2,3',4,6-TeCB					
PCB 49/69 PCB 50/53	2,2',4,5'-1eCB + 2,3',4,6-1eCB 2,2',4,6-TeCB + 2,2',5,6'-TeCB	μg/Kg μg/Kg	1.63 0.579	0.195 0.115 U		
PCB 50/33	2,2',5,5'-TeCB	μg/Kg μg/Kg	2.59	0.346		
PCB 54	2,2',6,6'-TeCB	μg/Kg μg/Kg	0.0588 U	0.0575 U		
PCB 55	2,3,3',4-TeCB	μg/Kg μg/Kg	0.0588 U	0.0575 U		
PCB 56	2,3,3',4'-TeCB	μg/Kg μg/Kg	1.05	0.190		
PCB 57	2,3,3',5-TeCB	μg/Kg	0.117	0.0575 U		
PCB 58	2,3,3',5'-TeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 59/62/75	2,3,3',6-TeCB + 2,3,4,6-TeCB + 2,4,4',6-TeCB	μg/Kg	0.221	0.172 U		
PCB 60	2,3,4,4'-TeCB	μg/Kg	0.566	0.101		
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	3.62	0.635		
PCB 63	2,3,4',5-TeCB	μg/Kg	0.0758	0.0575 U		
PCB 64	2,3,4',6-TeCB	μg/Kg	0.833	0.118		
PCB 66	2,3',4,4'-TeCB	μg/Kg	1.77	0.319		
PCB 67	2,3',4,5-TeCB	μg/Kg	0.0674	0.0575 U		
PCB 68	2,3',4,5'-TeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 72	2,3',5,5'-TeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 73	2,2',3,5-TeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 77	3,3',4,4'-TeCB	μg/Kg	0.344	0.0575 U		0.052
PCB 78	3,3',4,5-TeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 79	3,3',4,5'-TeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 80	3,3',5,5'-TeCB	μg/Kg	0.0588 U	0.0575 U		

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Table 6 Basin 44A Inline Solids - PCB Congeners Results

			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Manhole ABC311 Duplicate ST1: FO095677	Screen	JSCS <sup>(2)</sup> ing Level Value
IUPAC Number <sup>(1)</sup>	Chemical Name	Units	6/2/2009	6/2/2009	Toxicity	Bioaccumulation
PCB 81	3,4,4',5-TeCB	μg/Kg	0.0588 U	0.0575 U		0.017
PCB 82	2,2',3,3',4-PeCB	μg/Kg	0.472	0.111		-
PCB 83	2,2',3,3',5-PeCB	μg/Kg	0.194	0.0575 U		
PCB 84	2,2',3,3',6-PeCB	μg/Kg μg/Kg	0.966	0.181 0.172 U		<del></del>
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6-PeCB 2,2',3,4,5-PeCB + 2,2',3,4,5'-PeCB + 2,2',3',4,5-PeCB + 2,3,3',4,5'-PeCB	μg/Кg	0.681	0.172 U		
PCB 86/87/97/108/119/125	+ 2,3',4,4',6-PeCB + 2',3,4,5,6'-PeCB	μg/Kg	2.88	0.600		
PCB 88/91	2,2',3,4,6-PeCB + 2,2',3,4',6-PeCB	μg/Kg	0.700	0.115 U		
PCB 89 PCB 90/101/113	2,2',3,4,6'-PeCB	μg/Kg μg/Kg	0.0588 U 6.27	0.0575 U 1.22		
PCB 90/101/113 PCB 92	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6-PeCB 2,2',3,5,5'-PeCB	μg/Kg	0.935	0.172		
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	0.347	0.230 U		
PCB 94	2,2',3,5,6'-PeCB	μg/Kg	0.0850	0.0575 U		
PCB 95 PCB 96	2,2',3,5',6-PeCB 2,2',3,6,6'-PeCB	μg/Kg μg/Kg	4.10 0.0588 U	0.762 0.0575 U		
PCB 99	2,2',4,4',5-PeCB	μg/Kg	1.70	0.388		
PCB 103	2,2',4,5',6-PeCB	μg/Kg	0.0778	0.0575 U		
PCB 104	2,2',4,6,6'-PeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 105	2,3,3',4,4'-PeCB	$\mu g/Kg$	1.52	0.461		0.17
PCB 106	2,3,3',4,5-PeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 107/124	2,3,3',4',5-PeCB + 2',3,4,5,5'-PeCB	μg/Kg	0.139	0.115 U		
PCB 109 PCB 110/115	2,3,3',4,6-PeCB	μg/Kg μg/Kg	0.217 5.56	0.0700		<del></del>
PCB 110/115 PCB 111	2,3,3',4',6-PeCB + 2,3,4,4',6-PeCB 2,3,3',5,5'-PeCB	μg/Kg μg/Kg	0.0588 U	0.0575 U		
PCB 112	2,3,3',5,6-PeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 114	2,3,4,4',5-PeCB	μg/Kg	0.0770	0.0575 U		0.17
PCB 118	2,3',4,4',5-PeCB	μg/Kg	3.62	1.04		0.12
PCB 120	2,3',4,5,5'-PeCB	$\mu g/Kg$	0.0588 U	0.0575 U		
PCB 121	2,3',4,5',6-PeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 122	2',3,3',4,5-PeCB	μg/Kg	0.0588 U	0.0575 U		0.21
PCB 123 PCB 126	2',3,4,4',5-PeCB 3,3',4,4',5-PeCB	μg/Kg μg/Kg	0.0588 U 0.0892	0.0575 U 0.0575 U		0.00005
PCB 127	3,3',4,5.5'-PeCB	μg/Kg	0.0588 U	0.0575 U		
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	μg/Kg	1.22	0.327		
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	12.6	3.39		
PCB 130	2,2',3,3',4,5'-HxCB	μg/Kg	0.529	0.129		
PCB 131	2,2',3,3',4,6-HxCB	μg/Kg	0.108	0.0575 U		
PCB 132	2,2',3,3',4,6'-HxCB	μg/Kg μg/Kg	4.17	1.04		
PCB 133 PCB 134/143	2,2',3,3',5,5'-HxCB 2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	μg/Kg μg/Kg	0.164 0.514	0.0575 U 0.115 U		
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6-HxCB	μg/Kg	6.28	1.19		
PCB 136	2,2',3,3',6,6'-HxCB	μg/Kg	1.97	0.397		
PCB 137	2,2',3,4,4',5-HxCB	μg/Kg	0.206	0.0589		
PCB 139/140	2,2',3,4,4',6-HxCB + 2,2',3,4,4',6'-HxCB	$\mu g/Kg$	0.118 U	0.115 U		
PCB 141	2,2',3,4,5,5'-HxCB	μg/Kg	2.67	0.811		
PCB 142	2,2',3,4,5,6-HxCB	μg/Kg	0.0588 U	0.0575 U		
PCB 144 PCB 145	2,2',3,4,6,6'-HxCB 2,2',3,4,6,6'-HxCB	μg/Kg μg/Kg	0.687 0.0588 U	0.155 0.0575 U		
PCB 146	2,2',3,4',5,5'-HxCB	μg/Kg	1.62	0.404		
PCB 147/149	2,2',3,4',5,6-HxCB + 2,2',3,4',5',6-HxCB	μg/Kg	12.0	2.82		
PCB 148	2,2',3,4',5,6'-HxCB	$\mu g/Kg$	0.0588 U	0.0575 U		
PCB 150	2,2',3,4',6,6'-HxCB	μg/Kg	0.0588 U	0.0575 U		
PCB 152	2,2',3,5,6,6'-HxCB	μg/Kg	0.0588 U	0.0575 U		
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6-HxCB	μg/Kg	11.7	3.10		
PCB 154 PCB 155	2,2',4,4',5,6'-HxCB	μg/Kg	0.114 0.0588 U	0.0575 U 0.0575 U		
PCB 155 PCB 156/157	2,2',4,4',6,6'-HxCB 2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	μg/Kg μg/Kg	0.954	0.288		
PCB 158	2,3,3,4,4,6-HxCB 2,3,3',4,4',6-HxCB	µg/Кg µg/Кg	1.09	0.288		
PCB 159	2,3,3',4,5,5'-HxCB	μg/Kg	0.0588 U	0.0575 U		
PCB 160	2,3,3',4,5,6-HxCB	μg/Kg	0.0588 U	0.0575 U		
PCB 161	2,3,3',4,5',6-HxCB	$\mu g/Kg$	0.0588 U	0.0575 U		
PCB 162	2,3,3',4',5,5'-HxCB	μg/Kg	0.146	0.0575 U		
PCB 164	2,3,3',4',5',6-HxCB	μg/Kg	0.867	0.247		
PCB 165	2,3,3',5,5',6-HxCB	μg/Kg μg/Kg	0.0588 U	0.0575 U		
PCB 167	2,3',4,4',5,5'-HxCB	µg/1Xg	0.320	0.105		0.21

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Table 6
Basin 44A Inline Solids - PCB Congeners Results

			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Manhole ABC311 Duplicate ST1: FO095677	Screen	JSCS <sup>(2)</sup> ening Level Value	
IUPAC Number <sup>(1)</sup>	Chemical Name	Units	6/2/2009	6/2/2009	Toxicity	Bioaccumulation	
PCB 169	3,3',4,4',5,5'-HxCB	μg/Kg	0.0588 U	0.0575 U		0.00021	
PCB 170	2,2',3,3',4,4',5-HpCB	μg/Kg	3.83	1.40			
PCB 171/173	2,2',3,3',4,4',6-HpCB + 2,2',3,3',4,5,6-HpCB	μg/Kg	1.21	0.42			
PCB 172	2,2',3,3',4,5,5'-HpCB	μg/Kg	0.634	0.223			
PCB 174	2,2',3,3',4,5,6'-HpCB	μg/Kg	4.04	1.53			
PCB 175	2,2',3,3',4,5',6-HpCB	μg/Kg	0.183	0.0575 U			
PCB 176	2,2',3,3',4,6,6'-HpCB	μg/Kg	0.639	0.179			
PCB 177	2,2',3,3',4',5,6-HpCB	μg/Kg	2.51	0.839			
PCB 178	2,2',3,3',5,5',6-HpCB	µg/Кg	0.960	0.257			
PCB 179	2,2',3,3',5,6,6'-HpCB	μg/Kg	2.22	0.585			
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	μg/Kg	8.72	3.19			
PCB 181	2,2',3,4,4',5,6-HpCB	μg/Kg	0.0588 U	0.0575 U			
PCB 182	2,2',3,4,4',5,6'-HpCB	μg/Kg	0.0588 U	0.0575 U			
PCB 183/185	2,2',3,4,4',5',6-HpCB + 2,2',3,4,5,5',6-HpCB	μg/Kg	2.90	1.02			
PCB 184	2,2',3,4,4',6,6'-HpCB	μg/Kg	0.0588 U	0.0575 U			
PCB 186		μg/Kg μg/Kg	0.0588 U	0.0575 U			
PCB 180 PCB 187	2,2',3,4,5,6,6'-HpCB			1.71			
	2,2',3,4',5,5',6-HpCB	μg/Kg	6.06				
PCB 188	2,2',3,4',5,6,6'-HpCB	μg/Kg	0.0588 U	0.0575 U			
PCB 189	2,3,3',4,4',5,5'-HpCB	μg/Kg	0.166	0.0575 U		1.2	
PCB 190	2,3,3',4,4',5,6-HpCB	μg/Kg	0.764	0.283			
PCB 191	2,3,3',4,4',5',6-HpCB	μg/Kg	0.143	0.0575 U			
PCB 192	2,3,3',4,5,5',6-HpCB	μg/Kg	0.0588 U	0.0575 U			
PCB 194	2,2',3,3',4,4',5,5'-OcCB	μg/Kg	1.5	0.658			
PCB 195	2,2',3,3',4,4',5,6-OcCB	μg/Kg	0.734	0.293			
PCB 196	2,2',3,3',4,4',5,6'-OcCB	μg/Kg	1.05	0.359			
PCB 197/200	2,2',3,3',4,4',6,6'-OcCB + 2,2',3,3',4,5,6,6'-OcCB	μg/Kg	0.384	0.172 U			
PCB 198/199	2,2',3,3',4,5,5',6-OcCB + 2,2',3,3',4,5,5',6'-OcCB	μg/Kg	2.24	0.736			
PCB 201	2,2',3,3',4,5',6,6'-OcCB	μg/Kg	0.270	0.0862 U			
PCB 202	2,2',3,3',5,5',6,6'-OcCB	μg/Kg	0.324	0.117			
PCB 203	2,2',3,4,4',5,5',6-OcCB	μg/Kg	1.07	0.420			
PCB 204	2,2',3,4,4',5,6,6'-OcCB	μg/Kg	0.0882 U	0.0862 U			
PCB 205	2,3,3',4,4',5,5',6-OcCB	μg/Kg	0.105	0.0862 U			
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	μg/Kg	0.547	0.173			
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	μg/Kg	0.0882 U	0.0862 U			
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	μg/Kg	0.167	0.0862 U			
PCB 209	Decachlorobiphenyl	μg/Kg	0.0959	0.0862 U			
	Total Monochlorobiphenyls	μg/Kg	ND	ND			
	Total Dichlorobiphenyls	μg/Kg	3.03	0.766			
	Total Trichlorobiphenyls	μg/Kg	11.9	2.04			
	Total Tetrachlorobiphenyls	μg/Kg	20.3	2.48			
	Total Pentachlorobiphenyls	μg/Kg	30.6	6.18			
	Total Hexachlorobiphenyls	μg/Kg	59.9	14.8			
	Total Heptachlorobiphenyls	μg/Kg	35.0	11.6		-	
	Total Octachlorobiphenyls	μg/Kg	7.68	2.58			
	Total Nonachlorobiphenyls	μg/Kg	0.714	0.173			
	Total Decachlorobiphenyls	μg/Kg	0.0959	ND			
	Total PCBs	μg/Kg	169	40.6	676	0.39	

## Notes:

MoCB = Monochlorobiphenyl

DiCB = Dichlorobiphenyl

TriCB = Trichlorobiphenyl

TeCB = Tetrachlorobiphenyl

PeCB = Pentachlorobiphenyl HeCB = Hexachlorobiphenyl

HpCB = Heptachlorobiphenyl

HpCB = Heptachlorobiphenyl
OcCB = Octachlorobiphenyl

NoCB = Nonachlorobiphenyl

 $U=\mbox{The analyte was not detected above the reported sample quantification limit.}$ 

-- No JSCS screening level available.

 $\mu g/Kg = Micrograms per kilogram.$ 

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

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

**bold** = concentration exceeds JSCS Bioaccumulation Screening Level Value

= concentration exceeds JSCS Toxicity Screening Level Value

Table 7 Basin 44A Stormwater Evaluation Summary

			_	A	dditional Screening Fact	tors		
Analytes with Detection(s) Exceeding JSCS SLVs (1)	Geometric Mean <sup>(2)</sup> of Concentration (µg/L)	JSCS SLV <sup>(3)</sup> (µg/L)	Geometric Mean >SLV?	DEQ Background <sup>(4)</sup> (µg/L)	Harborwide Source Tracing Category <sup>(5)</sup>	NPDES Permit Benchmark <sup>(6)</sup> (μg/L)	Data Indicate Potentially Significant Current Source	? Rationale
PCB Congeners								
Total PCBs	0.00675	0.000064	Yes		1		No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Total Metals								
Arsenic	0.905	0.045	Yes	2	1		No	Basin geometric mean concentration is below DEQ estimated background concentration.
Cadmium	0.438	0.094	Yes	<1	2		No	Basin geometric mean concentration is below DEQ estimated background concentration.
Copper	25.3	2.7	Yes	9	1	100	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Lead	10.8	0.54	Yes	13.3	1	400	No	Basin geometric mean concentration is below DEQ estimated background concentration.
Silver	0.096	0.12	No	<1	Note <sup>(7)</sup>		No	Basin geometric mean concentration is less than the JSCS SLV.
Zinc	192	36	Yes	38	2	600	No	Basin geometric mean concentration is only slightly greater than the upper confidence interval (UCL) for the lowest source tracing category (0.186 $\mu$ g/L; BES, 2010) and is signicantly less than the NPDES permit benchmark
Pesticides								
4,4'-DDE	0.00119	0.00031	Yes		NA		No	Analyte was detected in only one stormwater sample, and the basin geometric mean concentration is less than 10 times the JSCS SLV.
4,4'-DDD	0.00262	0.00022	Yes		NA		No	Analyte was detected in only two stormwater samples, and both detections were qualified (flagged) results. Basi geometric mean concentration is only slightly greater than 10 times the JSCS SLV.
Aldrin	0.0025	0.00005	Yes		NA		No	Analyte was detected only in samples (parent and duplicate) from one storm event, and both detections were qualified (flagged) results. Analyte was not detected in the samples from the last two storm events.
Heptachlor Epoxide	0.00174	0.000039	Yes		NA	==	No	Analyte was detected only in parent sample (not duplicate) from one storm event, and the detection was a qualified (flagged) result. Analyte was not detected in the samples from the last two storm events.
PAHs (EPA 8270-SIM)								
Benzo(a)anthracene	0.0137	0.018	No		Note <sup>(7)</sup>		No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(a)pyrene	0.0143	0.018	No	==	Note <sup>(7)</sup>	==	No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(b)fluoranthene	0.0169	0.018	No		Note <sup>(7)</sup>		No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(k)fluoranthene	0.0144	0.018	No	==	Note <sup>(7)</sup>	==	No	Basin geometric mean concentration is less than the JSCS SLV.
Chrysene	0.0473	0.018	Yes		1		No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Fluoranthene	0.0915	0.2	No		Note <sup>(7)</sup>		No	Basin geometric mean concentration is less than the JSCS SLV.
Indeno(1,2,3-cd)pyrene	0.0131	0.018	No	==	Note <sup>(7)</sup>	==	No	Basin geometric mean concentration is less than the JSCS SLV.
Naphthalene	0.166	0.2	No		Note <sup>(7)</sup>		No	Basin geometric mean concentration is less than the JSCS SLV.
Total PAHs	0.598				2		No	No source tracing is needed for individual PAHs based on low geometric mean concentrations relative to JSCS SLVs and/or harborwide source tracing categories.
Phthalates (EPA 8270-SIM)								
Bis(2-ethylhexyl)phthalate	1.92	2.2	No		Note <sup>(7)</sup>		No	Basin geometric mean concentration is less than the JSCS SLV.
SVOCs (EPA 8270C)								
Pentachlorophenol	1.55	0.56	Yes	-	NA		No	Analyte was detected in only two stormwater samples, and only one detection exceeds (slightly) the JSCS SLV. Basin geometric mean concentration is less than $10$ times the JSCS SLV.

## Notes:

NA = Harborwide source tracing category not developed for this constituent.

MARCH 2011 PAGE 1 OF 1

<sup>(1)</sup> Stormwater analytes for which at least one detected concentration exceeded the corresponding JSCS SLV. See Tables 2 and 3.

<sup>(2)</sup> Geometric mean values were calculated using the following conventions: (1) averaging the concentrations (for each analyte) for the 12/12/2008 primary and duplicate samples to calculate a single concentration (for each analyte) for the 12/12/2008 event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting limit (MRL) to 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

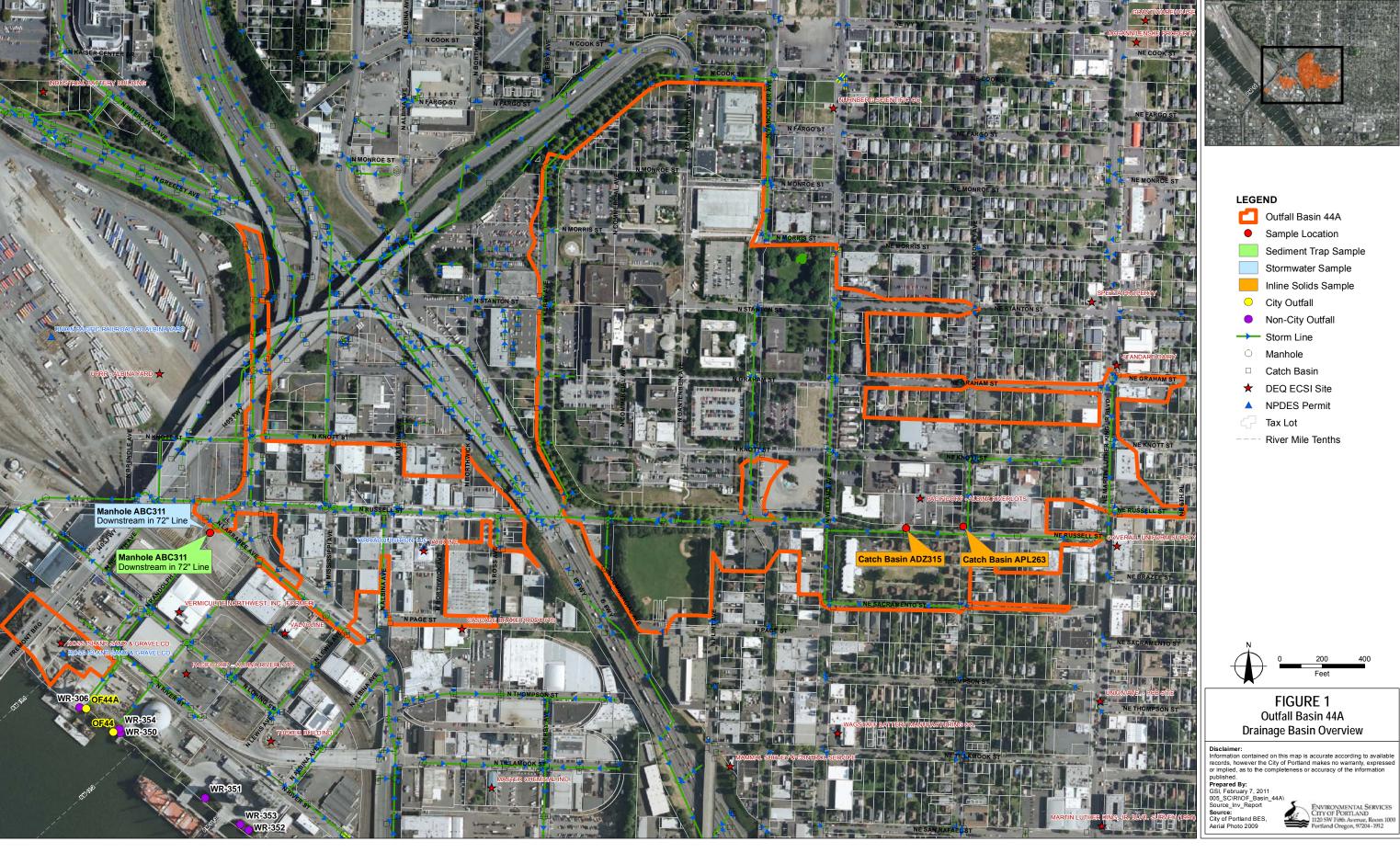
<sup>(3)</sup> Joint Source Control Strategy (JSCS) Screening Level Value (SLV) (DEQ/EPA 2005, as updated in July 2007).

<sup>(4)</sup> 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.

<sup>(5)</sup> Based on data from City and non-City outfalls discharging to the Portland Harbor. See City Stormwater Evaluation Report (BES, 2010) for detailed description of source tracing category significance and development.

<sup>(6)</sup> NPDES = National Pollution Discharge Elimination System.

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





Outfall Basin 44A

Sample Location

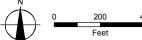
Sediment Trap Sample

Stormwater Sample

Inline Solids Sample

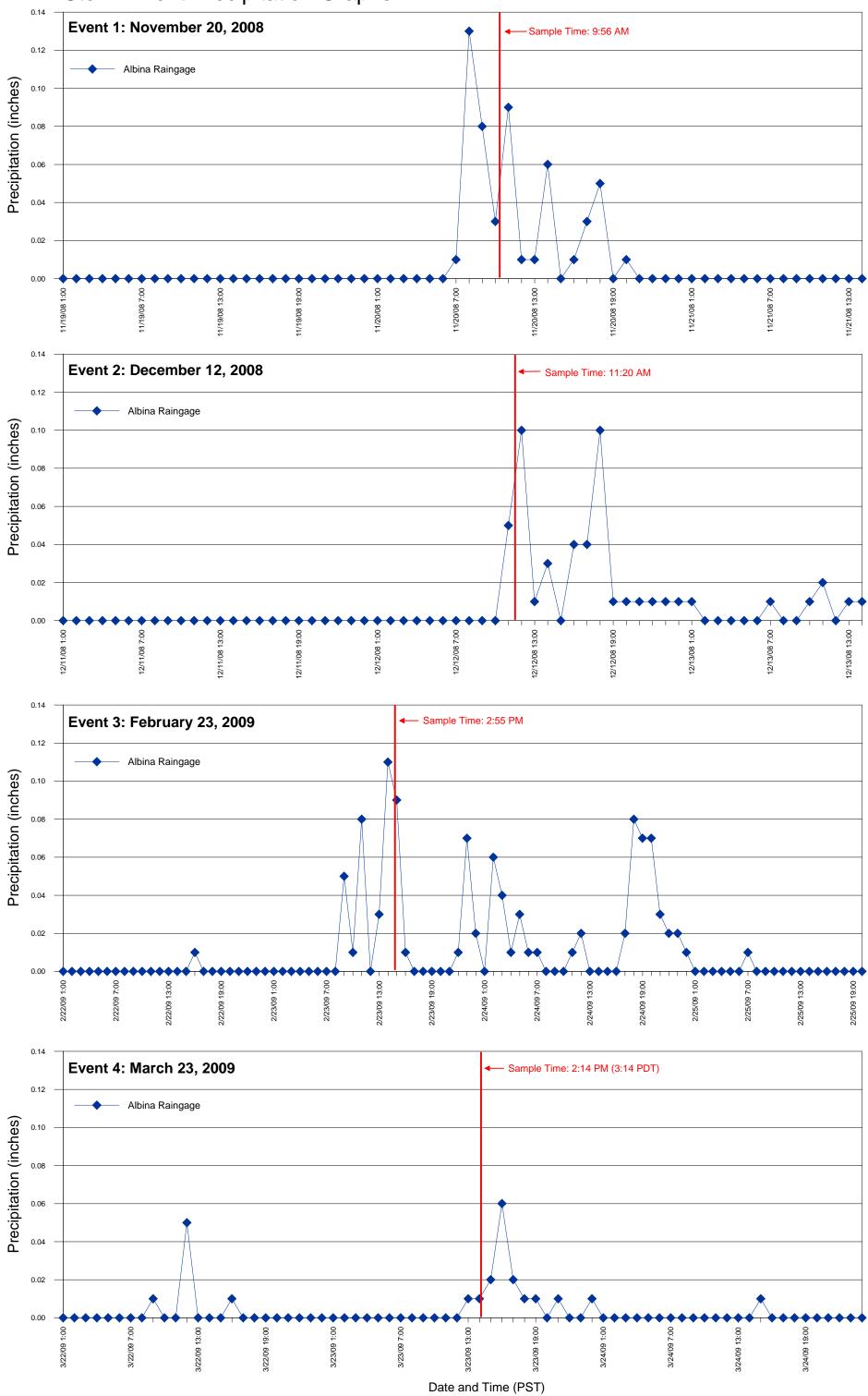
Non-City Outfall

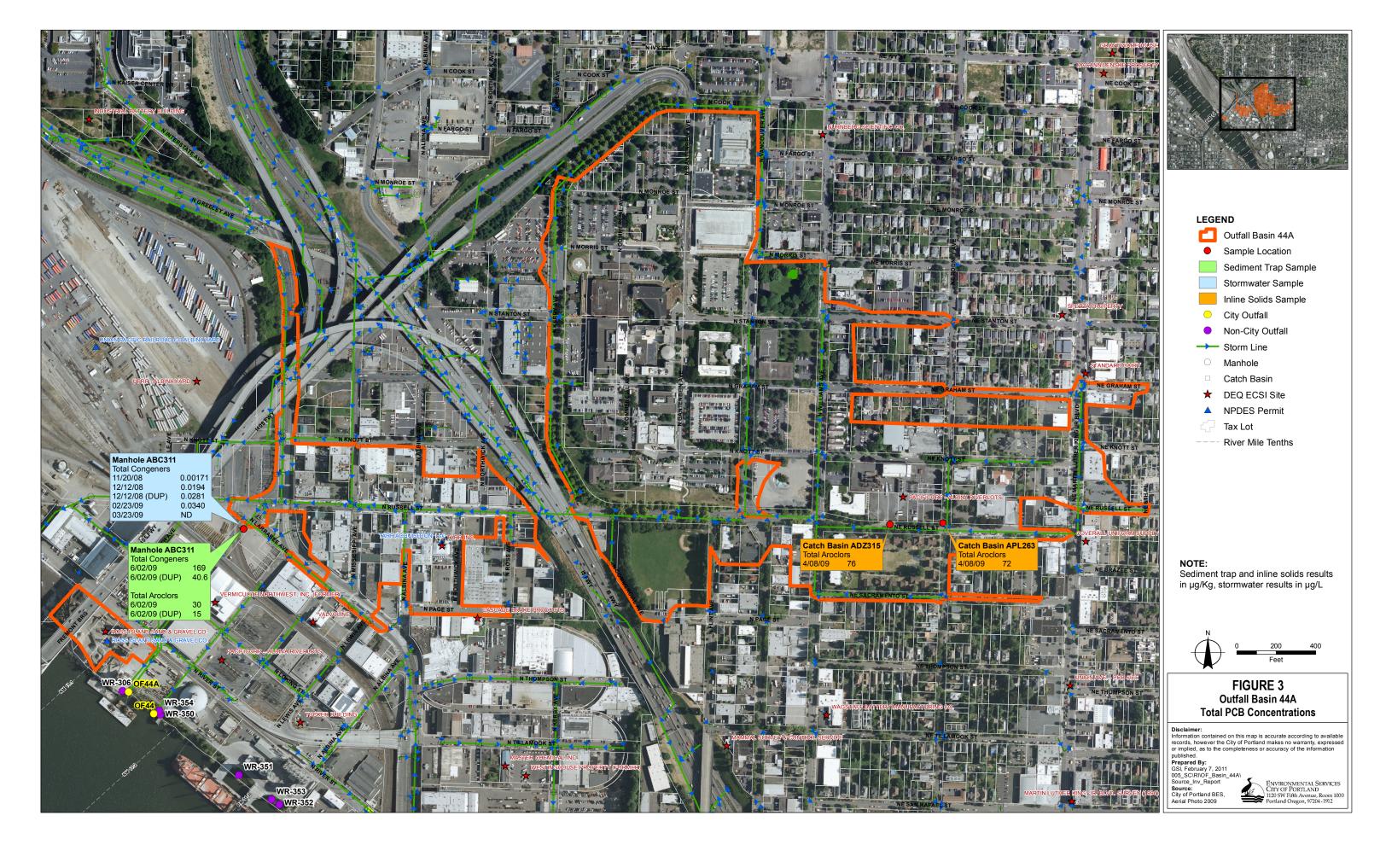
River Mile Tenths



## FIGURE 1 Outfall Basin 44A Drainage Basin Overview

Figure 2
Outfall 44A
Storm Event Precipitation Graphs









## 2008 - 2009 Stormwater Sampling



Photo 1 (December 2008). Stormwater sampling location ("SW1", Manhole ABC311).



Photo 2 (December 2008). Stormwater flowing through Manhole ABC311 during sampling event.

## 2008 - 2009 Sediment Trap Deployment



**Photo 3 (October 2008).** Two sets of installed sediment traps at sampling location ST1 (Manhole ABC311). The trap in the foreground is the farthest upstream.



Photo 4 (May 2009). Sediment traps at time of removal.

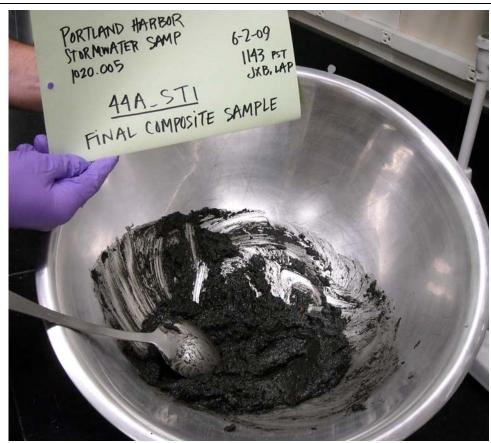


Photo 5 (June 2009). Composited and homogenized sediment trap sample submitted for analyses.

## 2009 Catch Basin Solids Sampling



**Photo 6 (April 2009).** Collecting a solids sample from catch basin ADZ315.

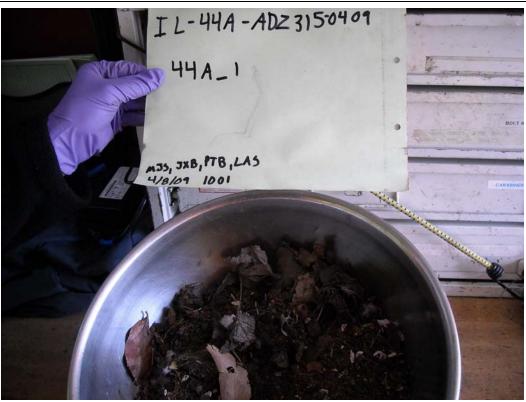


Photo 7 (April 2009). Homogenized solids sample collected from catch basin ADZ315.



Photo 8 (April 2009). Catch basin APL263 at the intersection of NE Russell and NE Rodney Streets.

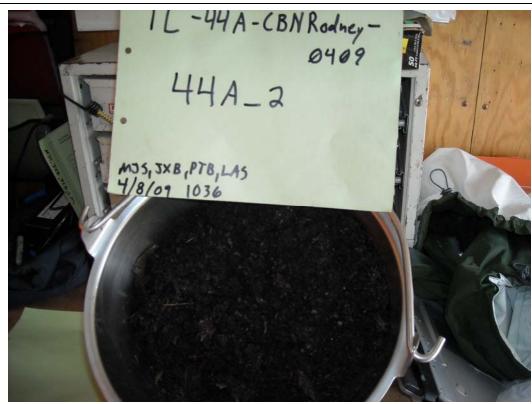
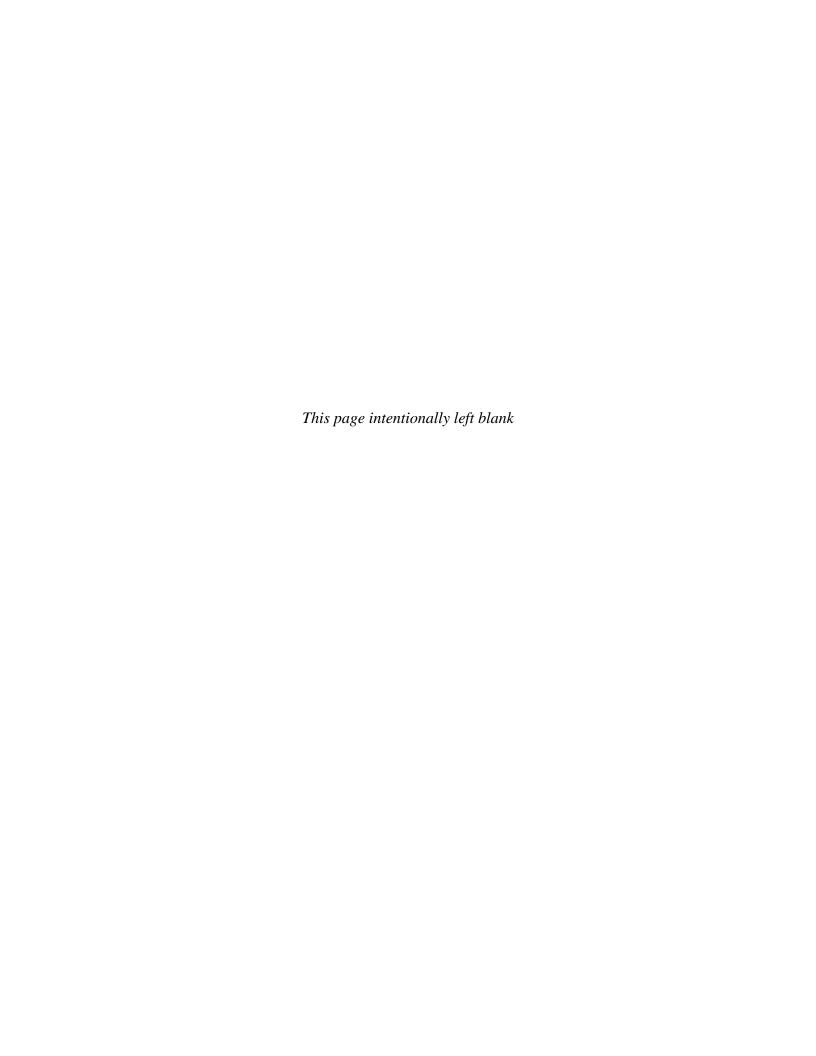


Photo 9 (April 2009). Homogenized solids sample collected from catch basin APL263.

APPENDIX B Field Notes



# Stormwater Sampling



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: / of (

Collected By: \\CB/PHA

	intod Nama	gnature:	-   >	rinted Name: DAN ( PE)	KINGHOBE	1 1 11	FW 081414		EO 081/13			200 A 100 A		VITTORY OF THE PROPERTY OF THE	TO 081410	FO 081411	FO 081410	- 0001409		FO 081408	WPCL Sample I.D.			FY 2008		File Number: 1020.005	Project Name: PORTLAND HARBOR STORMWATER SAMP
Date:		Time:	120/08		132 Inne 1/32		DUPLICATE	FIELD DECON BLANK		e established and	en e	COLUMN TRANSPORTE COLUMN TRANSPORTE DE LA COLUMN TRANS	The second secon	N LARABEE & RANDOLPH	SW-44A-ABC311-1108	N HARDING & RIVER	NWHEELER PL & KERBY	N KERBY & WHEELER	SW.43 ABC530 1108	SW-43-ABC290-1108	Location		Sample Time recorded in PST	FY 2008-09 Stormwater Grab Chain-of-custody		)5	TLAND HARBOR S
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Date:	Time:	١.	· Separate	'Dafa'	Time:	) je v	G	1006 6	<del> </del>		TWCCDR23:	;	· · · · · · · · · · · · · · · · · · ·	0956 G		1 (94)   G	6 0911 G	8 0854 6	70.04	1927 6	Time	e Sample Sample		stody		STORMWTR	AMP
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## **DAILY FIELD REPORT**





Page or
Project bothur Harbor Sparmwater Samp Project No. 1020.005
Location Lasing 43, 44, 44/A Date 11/20/08
Subject 1st sampling event By feb/PHA
2
0852: Arrived at 43. SWB to heavy steady rain lain began this morning
at approx 0700. Visible flow of ~ 0.5 fps in manhole. Collected
Sample plus displicate. Took photos (1) Flow in MH @ Draining area.
Off-site @ 0903.
0908 Arrived @ 43_SW3 to steady moderate rain. Collected sample
ot 0911, Strong Som Sewage odor in MH and samply. Sample had lots of solids, was turbed and brown in color.
had lots of solids, was turbed and brown in color.
0925 Offsite
O928 Amire at 43.5WI to steady vain. Collected sample @ 0930  Sanitary seep evident in MH, but does not appear to be Plowing of the higher volume observed during previous sed trap install
Sanitary seep evident in MH, but does not appear to be Plowing
at the higher volume observed during previous sed trap install
visits. Offsite @ 0935
0939 Brive @ 55 44-SWI to steady, light rain. Collected sample successfully @ 0941. Laterals Howing into MH, deflecting off PVI and spraying sed trapin pipe. No sewage odorin sample. Low
successfully @ 0941. Lateral's Howing into Mit, deflecting off PVE
and spraying sed trapin pipe No sewage odorin sample. Low
turbidity, he odor, but very slight sheen present in sample
Off 51 10 @ 0948.
AND I I A STATE OF THE PARTY OF
5453 prive @ 44A_SWI. To very light rain. Sample collected success Bully. Field decon blank collected here as well at 1006.
successiony. Freld decon blank collected have as well at 1000
1010 OFF sik to WPCL to relanguish samples.

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:

Collected By: 1455 35 3 143 Page:

Project Name: PORTLAND HARBOR STORMWATER SAMP

Date:		Printed Name:	Date:		Printed Name:	Date:	1		Printed Name:	Date:	rinted Name:
Time:		Signature:	Time:		Signature:	Time:			Signature:		Signature:
	<i>5</i> -	Received By: 4.		3.	Received By:			2.	Received By:		
Date:	D	Printed Name:	Date:		Printed Name;	Date:			Printed Name:	\ 13/13/05	May + 5c   Nax
Time:		Signature:	Time:		Signature:	Time:			Signature:	ンがた一つと	Signature: Mr. H. H.
		Relinquished By: 4.		By: 3.	Relinquished B			By: 2.	Relinquished By: 2.		Relinquished By: 1/1 /2 /2
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			•	•		•	)344 G	13/12/08 13	FDB 1	FIELD DECON BLANK	FO 081481
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10.1	Š	7.1	•	•		•	1144 G	44_SW1 12/12/06 11	44_SW1	SW-44-ABC352-1208 N HARDING & RIVER	FO 081479
シナ	31	7.8	•	•		•	) <i>0</i> 6	43_SW4 13/13/18 1310	43_SW4	SW-43-ABC449-1208 N KERBY & TILLAMOOK	FO 081478
ار س	106	7.9	•	•		•	330 G	43_SW3 12/12/05/332	43_SW3	SW-43-ABC552-1208 N WHEELER PL & KERBY	FO 081477
	20	7.7	•	•		•	(2) G	43_SW2 10/12/08 1321	43_SW2	SW-43-ABC539-1208 N KERBY & WHEELER	FO 081476
5x 7,9	56	7,8	•	•		•	6	7/11/8/1/21	43_SW1	SW-43-ABC290-1208 N ALBINA & RIVER	FO 081475
рН (рН с	Conduc	Temper		PAH + F SVOC's		TSS	Sample Sample Time Type	Sample Sa	Point Code	Location	WPCL Sample I.D.
units)	tivity (umhos/	ature (Deg C)	etals (As, Cd, Ag, Zn) ercury	ringeners (Ali Phthalates (T/ (CAS) des (CAS)				ST	corded in P	☐ Sample Time recorded in PST	
	/cm)		Cr, Cu,					-of-custody	rab Chain	FY 2008-09 Stormwater Grab Chain-of-custody	FY 2008
	Field		Metals	Organics	General	G				\$. 1	
		alyses	Requested Analyses	Requ	,		STORMWTR	Matrix: ST	I <u>.                                     </u>	5	File Number: 1020.005
			•	ļ		<u>_</u>					1.4

## DAILY FIELD REPORT





Page \_\_\_\_\_ of \_\_\_\_\_\_\_

Project Portland Harbon SW Project No. 1020.005
Location 6 outfall grah sites Date 12/12/08
Subject Event 2 By MJS, JXB
1035 - rain has intensified from very light to moderate
1035 - rain has intensified from very light to moderate steady rain - will go out to sites at this point.
1112 - on site @ 44A-SWI to Kery heavy consistant
tain and heavy runoff. Flow in pipe is flowing very fost and is extremely turbed collected sample and duplicate from 1180-1132. Took photos of flow in pipe and st street new manhole.
dollar eform 1120 -1130 Tank Abouter of Claring diff
a let street are horable
1138 - on sife 44-5WI. light but steady rein good flow entering catch basin and heavy flow in line. I collected sample 1144 -1149
conditions entering extension and heavy flow in live
J Collected Sample 1144 -1149
1155 on site @ 43_SWI. light rain but runoff
1155 on site Q 43_SWI light rain but runoff still entering catch basins Sampled 1157-1205 sample is moderately tucked.
sample; moderately tuched.
1205 Rain has stopped
1276 Rain has storted up again and is currently quite
1 rant
1255 Rain intensifying
1306 - on site @ 43 SWY to moderate Steady Nata
and good run off entering cotch hasing, Sample is moderated
440610
1321 - on site 43-5WI to steady ram 4-flow, sample.
is the maderately turbed.
1330 - on sitep 43_ SW3 to heavy flow
Attachments gample is extremely quiting

## City of Portland Environmental Services

## **DAILY FIELD REPORT**





Page  $\underline{\mathcal{A}}$  of  $\underline{\lambda}$ 

Project <u>Portland Harbor Stormnoten</u> Location  Subject <u>Event</u>	Project No. 1 (12/1) 005  Date 12/12/08  By M55, 5 X 3
1344 Collected Field Decon Blank immediately after collecting sumple clean heaker. Did not collect First	b/c we were
approaching 3 hour first flush de	ad Ime).
프로그램 교육 중에 되었다. 그는 경기를 보고 하는 것이 되는 것이 되었다. 그런 전략을 하는 것이 되었다. 교육 기계를 보고 있는 것이 되었다. 그렇게 되는 것이 되었다는 것이 있는 것이 없는 것이 없는 것이 되었다.	
스팅, 설명 경험 회사 (1985년 1987년 1985년 - 1985년 - 1985년 1987년 1987년 - 1987년 - 1987년 - 1987년 - 1987년 - 1987년 - 1987년 - - 1987년 - 1987	
교육하는데 고려왔는데 있다는 왕이는 여러가는 하다는 경기를 받았다. 하는데 전하는 사람 사람들은 일반 사용을 보자 하는 경기를 하는데 한 사람들은 사용을 받았다.	
고등, 생각한 시리 및 그런 일반 전 경기는 사람들은 문제를 보고 있다. 전 전 경기는 전 경기는 것으로 함께 되었다. 	
Attachments	

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



## Chain-of-Oustody



Date:

Page:

Collected By: M35, JXB

# Project Name: PORTLAND HARBOR STORMWATER SAMP **Bureau of Environmental Services**

File Number: 1020,005	5	-	Matrix:	STORMWTR	VTR							Requested Analyses	lest	ď	naly	/ses		
						Ge	General			org	Organics			Metals	sls	·	Field	
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	☐ Sample Time recorded in PST	orded in F	ST					geners (All	thalates (T	AS)	(CAS)	······································	ıls (As, Cd,		cury	ure (Deg C)	ity (umhos/	ts)
WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	TSS		PCB Cond		SVOC's (C	Pesticides		Total Meta	Pb, Ni, Aç	Total Merc	Temperati	Conductiv	oH (pH uni
F0095216	SW-43-ABC290-MMYY	43_SW1	CHHI 60/EE/E	ZHH!	ര	•		•		•	•					.s.	ي	annes.
FO095217	SW-43-ABC539-MMYY N KERBY & WHEELER	43_SW2	43_SW2 3/23/09	) H (0	ഹ	•		•	•	•	•				•	0	3	<i>F</i> 1
FO095218	SW-43-ABC552-MMYY N WHEELER PL & KERBY	43_SW3	43_SW3 8/23/09	15.00 16.00	G	•		•	•	•	•				•	9.8	60	7.2
FO095219	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	43_SW4		1358	G	•		•	•	•	•				•	, r	ي ب	7.5
FO095220	SW-44-ABC352-MMYY N HARDING & RIVER	44_SW1	44_SW1 3/03/09 142e	1428	G	•		•	•	•	•				•	$\longrightarrow$	01	7 2
FO095221	SW-44A-ABC311-MMYY N LARABEE & RANDOLPH	44A_SW1	44A_SW1 3/03/09 1455	1455	ര	•		• 1	•	•	•		•		•	9	37	7.3
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		į															
						· ·					-					·	0	
FO095222	FIELD DECON BLANK	FDB	2/23/09	1530	G	•		•	•	•	•		•		•			
FO095223	* DUPLICATE	DUP	3/33/09		G	•		•										
Signature: M. H. A.	Time:	Kelinquished By: 2. Signature:	d By: 2.		Time:		Relinquished Signature:	Shed E	By: 3,	<i>i</i>			Time:	ľ	Relingu Signature:	Relinquished By: 4.	=1	imp.
Printed Name: ++ 54 11 Non		Printed Name:			Date:		Printed Name:		.				Date:	.	Print	Printed Name:	D	Date:
Signature:		Received By: Signature:	2.		Time:		Received By: Signature:	By	ω				Time:		Receive Signature:	Received By: 4. Signature:	<u> </u>	Time:
Printed Name:	Date:	Printed Name:			Date:		Printed Name:	2					Date:		Printe	Printed Name:	B	Date:
S.\FID\1000\1000	SAFIDADDA 1020 DOS - Portland Harbor Stormanto	Cambio	-1-10-11				┞	Ì										

## **DAILY FIELD REPORT**





Page \_\_\_\_\_ of Project Portland Harbon Stormwater Sand Project No. 1020.005 Location bistus 43, 44, and 44A Date 2/23/04 Subject <u>Event</u> 8 By MJS, JXB 1337 - very heavy rain folling throughout the region - will go to Albina and determine if there is sufficient rain thin off to sample 43\_5W4 - on site at 1354 to heavy nam + good sun oft Sample is very turbed and has a pronounced sheen. 43- Swa - on - site at 1406 to contract vair and flow custading from laterals into markole charles water proled M manihole is visibly flowing samples are extremely to obid. 44\_SWI - on site @ 1470 to continued moderate vain and very heavy runoff. collected duplicate for TSS + PCBs. Samples are extremely turbed w/ wishte suspended soil wishle enforme cotch basin 43-5W1- on site @ 1439 to continued rain and heavy run-off Samples are again extremely turbed - word frack traffir. 44A-SWI - on site at 1452 to decreasing rain but still very heavy flow. Samples extremety turbid, Rain intersifying agoin--on site @ 1509 to steady woderate rain, Rain. decreased throughout sampling but flow remembed etranely heavy, odor and visual particles in sample may indicate a CSO event organing. FDB Wavew clear baller at 43.5W) **Attachments** 

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: 3/33/04

Page: | | |

Collected By: <u>MJ5, ゴメら</u>

rinted Name:	»gnature:	<u>id By:</u> 1.	My Sallivan	Signature: Mult Sul		FO095378	FO095377		FO095376	FO095375	FO095374	FO095373	F0095372	FO095371	CL Sample I.D.	FY 2008		File Number: 1020.005	Project Name: PORTLAND HARBOR STORMWATER SAMP	,
Date:	Time:		3/23/09	1		DUPLICATE	FIELD DECON BLANK		SW-44A-ABC311-MMYY N LARABEE & RANDOLPH	SW-44-ABC352-MMYY N HARDING & RIVER	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	SW-43-ABC552-MMYY	SW-43-ABC539-MMYY N KERBY & WHEELER	N ALBINA & RIVER	Location	FY 2008-09 Stormwater Grab Chain-of-custody  ☐ Sample Time recorded in PST		)5	<b>FLAND HARBOR S</b>	
Printed Name:	Signature:	Received By:	Printed Name:	Signature:	Relinquished By:	DUP	FD8		44A_SW1	44_SW1	43_SW4	43_SW3	43_SW2	43_SW1 3/	Point Sa	rab Chain-of corded in PST		Matrix:	TORMWATE	£
		2.			2	4	1432		디디	1402	1322	1984	1330	3/23/04 1348	Sample Sample Date Time	-custody			RSAMP	artitis N
Date:	Time:		Date:	Time:		G	G.		<u>r</u> G	01 G	6	-£	ە ھ	ഹ	ple Sample ne Type			STORMWTR		
39	<u>S</u>	120	P	S		•	•		 •	•	•	•	•	•	TSS		General			•
Printed Name:	Signature:	Received By:	Printed Name:	Signature:	Relinquished By:	•	•		•	•	•	•	`•	•	PCB Cor	ngeners (All 209)	- 12			
		3	-		ω	*	•		•		•	•	•	•	PAH + PI SVOC's ( Pesticide	· · · · · · · · · · · · · · · · · · ·	Organics			
Date:	Time:		Date:					· · ·							Total Me	tals (As, Cd, Cr, Cu	_			•
Printed Name:	Signature	Recei	Printed Name:	Signature:	Rein		•		•	•	•	•	•	•	Pb, Ni, A Total Me	<del></del>	Metals	Requested Analyses		
Name:		Received By: 4.	Name:	ıre:	Relinguished By: 4.	ed A			10.0	_0	1017	た。	ان آن	9 6	Tempera	ture (Deg C)		ses	. <sup>1</sup> **:	
	-			-					97	12 <b>9</b>	122	552	30°	661	Conducti	ivity (umhos/cm)	Field			
Date:	Time:		Date:	Time:					7.5	7.8	1,4	a-	6.9	7.3	pH (pH ur	nits)				

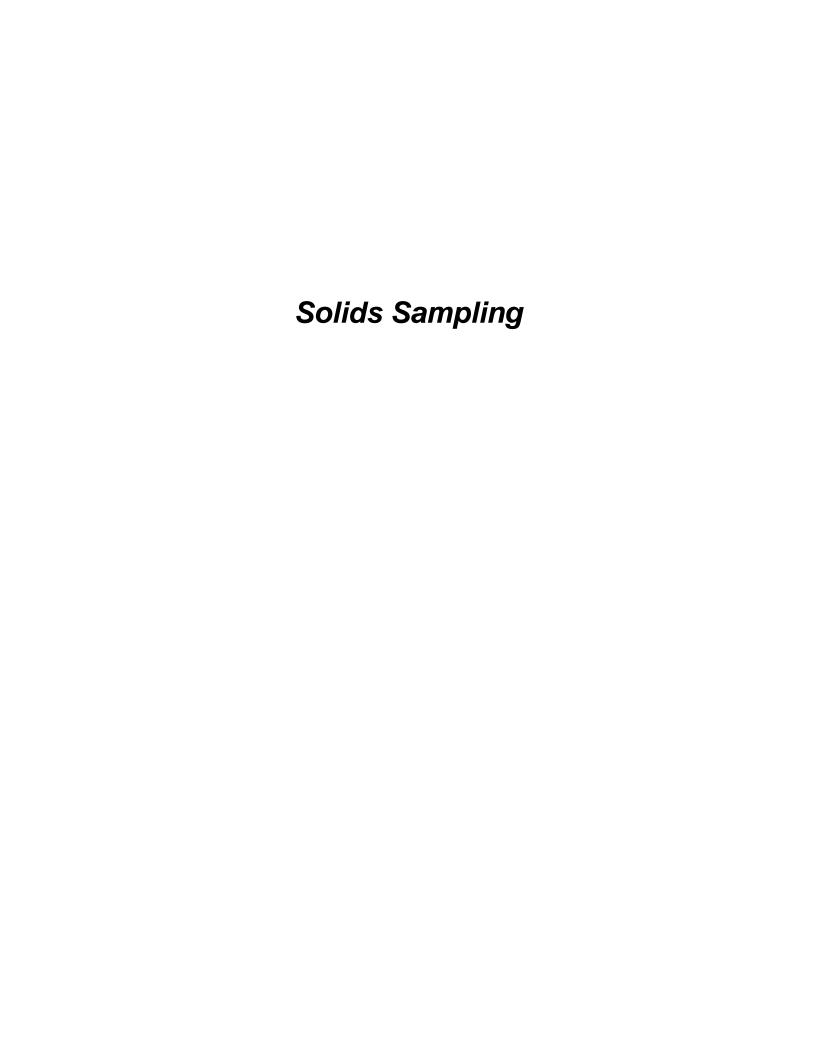
## **DAILY FIELD REPORT**



Page \_



Project Portland Harbon Starmweter Project No. 1020.005 Date 3/23/04 Location Basin 43, 44, and 44a Subject Even + 5 By MJS, JKS PST Light rain beginning, radar shows significant moisture arriving from the wes on ste at busin 43, No rain yet - sprinkle rain, s now intensifying and to be lebt hot or site P 43 SW/ Still light but at pac Viginle runoff and good flow in the 44-5WI to continued le tunoff enterine catch and duplicate for TGG & PLB. 44A\_SWI. Light Nath at 47 5W3 Light rain contin FOR prior to sampling 1445 Light steady rain continuing. There light but 5 us pendled par Attachments very furbid, Measured extremely high tonductivi (552 US/cm). Sample has anoil snear and a trydiscourse ofor petroleum like ofor





#### Solids Sampling: Sediment Trap







Project PORTLANT HARDOR STORMWATER STUP Project No. 2020.005 Location BASTAS 43, 44, 441A  Subject 08/09 TNITUE SENTRAP INSTALLATION By JXR/MJS  BACKLERGUND: High pressure system has moved into the northwest?  For four rest conditions turning into Clear sty's 60.65° Last measurable precipe 48 hours  All times in PDT  0733 PDT Armine on site N Larabee & Randolph (ABC311)  JXR installs Standard" sed traps (44 A ST1) approx 6-8'  Ox From Manhole chamber in the 72" main pipe JXR also installs base plates for see rectangular of equare sed  traps (R\$D) approx 9" from standard sed traps."  Took photos of sed Trap installation  IXR mounts "FPA certified clean narrow menth HDPE  bottles in standard pair using clean nitrile glows, after flushing invert WMPDI Bottle caps where remared  of placed in clean Ziplork bag, look photo of sed traps what bottle caps  Soft of the Con Ziplork bag, look photo of sed traps what bottle caps  Soft of the Con Ziplork bag, look photo of sed traps what bottle caps  Soft of the Con Soft of the pipe is clay making anchor for traps dominations of  MH chamber. 16 pipe is clay making anchor foil installation challenged.  Mill 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 of slight sag in gipe Large quantity of solds in line  May be due to Esco construction activities—talk to Angela Henrer  MIS completed standard sed trap installation. Took photos of SW.  traps wifout bottle caps  413-511-132 installed numbers.  440-6000 From Eor.			Page $\underline{1}$ of $\underline{1}$
Fog overast conditions turning into clear sky's 60.65.  Last Measurable precipe > 48 hours.  All times in PDT  0933 PDT - Arrive on site@ N. Larabeed Roundolph (AB(311)).  JXR installs "standard" sed traps (44A-571) approx. 6-8  DS from Manhole chamber in the 72" main pipe. IXB also installs base plains for recreatingular of square sed traps (R&D) approx 9" from standard sed traps. All traps (R&D) approx 9" from standard sed traps. All traps (R&D) approx 9" from standard sed traps. All traps (R&D) approx 9" from standard sed traps. All the posters of sed Trap installation.  JXB mounts "FPA certified clean narrow month HDPE bottles in standard pair using clean nitrile gloves.  After flushing invert w/ NPDT. Bottle caps were removed of placed in clean ziplock bag. Took photo of sed traps wout bottle caps.  Bottle 1 mounted in US trap (44A-571-B1)  As bottle 2 mounted in US trap (44A-571-B2)  PATOR OF SIDE & 2100 N Albina Aue (AB(363)). MTS  attempts to install a pair of "standard" sed traps downstream of MH chamber. 16" pipe is clay, making ancier both installation challenging.  All hor hours are in place but not engage of conjugacting like peass).  Will need to keep an eye on traps during storm events. There is a low probability that traps will get hlown out due to smail pipe diameter of slight standard sed trap installation. Took photos of SCU. traps whom bottle caps.	Location BASINS 43, 4	14,44A	Date <u>10/17/08</u>
OS Fromminanhole chamber in the 72" main pipe. TXB also installs base plates for recreangular of square sed traps (R&D) approx 9" From standard sed traps. I Took photos of sed Trap installation.  TXB mounts "EPA certified clean" narrow month HDPE bottles in standard pair using clean nitrile gloves, after flushing invert w/4PDT. Bottle caps were removed of 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 US trap (44A-ST1-B2)  150 Arrive on site of 2100 N Albina Avo (ABC 363). MJS attempts to install a pair of "Standard" sed traps downstream of MH chamber. 16" pipe is clay, making away bot installation challenging Awhor hosts are in place but not engage of 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 of slight sag in pipe large quantity of solids inline may be due to ESCSO construction activities—talk to Angela Henders MJS completed standard seed trap installation. Took photos of SCU.	Fog of oversost conditions to Last measurable p All times in PDT 0933 PDT - Arnive	itions turning into Cle vecip > 48 hours on site@ N. Larabeet	Par Stys 60-65.
bottles in standard pair using Clean nitrile gloves, after flushing invert W/MPDI. Bottle caps were removed of placed in clean Ziplock bag. Took photo of sed traps W/Out bottle caps is Bottle 1 mounted in US trap (44A-ST1-B1 & ST000) Bottle 2 mounted in US trap (44A-ST1-B2) & ST000 Bottle 2 mounted in US trap (44A-ST1-B2) & ST000 Bottle 2 mounted in US trap (44A-ST1-B2) & ST000 Bottle 2 mounted in US trap (44A-ST1-B2) & ST000 Bottle 2 mounted in US traps (44A-ST1-B2) & ST000 Bottle 2 mounted in US traps (44A-ST1-B2) & ST000 Bottle on Site of 2100 N Albina Ave (ABC363). MJS attempts to install a pair of "standard" sed traps dominated of MIH chambers 16" pipe is clay, making anchor bott installation challenging Awhor houts are in place but not engages (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 of slight sag in pipe Large quantity of solids inline may be due to ESCSO construction activities—talk to Angela Henders MJS completed standard sed trap installation. Took photos of SGV. traps W/out bottle caps	installs base-pk traps (R\$D) app Took photos of	chamber in the 72" mates for sea rectangulation 9" From Standard Sed Trap installation	ain pipe TXB also or of Square sed sed traps. 25
150 Arrive on site & 2100 N Albina Ave (AB(363). MTS attempts to install a pair of "Standard" sed traps doministream of MIT chamber. 16" pipe is clay, making anchor both installation challength Awhor boths are in place but not engagest (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 of slight sag in pipe. Large quantity of solids inline May be due to ESCSO construction activities—talk to Angela Henders MTS completed standard sed trap installation. Took photos of Sed. traps Wout bothe caps	after flushing	lard pair using clean invert w/ uppi Bottle 2 inlock bas. Took photo o	e caps were removed  Free traps Wout bottle caps.
a low probability that traps will get blown out due to small pipe diameter of slight sag in pipe Large quantity of solids inline may be due to ESCSO construction activities—talk to Angela Henders Mos completed standard sed trap installation. Took photos of Saditraps whole bottle caps	Attempts to install a mit chamber 16"p Awhor holts are in	te & 2100 N Albina An pair of "Standard" sed uipe is clay, making anchor place but not engage of "	o (AB(363). MTS traps donunstream of boil installation challenging only acting like pegs).
	a low probability the diameter of slight may be due to Esce MJS completed sta	at traps will get blown t sag in pipe. Large q so construction activit andard sed trap installat	out due to small pipe nantity of solids Inline ies-talk to Angela Henders
and the state of t			Fream ~5:0" from EOP



#### CITY OF PORTLAND

#### **ENVIRONMENTAL SERVICES**

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



## Project Name: Portland Harbor Stormwater Sump Project No.: Date: 1020.005 | 10/17/08 | 1075, 78 Site Address: N. Larabee 4 Randolph | STI | Hansen ID: ABC 311

	1 1 2 4 2 county 146 2	[KoC 31]
SECTION 1 - INSTA	LLATION INFORMATION	Solida pi i Solida De De Sucionado
raffic control and/or site access concerns:	Describe flow conditions and depth and	l/or any standing
manhole is located in center of abardoned	water at time of install (does river appear	ar to back up into th
spar road w/ very little troffic	line intermittently?):	
	-There is a small but consistent	
	Pipe. ~0.3" of floodepth a	+ ~lfps
	2 O Sm. o A	
escribe sediments in pipo if propert (depth personal self-	River does not appear to	
Describe sediments in pipe if present (depth, sampleable quar	ntitles, lateral extent, etc.):	Sed trap bottles
no sediment present in pipe		installed on:
ediment trap location(s) (pipe size, distance from center of no	ode, proximity to laterals, etc.): From	L0/17/084 © Pipe diameter
ediment trap location(s) (pipe size, distance from center of no primary sed traps are located just off the pipe in v	ert Bund 90" down stream de	
edge of the manhole chamber in the 72" pipe	. A65"	
edge of the manhole chamber in the 72" pipe in beimdary fattor sed fraps are red downstream of primary humber repardard	sytrops, downstream of mh.	Distance from MI
hamber Agrandard	~ 404 4 3124	node (feet) ーフ.5
ED TRAP SITE DIAGRAM		
ketch map of the lateral(s) and layout of manhole, showing approx sed. trap sing the top of the page as north):	location, manhole elevation and inline sediment if	present. Orient drawing
maybole shaft +	~0.3 of base Clo	W
Chamber		
	2 6 8 4 7 6	2
		0/08 ied Standard Immurh
	10/3	000
	Tubil	ed standard
	A i IA	en 1/2-vtife
	1 1 1	EPA "Certific
~ 6/	HDPE I	" bottles in
	100 Clear	condary sed
20 6		,
	Trape	
primary sed yeaps		
~ • · · · · · · · · · · · · · · · · · ·		
TYPE I THE		
5x3 10/30/08	bottle1 = apste	eam (65")
secondary sed traps		400
- sea traps	bottle 2 = downs	tream 190 down
		· · · · · · · · · · · · · · · · · · ·





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Page <u>L</u> of <u>X</u>
Project PORTLAND HARBOR STORMWATER SAMP Project No. 1020.005
Location BASENS 44A, 43 \$ 18(R\$D) Date 10/30 08
Subject TNLTNE SEN TRAP INSTAUS By JXB / AJA
0951 PST - Arrive on site @ 44A_STI[N. Larabee & Randolph/ABC311]
to install sed trap bottles & housing for secondary (standard)
sed traps located approx 9.0' 05 from polymany sed traps.
Primary sed traps of bottles, along with secondary sed trap base
plates were installed on 10/17/08 @ this site.
AJA prepares to make entry. Entrant caps primary sed trap bottles w/site's designated clean bottle caps prior to moving
bottle's w/ site's designated clean bottle caps prior to moving
DS in main like to install secondary sed trap housing. Entrant
notes accumulation of organic leaf debris around primary
Sed trap basephiles Primary sed trap bottles are full of
Stormwater w/ mouths of bottles free of abstructions.  bottle mouths Jx8/11/108
Entrant installed secondary sed traphousing w/clean gloves;
secured decontaminated 1 L HDPF narrow-mouth bottles in
secondary sed traps of removed bottle caps w/clean glaves.
Bottle caps from primary & secondary sed trap bottles were
placed into clean, individual Ziplock bags for deployment pendo
storage of labored. Photo taken of primary of serondary sed trap pairs insitu.
1035 - Left site for Basin 18 RQD site AAT557.
1130 - Amre on site @ 18-ST2 (3950 NW Year Ave (AAT557)]
to install four different sed trap styles for Basin 18 R&D.
1) Standard Sod Trap W/1-L HOPE, narrow-mouth bottle
2) Standard Ed trap 4/1-LHOPF, wide-mouth bottle
Attachments 3) Rectangular low-profile 16 HOPF wide-mouth trap





Page 1 of 4

350 0
Project PORTLAND HARBOR STORMWATER SAMP Project No. 1020, 005
Location BASIN 43, 44 & 44A Date 1/8/09
[하다] 이번 보고, 대생생활하다 하는 것은 말이 되었다. 이 네티를 하는 다른 사람들은 사람들이 되었다. 그는 그리는 다른
Subject TULTUF SED TRAP CHERS By JXB JECH
BACKGROUND: Large frontal system has moved through the Northwest
"Theavy bands of moisture (Pineapple Express), following a prolonged
artic front throughout the entire plantingst (Rain on snow event).
High pressure ridge beginning to build leading to increased temperature
& a prolonged dry period. This will be the first field check of the
sed traps in Basin 43,44 & 44A following installation
All times in PST
Willamotte River Staff Gauge Reading => 13.14@ 0930 (~16.14')
1951 - Arrive on site @ 44A-ST1 (ACX 311). Ect prepares to enter MH.
Baseflow in pipe measured at ~1.8" \$ 1.5-2.0 fps. Noticeable
petroleum oder observed in MH-chamber. Entrant notes significant
build up of organic debris around primary & secondary sed traps
housing. Fook a photo of debris organizated further upstream
trop. Entrant secured bottle caps, working upstream to downstream,
while wearing clean gloves. Entrant removed sed trap bottles for
visual observations after removing debris. All traps were in tacked.
Primary Sed Trap pour:
· 44A-STI-BI- Had a total accumulation of ~0,5" of solids
Wifines adhered to the inside of the bottle wall. Significant
huildup 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 of 10
apparent odor.
* 44A-STA-B2 - Had approx. 1.5" of total accumulation of solids"
fines adhered to the inside wall of the bottle. Minor buildup
-Attachments of organics on trap housing; bottle opening free of obstructions.
bottle was tull of Stormwater Wa visible sheen on the surface
& no apparent odor





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	그렇게 얼마는 것 같은 얼마는 얼마를 먹었다.
Project PORTLAND HARPOR STERMWATER SAMP	Project No. <u>1020,005</u>
Location BASIN 43,4444A	Date <u>1/8/09</u>
Subject INLINE SEN TRAP CHECKS	By JXB/FCH
94A_ST1 (cont.)	
Secondary Sed Trap Pair:	
· 44A-ST1-B3 - Total accumul	lation of solids was
approx. 0.5" w/ minor fines ad	
of the bottle (adhesions). Org	anic debn's wrapped
around trap housing of particul	ly obstructing bottle
opening (280% obstructed). D	ebris was removed by
entrant. Bottle was full of s	tormwater Wa visible
Sheen on the surface of no	
344A-STI-BY - Total accumu	lation of solids was
approx. 1.0-0.5 Wan averag	e depth of ~0.7"
(captured solids were deposited	In the bottom of the
bottle @ an angle) adhesions	on Inside of bothle
Walls Bottle was full of Stor	muder Wa visible sheen
at on the surface & no app	arent odor. Miror buildux
otorganics on trap housing	
Total accumulation of solids @ 44A-5	
Entrant re-secured trap bottles & ren	noved bottle caps while
wearing clean gloves. Bothe caps we designated Ziplock for duration of	ere placed in clean,
designated Ziplock for duration of	deployment perion.
<u> </u>	
1050 - Left 44A-ST1 for Basin 44 - 44	<i>(</i> _\$71_
1103 - Arrive on site @ 44-ST1 (ABC 352)	. Upon amval, field crew
Observed substantial oily sheen/spill as	round man hove, extending
upstream of MH manhole (MH) CB along	curb, into parring area
Attachments @ 2204 N. River ST. Fook photo	s of sheen.

 (	Pt. Code:		Section 25 Committee (1986)	FIELD CHECK INFORMAT	ION Hansen ID. ABC 377
,	Jate: 1/8/09	Estimated sed, depth p volume & inches):		Bottles removed/replaced? Y/W If removed which one(s)?	Archived ID:
	By: JXB/ECH	US Bottle 1 - 0.5" UŚBottle 3 - 0.5"	DS Bottle 2 - 115" DS Bottle 4 - 40,7"	Final Removal? Y(N)	
	Comments: Traperroleum chousings: fr	ups are in tacked, Budor observed in wimary of secondary WASTIBINFINES accumulation of soil who bottle opening from	ascflow was ~1.  It chamber signification of signification of signification of significations.	8"@ 1.5-2.0 fps. Noticeal ficant build up of organi rormwater, olde of the buttle walls. Inificant buildup of organizathe full of stormwater	Holding Sticker es around housing.
	DS Bottle - &	A-671-183; fines ad Lemoved obstruction. Johnwaver Wyvisible A-571-182! Fines ad	hered to inside of b Total accumulation toneen a ne appan hered to incide all	orte wais forthe opening was not solids was ="0,5" & ent odor.	othe was full of
:	Photos Taken?	Wavisible she	end no odor.	to on housing pottle fu	Mat Stormwall
	Describe: Photo	~1.0-0.5" wi average of organic debri	es acrited to hold ege depin of 10,71. R son trap housin	te walls of bottle. Accumuly bottle full of stormwaler was get bottle opening abstru	Mobile sheen & no od
	2/18/09	volume & inches):	er bottle (% by	Bottles removed/replaced? Y(N) if removed which one(s)?	Archived ID:
•	By: JXB/ECH	US Bottle 1 - ^0/8"  WBottle 3 - ^0, 6"		Final Removal? Y/N	
appr	Hyaps house US Bottle 444 Stormwater w 444 STI-BS: 11	@ 015fps. Organic sirg. 144_sti_B3 nbacteria film o sti_B1: Fines adhe up to the bottle neck. Imor adhesions on i of accumulated s	s and plastics, bottle of consider of consider of actions of a consider of actions of ac	atacked. Base flow on sit adhered to all four sca We completely obstructed to aptured stormwateriess, calls of the bottless Bottle is camulated sediment in bottle is full of stormwater up to m of bottle.	Siment by a paper fau of m of bottle e bottle
	994-571-154 Photos Taken?	captured sediment Mixor adhertory The Sterrownier is The hoston of	in bottom of b	stronwater up to bottle pottle face of bottle walls yeap Approx. 0.7" of capture	tured ed sed invent
				d stormwater of paper ton	
	sheing	Estimated sed. depth pervolume & inches):  US Bottle 4 - ~/ 25"  Bottle 3 - ~/ 0"	of bottle (% by	Bottles removed/replaced? Y/N If removed which one(s)? Final Removal? Y/N	Archived ID:
	HITO F capture US Bottle De Od 444-STI-81:	),25% Wa flow of d stormwater will or detected. Minorfl Total accumulation	no visible sheen nesadhered the sall	kediall bottle openings a eved to trap housing, base ya secondary sediment to on surface of captured a hemolice walk of all the distinction of bottle was	stormwater Sticker bottles. supprox. 1.25"
si M	444-511-83"	Total accumulation o	fcaptured solids	in bottom of bottle was solids in bottom of bot	approx. 1,0"
	१५४- <i>ऽ।1-७५;</i> tos Taken? Y	<del>70/al accumula ti</del> e	n of captured e	solids in bottom 100 bott	te was approxogn
	Describe:				

#### **DAILY FIELD REPORT**





Page <u>4</u> of <u>5</u>

	Page 4 of 5
Project Portland Harbor Stormwater Samp.	Project No. <u>1020,005</u>
Location Basing 43, 44 & 44A	Date <u>2/18/09</u> By T√0/504
Subject Inline sediment Trap Checks	By JXB/ECH
BACKUROUND: Extended dry period (5-day acc	umulation=0,06 inches-
Albina Raingage) Wa high pressure system	
throughout the region. (urrent weather	
50°s) and overcast. FO to conduct secon	d inspection of the
inline sediment traps installed in Basins	43,449 44A of for
08/09 wet season.	
*All times in PST	
0952- Amve on site @ 44A-ST1 (N. Lora	
prepares to enter stormwater note ARC311. I	Saseflow was approx.
0.2" W/a flow of 0.5 fps. FCH inspects prin	any & secondary Inline
sediment traps @ 44A_ST1	
44A_ST1_B1&B2-Pamany Sed Traps:	
Organics and plastics were adnered to the	housing of both sed
traps. Bottle openings were free of obstruc	
holdles were full of stormneder up to the	
Entrant observed iron bacteria film ons	
Stormwater Took photo of Ivon bacteria	
44A-ST1-81- Total accumulation of sed in	bottom of sed trap
bottle was approx. 10.8"	
44A-ST1-B2-Total accumulation of sed	in bottom of sed trap
bottle was approx 11.5"	일본 전에 전환되는 것이 발표되었는데 함께 함께 보면 되는 것은 사람들이 발표되었다. 기본 사람들이 함께
[ 하고요 : 그 : 10 1 : 4 : 10 : 40 : 42 : 10 : 4 : 10 : 4 : 10 : 10 : 10 : 10 :	
44A_ST1-B3&B4-Secondary Sed Traps: Or	ganics and plastics were
Attachments also adhered to the housing of home	commence of the second

#### DAILY FIELD REPORT





Page Q of 5

1000 5
Project Portland Harbor Stormwater Samp Project No. 1020,005
Location Basins 43, 444 44A Date 2/18/09
Subject Inline Sediment Trap Checks By JXB/ECH
44A-ST1-838BU-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 bottled obstruction.
Both sed trap bottles are full of stormwater up to the neck of
the bottle. I von bacteria film was also observed on the
surface of the captured stormulater in the secondary sed trap bottles
[제 하다는데는 하는 일본 : 하는데 는 다른 다른 다른 다른 하는데도 다른데는데 하 [해하는데 하다리는 문화 하다는 말함에 하였다] 하였다.
44A_STI-B3 - Total accumulation of sed in bottom of sed
trap bottle was approx. 10.6"
trap bottle was approx. [0.6"]  44A-ST1-BY-Total accumulation of sed. in bottom of sed trap  bottle was approx. [0.7"]
bottle was approx. 10.7"
도 하는 사람들이 되었다. 그는 사람들은 사람들은 사람들이 가장 하는 것이 되었다. 그는 사람들이 되었다. 그는 사람들은 사람들이 되었다. 그는 사람들은 사람들이 되었다. 그는 사람들이 되었다. 그 그는 사람들이 되었다.
1018 - Entrant re-secured primary of serondary sed. trap bottles
in inline stainless housing & removed bottle caps. Entrant observed a minor oily sheen on sufface of baseflow, while
observed a minor only sheen on sufface of baseflow, while
leaving stormwater node.
1037-Leave 44A-ST1 & travel to Basin 44
1007 Leave 9777_31 I g Fravel to 13031K 99.
1057 - Arrive as site a life of the other downsord RES
1057 - Arrive on site @ 44 571 (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 parraiveling N. Riverst north, to Escso micro-tunnel
shaft for a new power pad Rick mentioned that PPL sub
had drilled into 8" plugged lateral entering Stormmater node
ABC352 from the north east. Rick was on site when our site
Attachments when subsurface lateral was struck; drilling was stopped of drill had
Attachments when subsurface lateral was struck; drilling was stopped of drill her repositioned. Rick observed no visible fines or displaced so il exiting lateral into ARCZ

#### DAILY FIELD REPORT





Page \_ 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 For background information for weather see Basin 18 R&D notes from 3/18/09 on file. \* All times in PST 1010 - Arrive on site @ 44A-STI [N. Larabeed Randolph (ABC311)] to inspect primary & secondary sediment traps. MIs prepares to enter MH. Primary & secondary traps are in tacked & are free of obstructions Observed baseflow was "0.25" Wa Flow of "1.0 fps. Leavest organics were adhered to the trap housing. Entrant capped sediment trap bottles of conducted visual inspection. Primary Sed Traps: No visible sheen on surface of captured stormwater nor was there a discernable odor. 44A-STI-BI- was full of captured stormwater "/a total accumulation of captured solids of approx. 1.25" Minor fines adhered to the inside surface of the bottle (adhesions) 44A-STI-B2- was full of captured Stormwater Wa total accumulation of captured solids of approx. 1,7". "Adhesions were also present in bottle Secondary sal Traps: No visible sheen on surface of stormwater captured in traps, nor was there a discernable odor. 44A-STI-RZ- Was full of captured stormwater Wa total accumulation of aptured solids of approx 1.0" w/visible adhesions on the inside surfaces of he bottle 44A\_STI\_BU - was full of captured stormwater Watoral accumulation of captured Attachments plids of approx. 0.911. Adhesions were also present in bottle

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

#### DAILY FIELD REPORT





			Page	of
Project <u>Portland Hay</u> Location <u>To File</u>	bar Stormuc	ter Samp		_1020.005 9109
Subject Albina River	Lots/Solids Ac	cumulation for	tes By JKB	
Basin 43				
43_ST =	1.0" Fo	3" gain is (	antural solids	accumulation 18107
43-ST2 =	2.7 IN	O chama I		
43-5T3 =	3,42 [ 0,4"	can in contra	m 2 50 1 de 2 50	Amulation 3/18/09
из_STY =	0.817 121	Jan Sa Carabas	1 /21/2	nulation since 2/18/6
		Jan Meapin	ex 5011 e5 2/2CM	ARX ION
Basin 44				
<u> </u>	001/031	22	مدر میں علم ارمی کے	ulahansinee 2118108
	7.4	gain in captur	as somes accum	alanon-
	con a	s) = 1.1"	she carenived	solids of current
JXR Roma MUA	1101			
TXB Basin UYA YYA Basin YYASIE	4911 (1.311	and to comb	and sold and	54795 m
	JXX	3 am in capit	uco somes acc	1000000 1000 2/13/13
Attachments				





Page  $\frac{2}{\sqrt{3}}$  of  $\frac{3}{\sqrt{3}}$ 

Project Partland Harber SW Samb Project No. 1020.005
Location Basins, 43+ 44+444- Albina Riverots Date 5/29/09
Subject Sed trap final vernoval By MTS, IXB, EEH
B3 PA Site for removal of 44A STIBIBZ.
B3, B4-located at ABC311, N-Lavaber + Kandolphi
About 1/11 of paseflow moving at about 1.8-for 1
fill of storwater. Bliston bottle top was
partially obstructed with taloric plastic and
breanies B2 B3 BM were all clear expenses
Bound or envie delavis avained the hersing.
before to remove bettles Battles and sed
trak hoveine removed i Buseplates remain
installed. Besentates do not soon to adversely
huspact flow - will notify maintenance of equipment in collection system
1041 - on site @ 47-3TH (ABC500) for removal of
sed. traps from N TillameDk + kerby. There is I ~0-3" of base flow. Both bottler are full of starmeday
There is debris, plusty, and organic material and metal
screen an the housing of bottle 1. Bottle 2 had
a rag collected on the housing, Bottle me I had
a leaf perched on the opening but was not obstructing flowing
(ad table Remarked to bottle and is the
and left the have plates installed.
1120 - on-61te po 43, 573 - ABC55A to remove sed
traps. There is "02" of base flow. upstream (#2)
pointle has rass and promises on housing but bottle
Attachments

Date: Estimated sed. depth per bottle (% by volume & inches):  Dy: US Bottlegi - 1/3!* DS Bottlegi - 1,0!* Final Removal? Bin End of color	Pt. Code:	SECTION 2 MONTE	ver savenanca ivez	
Bottle semoved/replaced? V/N	44 A_ST1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Hansen ID: A&¢311
By: US Bottless: 1.3:15" DS Bottless: 1.2" Final Removal? BIN End of 05/07 development (Comments: Problem of 1.3:15" DS Bottless: 1.3:15" DS Bottless: 1.3:15" DS Bottless: 1.3:15" Pinal Removal? BIN End of 05/07 development period forms of 1.3:15 period of 05/07 development peri	Party.	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N	
TEMPERATURE US Bottless-1.3-1.5" DS Bottlesy-1.0" Final Removal? BIN End of 3/104 deployment of the site to remove primary of secondary sed traps at end of deployment period reports are in tacked base plan was "0.28" by flow of ~1.0 fpc. Instrum primary sed traps are in tacked base plan was "0.28" by flow of ~1.0 fpc. Instrum primary sed traps the period of plants traps not primary sed traps and primary for gamines about traps not traps and primary for gamines and before the trap housing diverse traps and primary for gamines and the sed for	By:	US Bottle 81 - 1:31 DS Bottle 82- 1.2"		
Comments: on the little and the control of the cont	JXB/FCH/MJ	11/5 Bottless - 1.3-1.5" DS Bottlesy - 1.0"	Final Removal? VIN End of 08/04 deploym	WAL STIBI
The perminal (YA-STI.B) was partially obstructed by placement they arganics of the through the perminal of the	Comments:	site to remove primary a secondary &	SPALTONIA ABANDANDA ALAMADA LA SA	1 Indiana
DS Bottle  On his dee of bottle  On his dee	bottle opening	(444-STI-BI) was partially obstructed	by plasme trash, orange of the trash	x48 ( 0950 pst )
DS Bottle  On his dee of bottle  On his dee	US Bottle BY M	3 Sed traps had primarily organicsadue total accumulation was virou of	captured solids	44A-STI-BZ
The filter accumulation of captured shids was 1.2" at mirror adhesions of superior volume from volume from the common of the properties of	83	Total accumulation of solids was	adian-dell wind - the some	1 \C.5 \Z.29\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Describe: \$\frac{1}{2}\text{traps in situ pror to fired remaid discussions truchous}\$    Date:	DS Bottle - 82	· Morde of bottle ? Total accountation of captured so	cida was al. 2" with a sum adhering	IIIA STI Do
Describe: \$\frac{1}{2}\text{traps in situ pror to fired remaid discussions truchous}\$    Date:	240 84	Screpancy between thanh captured sounds was	neil volume most litely ( we to settling from	1910/30108 -
Describe: \$\frac{1}{2}\text{traps in situ pror to fired remaid discussions truchous}\$    Date:	Photos Taken?	MN decomposing oder & no visible	attor construed sterrounder 15 trong of	ही डाटम०९ जन्म जन्म १५०
Date: Estimated sed. depth per bottle (% by volume & inches):  By: US Bottle - DS Bottle - Bo	lp		C	144-511-64
By:  By:  US Bottle -  Bottle -  Bottle -  DS Bottle -  D	200	traps insitu pror to tired remain		10130108-
By: US Bottle - Bottle - Final Removal? Y/N  Comments:  Bottle - Bottle - Final Removal? Y/N  Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N	Date.	volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	0150 P51
Comments:    Holding Sticker	Ву:	US Bottle - DS Bottle -		AIGHVOU ID.
Bottle -  DS Bottle -  Photos Taken? Y/N  Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N		Bottle - Bottle -	Final Removal? Y/N	
Bottle -  DS Bottle -  Photos Taken? Y/N  Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N	Comments:			
DS Bottle -  Photos Taken? Y/N  Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N				1 1 1
Photos Taken? Y/N  Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N	Bottle -			
Photos Taken? Y/N  Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N				
Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N	DS Bottle -			
Describe:  Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N		5.		
Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N	Photos Taken? \	//N		1
Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N	Describe:			
Volume & inches)		Estimated sed depth per bottle (% by	T Detties removed/seeleedQ V/N	
Archived Which one(s):		volume & inches):	If removed which one(s)?	Archived ID:
By: US Bottle - DS Bottle -	Ву:			
That removal: 771	Commente	Bottle - Bottle -	Final Removal? Y/N	
Comments:	Comments:			Lialding
Sticker )				
JS Bottle -	US Bottle -			
OS Bottle -	DS Bottle -			
Photos Taken? Y/N	Photos Taken? Y	/N		
cribe:	cribe:			

Pt Code: 114	ALSTI SECT	ON 2 – MONTH	LY FIELD O	HECK INFORMA	TION	Hansen ID:
Date:	Estimated sed, depth povolume & inches):	er bottle (% by	Bottles re	moved/replaced? Y/Nd which one(s)?		A&311 Archived ID:
Ву:	US Bottle - Bottle -	DS Bottle - Bottle -		noval? Y/N		
Comments:						
						Holding Sticker
US Bottle -						
DS Bottle -						
						-
Photos Taken	? Y/N		<b>/</b>			
Describe:						
Date:	Estimated sed. depth per volume & inches):	r bottle (% by	Bottles rer	noved/replaced? Y/N I which one(s)?		Archived ID:
Ву:	US Bottle - I Bottle -	DS Bottle - Bottle -	Final Rem	oval? Y/N		
Comments:						
						( Holding Sticker
Bottle -	/	/				
DS Bottle -		<b>.</b>				-
Photos Taken?	P Y/N					
Describe:						
Pt Code		1896 Vite Mark San July Constant and the				
YYA_ST(		SECTION 3	COMPOSIT	ESAMPLE		Hansen ID: Aらcろ//
Sample ID:	FO095662	Duplicate sample this site? 70N	e collected at	DUPLICATE ID:	) NP (JX	8)6118109
affix FO numbe	· - / · · · · · · · · · · · · · · · · ·			F0\$9567	7	0110104
	ple ID on COC:	Any deviations f	rom standard c	pperating procedures?	YN	
affix FO number s	ticker FOG95677	Describe:				·
Comments:	See Sediv	vent Traf	rocessing rield (	lata Sheet,		
$\supset$						
•				•		* **.

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

Project Name: PORTLAND HARBOR STORMWATER SAMP



# Chain-of-Custody

**Bureau of Environmental Services** 



Date: 6/2/09

Collected By: TXB/MJS

Requested Analyses

File Number: 1020.005			Matrix:	SEDIMENT	Т								I	Reques	Requested Analyses	
							õ	Organics	જ			General	eral	Metals	Comments	- 1
Basi	Basin 44A Sediment Trap Chain-of-custody	Chain-of-c	ustody			<b>)</b> }	d)		I)	5)					Analyses and Dupliente added por	- 1
Sediment traps install	Sediment traps installed: 10/17/08; 10/30/08 (Installation of secondary set of sed traps) Sediment traps removed: 5/27/09	allation of se ed: 5/27/09	condary set of	sed traps)		(All 209	ow-leve	s (TA)	ow-level	:5(CA					Customer 6/5/09CEFF	
* 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.	, care should be taken to use the smalles volume for additional follow-up analyses	ise the small w-up analyse	est aliquot pos	sible to ret	ain sample	geners	clors (L	ıthalate	CAS - L	cde	e					
WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	PCB Con	PCB Aro	PAH + PI	SVOCs (	Pesti	Grain Siz	TOC	TS*	Total Met Cu, Pb, Ni		
FO095662	ST-44A-ABC311-0609 N LARABEE & RANDOLPH	44A_ST1	6/2/09	1151	0		×	$\times$		$\times$	×	×	•	$\sim$ 1	√S=5′1,3% 611.9 g Total Wet Weight	
FO095677	Doplicate	DUP	6/2/09	181	C	<u> </u>	$\times$	×				$\times$	●	 ×		]
																1
						<u>.</u>	} 7—									- 1
																- 1
gasture: 1.		Relinquished By:	<u>By:</u> 2.				· [	120	Relinquished By:	uishe	BV.	ω			Relinquished By: 4.	- 11
inted Name:	Date:	oignature:		į	Time:			ς.	Signature:					Time:		
eceived By: 1.	6/2/09	Received By:	2		Park.			0 3	Danalizad E			ا	ļ,	Date:	Printed Name:	
gnature Sun M	12	Signature:			Time:			<u>α</u> 12	Signature:	,	1.	ب		Time:	Received By: 4. Signature: Time:	
\$\(\int_{\int}\)\(\in	S:\EID\1000\1020\05 - Portland Harbor Stormwater Samp\Sampdoc\Portland Harbor Stormwater Albina Sed Trap COCs.xls	er Samp\Sampo	loc\Portland Ha	bor Stormw	ater Albina (	ed T	ab CC	CS T	Printed Name:	ame:	1		1	Date:	e: Date:	
				0.01		2	a C	000	Ū							



#### CITY OF PORTLAND

#### **ENVIRONMENTAL SERVICES**

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



INLINE SEDIN	MENT TRAP SAM	PLE PROCE	SSING D	ATA SHEET
Project Name: PORTLAND HARBO	OR STORMWATER SAME	<b>5</b> .	Project Nur	mber: 1020.005
Sample Processing Conducted By:	,	Removal Da	ite:	Processing Date:
Z C M	441-ST1	5/27/00	۹	6/1/09-6/2/09
Basin: 44A	Hansen ID: ABC	10 500 ABC	Subbasin:	
Sediment Trap Location Description downstream from the cline.	n/Address: Primery Truedge of the manh	rps: located 5 ole chamber in vabeek Rand	n the 72"	the pipe invert ~ 65% diametr, main concrete  TXB 6/18/09
		·	•	
	DIMENT TRAP PROC rtland Harbor, 90-millimeter (			OTES v/conical glass microfiltration system
	eld Operations (FO) Standard uipment for Phthalates Techr	d Operating Procedu nical Memorandum -	ure (SOP) 5.01. September 1	b & Evaluation of Microfiltration
Fisher brand, grade, porosity in micro	ometers (µm) and materia	l (e.g., Fisher Scien	rtific, qualitative	a P2, 1-5 µm cellulose filter paper):
Sediment Trap Bottle ID: 니니셔_			Bottle ID: 4	14A-STI-B2-
Total Est. Depth of Accumulated Se	d in Bottle (inches): 1.3	·*		ated Sed in Bottle (inches): i 🦼
Sample Processing Start Sam	nple Processing End	Sample Process		Sample Processing End
Time: 1005(6/1/04) Time		Time: 1350	6/1/09	Time: 0934 (6/2/09)
Number of Filters Used: 12	(1×06/18/49	Number of Filter	ers Used: 1	7-1 P8, 16 P5 A
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 50		Est. total volume DI used to remob stormwater solids milliliters (mL):	of Ultra Pure pilize adhered s within bottle ir	2 170 me
Tare Weight [empty jar in grams (g)]: 3	· / · · ·	Tare Weight [jar-s	and filtered sec	d. from Bottle1-in grams (g)]: 302.1g
Dewatered/Filtered Sed. Weight (g): 1 (	61-2 gd	Dewatered/Filtere	ed Sed. Weight	t(g) (163.8g
Sample Processing Notes/Comment	ts: lainly fine dark	Sample Process		
Sample Processing Notes/Comment Homogenized subsample is in brown Solt particles w/s	small amount of	Sample	priman	ily consists of
Coarse particles, Odor	r it decomposing	fine same		l'clay n/ some.
Organic material. (A) ti	rom Green sheets	color. Stre		mposing organic
	Sin I come	Mestznial	Oblor :	insted.
Visual Description of Final Composite	e Sample: perticles with	coarse fire to	medium so	wes composite was black
Visual Description of Final Composite COC Time (time composite jar is Total follows): 1151 617/09 がは	Fotal Dewatered/Filtered S grams (g): 611.9 G	है डॉम्ब्यूड टेट <i>ा</i> Sed. Weight in	mantial).	rs Collected (number, size, full or X 807 ) are ~90% hiled
Sample ID: FO09	Dunlicate	sample collected? FOØ95	7ÝØN DUF	PLICATE ID OUP
Duplicate Sample ID on COC:	Any deviat	ions from standard		rocedures? YAD
affix FO number sticker FO Ø956				



#### CITY OF PORTLAND

#### **ENVIRONMENTAL SERVICES**

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



#### INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

ade crante in the Share Constitution of the sale of the constitution of the constituti		***************************************		
Project Name: PORTLAND HARB	OR STORMWATER SAMP.		Project Nu	mber: 1020.005
Sample Processing Conducted By	1 '	Removal Da	te:	Processing Date:
JXB/MJS	44A_5TI	5 12710	G.	611109 - 6/2/09
Basin: 44A	Hansen ID: ABC3	11	Subbasin:	NIA
Sediment Trap Location Description of primary sed traps 140 Traps were located ~20	on/Address: Secondary UA-STI-BI & YUA-S DZ" & 212" from the	sed, traps	a hamber	outlet, end ofpipele
ricoress. Witarynee of	Kandolph		- 616210	7
	DIMENT TRAP PROCE			
[F	ıeld Operations (FO) Standard Quipment for Phthalates Techni	Operating Procedu cal Memorandum -	ire (SOP) 5.01 - September 1	w/conical glass microfiltration system  1b & Evaluation of Microfiltration  18, 2007].
Filter brand, grade, porosity in mici				e P2, 1-5 μm cellulose filter paper):
Ltisher Scientific, quality		1 cellulose f	zirec	
Sediment Trap Bottle ID: 1/4A_	511 - 83 -	Sediment Trap	Bottle ID:	44A_STI _84 _
Total Est. Depth of Accumulated S	ed in Bottle (inches): <sub>/,3</sub> *- <sub>/,5</sub> *	Total Est. Depti	n of Accumul	lated Sed in Bottle (inches): 1.01
Sample Processing Start Sa Time: 6/1109@1001 PSで Tin	mple Processing End ne: 6/1/09@1255-P5T	Sample Proces Time: 611104		Sample Processing End . Time: 6/2/09 @ 1000 PST
Number of Filters Used: 7 x P	5,5-10mm	Number of Filte	rs Used: 0	
DI used to remobilize adhered stormwater solids within bottle in	100 mL	Est. total volume DI used to remob stormwater solids milliliters (mL): Tare Weight [jar e	ilize adhered	f
Dewatered/Filtered Sed. Weight (g): ~	135,3g 165.3g	Dewatered/Filtere		J
Sample Processing Notes/Commer Filtered subsample consists placky particles, whome course angular Particles. Subsample was brownish-black in color w/ re Wishbe sheen on Surface W/Strong, decomposing of	remainly of fine silts be medium to large gravels of organic	some fin was br	d solids s fire silts to coar organic ownish- ite inclu	<i>,</i>
Visual Description of Final Compos	ite Sample:			
COC Time (time composite jar is capped):	Total Dewatered/Filtered Segrams (g):	ed. Weight in	Sample Ja partial):	rs Collected (number, size, full or
Sample ID: affix FO number sticker	See Pupicate sa	imple collected?	Y/N DU	PLICATEID
Duplicate Sample ID on COC:	Any deviation	ns from standard	d operating n	procedures? Y/N)
affix FO number sticker	Describe			
And the second second of the s	en datum in englishte in State (Section 1997)			<u>。1987年,北京大学的基本的主义的,所谓的主义的</u>





Page a of ba

rage 12 of
Project Portland Harbor Stormwater Samp Project No. 1020.005
Location WPCL Field Lab Date 6/1/09 Subject Basin 44 A sediment trap processing By MTS
1000 PST - set-up microfiltration system w/@ P5,5-10 um cellulose filter. Primed Filter m/ a small amount of ultra-pare DI water to secure filter
um cellulose filter. Primed Filter m/ a small amount
Ot ultra pare DI water to serve filter
1005 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
1005 began to process bottle of site 441-511-BI
1027 F. Her I relogged - no recoverable solids Replaced whomen P5, 5-10 um filter and resumed Processing
1038 filter 2 classed - no recoverable solids, Replaced w/a  new P5, 5-10 um filter and resumed processings 1047-Filter 3 classed - no recoverable solids, Replaced w/anew
new P5, 5-10 um Fitter and resumed processinge
TO NOW FITTER WANT & USIANZED BILLINGS INCO
consisting of fine silts and execution material. Tank whata
consisting of fine silts and erganic material. Took photo of sample, then sanguad material intersample for Replaced  W/ new P5 5-10 um filter primed my UPDI and resumed  Drocession.
W/ new P5 5-10 un filter prived by UPDI and resumed
of fine silts torganics. Surged material into sample jar, replaced Filter my new PS; 5-10 um filter primed we UPDI tresumed
Files Silts torganics supped material into sample jar, reflared
OTOLESSING
1125 - Filter 6 clayged - Solids retained on filter - Fine silts +
organics. Schaped uniterial into sample for replaced filter or
new P5 youred w/ UPDI + resumed processing.
1148 - Filter 7 classed - solids retained on Filter - & silts torganise
w/ some fine sand surged material of filter into sample jar.
Installed new PSFilter + primed w/ UPDI tresumed processing 1803 - Filter 8 classed - solids retained on Filter - silts, organics
Attachments and fine soud. Scraped into souple jar.





Page 2a of 6a

Project Portland Harbor Stormwater Samp. Project No. 1020.005 Location WPCL Field Lab Date 6/1/09 Subject Basin 44A sediment trap processing By Mgs  44A - STI - Bl contid: Installed new P5 (5-10 cm) fitter, primed w/ VPDI and resumed processing  1351 - Filter 9 clogged - Salids retained en filter - Sits, expanse eard fine sand. Supply into sample for Installed new P5 (5-10 cm) filter and fine sand. Supply into sample for Installed new P5 (5-10 cm) filter and fined w/ VPDI. Added Saml of VPDI to Sample bottle to nobilize solids that are residual in bottle, and processed.  1304 Filter 10 clogged - Small answert of salids retained on filter consisting at very fine silts up a small mount of coarse sand. Scropped wroterial into Sample for remainder of bottle into filter apparatus.  1317 Filter and powed off remainder of bottle into filter apparatus.  1317 Filter and powed off remainder of bottle into filter apparatus.  1319 Filter and before all meter was down through a power of fremainment afforder and continued filtering with all remainment mater was down through a power of filter and continued filtering with all remainment and the filtering with all remainment and the filter primed on the filter consisting of very fine stilled power and large retained on the filter consisting of very fine stilled into the filter apparatus.  3336 - all water has been drawn through the filter (filter # 12).  3376 - all water has heen drawn through the filter (filter # 12).  3376 - all water has heen drawn through the filter (filter # 12).  3376 - all water has heen drawn through the filter (filter # 12).  3376 - all water has heen drawn through the filter on the filter consisting at face sittles particles.  3376 - weight of sample 2 3613 - 1600 - 1601 2 mm of particles.	
Subject Rasin 44A sediment trap processing By Mgs.  44A - STI - Bl contid: Installed new P5 (5-10 mm) fitter, primed W/ VPDI and resumed processing  1251 - Filter 9 clayped - solids retained on filter - sitts, enjoying camped into snaple just. Installed new P5 (5-10 mm) filter and fine snand. Subsept into snaple just. Installed new P5 (5-10 mm) filter and fineed W UPDI. Added 50 ml of UPDI to sample bottle to nobilize solids that are residual in bottle, and fracessed.  1304 Filter 10 clayped - snall amount of solids retained on filter consistent of very fine silts up a small amount of course send. Scraped material into simple jax, replaced filter up new P5 (5-10 mm) filter and powed off remainder of bottle into filter apparatus.  1317 Filter clayped before all vater was drawn through so powed off remainment water in filter apparatus back mis sample bottle and continued filtering until all remainment water was drawn through the filter and a small amount of material was retained on the filter consisting of very fine stilled powered all of remainment for material was retained on the filter consisting of very fine p5 (5-10 mm) filter p rimed my UPDI and powered all of remainment p5 (5-10 mm) filter p rimed my UPDI and powered all of remainment p6 (5-10 mm) filter p primed my UPDI and powered all of remainment p6 (5-10 mm) filter p primed my UPDI and powered all of remainment p6 (5-10 mm) filter p primed my UPDI and powered all of remainment p6 material has been retained on the filter and can sixty at face sittled particles along with some coarse good and large organic fautrales.  1339 - weighed fall sample jax 2 3(1) 2 m G1(8) proticles.	Project Postland Harbor Stormwater Samp. Project No. 1020.005
Subject Rasin 44A sediment trap processing By Mgs.  44A - STI - Bl contid: Installed new P5 (5-10 mm) fitter, primed W/ VPDI and resumed processing  1251 - Filter 9 clayped - solids retained on filter - sitts, enjoying camped into snaple just. Installed new P5 (5-10 mm) filter and fine snand. Subsept into snaple just. Installed new P5 (5-10 mm) filter and fineed W UPDI. Added 50 ml of UPDI to sample bottle to nobilize solids that are residual in bottle, and fracessed.  1304 Filter 10 clayped - snall amount of solids retained on filter consistent of very fine silts up a small amount of course send. Scraped material into simple jax, replaced filter up new P5 (5-10 mm) filter and powed off remainder of bottle into filter apparatus.  1317 Filter clayped before all vater was drawn through so powed off remainment water in filter apparatus back mis sample bottle and continued filtering until all remainment water was drawn through the filter and a small amount of material was retained on the filter consisting of very fine stilled powered all of remainment for material was retained on the filter consisting of very fine p5 (5-10 mm) filter p rimed my UPDI and powered all of remainment p5 (5-10 mm) filter p rimed my UPDI and powered all of remainment p6 (5-10 mm) filter p primed my UPDI and powered all of remainment p6 (5-10 mm) filter p primed my UPDI and powered all of remainment p6 (5-10 mm) filter p primed my UPDI and powered all of remainment p6 material has been retained on the filter and can sixty at face sittled particles along with some coarse good and large organic fautrales.  1339 - weighed fall sample jax 2 3(1) 2 m G1(8) proticles.	Location WPCL Field Lab Date 6/1/09
1444-STI-Bl contid: Installed new P5 (5-10 mm) filter, primed W/ VPDI and resumed processing  1351-Filter 9 clayed - solids retained on filter - sitts, again and fine sand. Attributed into sangle jur. Installed new P5 (5-10 mm) filter and primed W VPDI. Added 50 ml of UPDI to some le bottle to nobilize solids that are residual in bottle, and fracessed  1304 Filter 10 clagard - small amount of solids retained on filter consisting of very fine silts of a small amount of course sand. Scropped waterial into Sample jax, replaced tilter of new P5 (5-10 mm) filter and powed off remainder of bottle into filter apparatus.  1317 Pilter clayed before all nature was down through so prived off remaining mater in as down through soft bottle and continued filtering until all remaining mater was down through 1319 - water had been drawn through filter II, and a small amount of anterial was retained on the filter (filter # 12).  Some fle into the filter apparatus  1336 - all water has been drawn through the filter (filter # 12).  Some II amount of material has been retained on the filter and consists of fine sittles and consists of filter # 12).  Some II amount of material has been retained on the filter and consists of filter # 12.	Subject Basin 44A sediment trap processing By Moss
primed W/ VPDI and fesumed processing.  1351 - Filter 9 clogged - Solids retained on filter - Silts, organized and fine sand. Supplied into santle jur. Installed new PS (5-10 um) filter and primed W/ VPDI. Added 50 ml of UPDI to 5 ample bottle to nobilize solids that are residual in bottle and processed.  1304 Filter 10 clagged - small amount of solids retained on filter consisting of very fine silts w/ a small amount of coarse sand. Scropped waterial into sample jar, replaced filter w/ new PS (5-10 um) filter and powed off remainder of bottle into filter apparatus.  1317 Filter and powed off remainder of bottle into filter apparatus.  1317 Filter and powed off remainder of bottle into filter apparatus.  1319 Filter and powed off remainder of bottle into filter apparatus.  1319 Filter and stare in filter apparatus back into sample bottle and continued filtering until all remainms water was down through 1319 - water had been drawn through filter II, and a small amount of material was retained on the filter insighing of very fine sittley pometrals and coarse film sends. Replaced Filter w/ new PS(5-10 um) filter, primed w/ UPDI and powed all of remaining sample into the filter apparatus.  336 - all water has been drawn through the filter (filter# 12).  3 mall amount at material has been retained on the filter and coarse sund and large organic particles.	44A_STI_Bl contid: Installed new P5 (5-10 um) filter.
135 - Filter 9 clogged - solids retained on filter - silts, again and fine sand. support into sample for installed new Pg 15-10 um filter and primed by UPDI. Added Soul of UPDI to Sample bottle to mobilize solids that are residual in bottle and processed.  1304 Filter 10 clogged - small amount of solids retained on filter consisting of very fine silts up a small amount of course sand. Scraped waterial into sample jax, replaced filter up new PS (5-10 um) filter and powed off remainder of bottle into filter apparatus.  1317 filter clogged before all water was down through, so powed off remaining water in filter apparatus back into sample bottle and continued filtering and I all remaining water was drawn through as mall amount of material was retained on the filter in and a small amount of material was retained on the filter consisting of very fine stilled pointales and correct line sands Replaced Filter up new PS (5-10 um) filter primed up UPDI and powed all of remaining sample into the filter apparatus.  336 - all water has been drawn through the filter (filter # 12).  3 mall amount at material has been retained on the filter and consists of fine sittles along with some coarse.  3 and and large argenic families a long with some coarse.  3 and and large argenic families a long with some coarse.  3 and and large argenic families are 2 361.2 and 100 powers.	primed w/ UPDI and resumed processing
sample bottle to nobilize solids that are residual in bottle, and processed.  1304 Filter 10 clogged - small amount of solids retained on filter consisting of very fine sills up a small amount of coarse search. Scroped waterial into sample jar, replaced filter up new PS (5-10 um) filter and poured off remainder of bottle into filter apparatus.  1317 Filter clogged before all water was drown through, so poured off remaining vater in filter apparatus back into sample bottle and continued filtering until all remaining mater was drown through 1319 - water had been drown through filter 11, and a small amount of unsterial was retained on the filter consisting of very fine sittley pointries and coarset fine sands Replaced filter up new PS(5-10 un) filter primed up UPDI and powed all of remaining sample into the filter apparatus 1336 - all water has been drown through the filter (filter# 12). Small amount of me sittles particles along with some coarse gund and large organic pantriles along with some coarse gund and large organic pantriles. Total weight of sample 2 3612-200 - 10012 and PRO Total weight of sample 2 3612-200 - 10012	1251 - Filter 9 cloqued - solids setained on filter - silts, organic
sample bottle to nobilize solids that are residual in bottle, and processed.  1304 Filter 10 clogged - small amount of solids returned on filter consisting of very fine sills up a small amount of course search. Scropped waterial into sample jar, replaced filter up new PS (5-10 up) filter and poured off remainder of bottle into filter apparatus;  1317 filter clogged before all vater was drawn through, so paired off remaining vater in filter apparatus back into sample bottle and continued filtering until all remaining water was drawn through 1319 - water had been drawn through filter it, and a small amount of unsterial was retained on the filter consisting of very fine sittley pointriles and correct fine sends Replaced filter up new PS(5-10 up) filter primed up usod a powed all of remaining sample into the filter apparatus 1336 - all water has been drawn through the filter (filter# 12). Small amount of me sittles particles along with some coarse gund and large organic pantriles along with some coarse gund and large organic pantriles along with some coarse Total weight of sample 2 3612-2000 - 10012	and fine sand, sampled into sample jar. Installed new P5 (5-10
Sample bottle to nobilize solids that are residual in bottle, and processed  1304 Filter 10 classed - small amount of solids retained on filter consisting of very fine silts up a small amount of coarse sand. Scraped insterial into sample jar, replaced filter up new PS (5-10 um) filter and poured off remainder of bottle into filter apparatus.  1317 Filter classed before all nature was drown through, as poured off remaining water in filter apparatus back into sample bottle and continued filtering until all remaining water was drown through 1319 - water had been drown through filter 11, and a small amount of waterial was retained on the filter (amount of waterial was retained on the filter (mainting of very fine sittledy pointrales and coarse to the sands Replaced Filter my new PS(5-10 um) Filter, primed my UPDI and poured all st remaining sample into the filter apparatus  336 - all water has heen drawn through the filter (filter # 12)  Small amount at material has been retained on the filter and coasings of fine sittles, particles along with some coarse gound and large organic particles.  Total weight of sample 2 361, 2-2000 - 1601, 2 at 601818  Homegon red Sample which is world, fine dark brown silt particles	um) filter and primed my UPDI. Added 50 ml of UPDI to
bottle, and fracessed 1304 Filter 10 clagged - Small amount of solids retained on filter consisting of very fine sills up a small amount of solids retained on filter consisting of very fine sills up a small amount of course sand. Scrapped material into Sample jar, replaced filter up new PS (5-10 am) filter and powed off remainder of bottle into filter apparatus.  1317 filter clagged before all nature was drown through so paired off remaining mater in filter apparatus back not sample bottle and continued filtering until all remaining mater was drown through 1319 - water had been drown through filter 11, and a small amount of material was retained on the filter consisting of very fine sittledy pointicles and coarse to fine sands Replaced filter up new PS(S-10 am) filter primed up UPDI and powed all of remaining sample into the filter apparatus  1336 - all water has been drown through the filter (filter# 12).  Small amount of material has been retained on the filter and coarse goined and large organic particles.  First 1339 - weighed Fall sample jar 2361.2 at the GO CO	
130 - Filter 10 clogged - small amount of solids retained on filter consisting of very fine silts we a small amount of course search. Scropped material into simple jax, replaced filter we new PS (5-10 mm) filter and poured off remainder of bottle into filter apparatus.  1317 filter clogged before all nater was drown through, as poured off remaining mater in filter apparatus back into sample bottle and continued filtering until all remaining mater was drown through 1319 - water had been drown through filter 11, and a small amount of material was retained on the filter consisting of very fine sittled powdrales and coarse to fine sands Replaced filter of new PS(S-10 mm) filter, primed of UPDI and powed all st remaining sample into the filter affaratus  1336 - all water has been drown through the filter (filter # 12).  Small amount at material has been retained on the filter and coarse sand and large organic particles.  Total weight of sample 2 36/12-1000 - 161. 3 - 000 611819  Homogenized sample which is mornly fine dark brown silt particles.	
ionisistmy of very fine silts up a small among to of course search. Scropped material into sample jar, replaced filter up new PS (5-10 am)  filter and powed off remainder of bottle into filter apparatus.  1317 filter classed before all vater was drown through, so powed off remaining mater in filter apparatus back into sample bottle and continued filtering until all remaining mater was drown through 1319—water had been drown through filter 11, and a small amount of material was retained on the filter consisting of very fine stilled powerfules and coarse to fine saids Replaced filter up new PS(5-10 and filter primed by UPD) and powed all of remaining sample into the filter apparatus  1336—all water has been drown through the filter (filter # 12). Small amount of material has been retained on the filter and coarse and coarsists of fine sittled particles along with some coarse sand and large organic particles.  Total weight of sample 2 36/12-1000 - 1601.2 m FR 611819  Homegenized sample which is morally fine dark brown silt particles.	1304 Filter 10 clogged - small amount of solids retained on filter
reterial into sample jar, replaced filter of new 15 (5-10 am)  filter and poured off remainder of bottle into filter apparatus.  1317 filter classed before all water was drown through so poured off remaining mater in filter apparatus back into sample bottle and continued filtering until all remaining mater was drown through  1319 - water had been drown through filter 11, and a small amount of material was retained on the filter consisting of very fine silfclop pointales and coasse to the saids Replaced filter of new  PS(S-10 am) filter primed by UPDI and powed all of remaining sample into the filter affaratus  1336 - all water has been drawn through the filter (filter at 12)  Small amount of material has been retained on the filter  and consists of the silfclay particles along with some coarse gund and large organic particles.  Total weight of sample 2 36/2-1000 - 161.3 at 166  Total weight of sample 2 36/2-1000 - 161.3 at 166  Homogenized sample a high is wornly five dark brown silt particles	consisting of very fine silts up a small amount of course sand. Scropped
1317 Filter clagged before all water was drown through, so powed off remaining vater in filter approatus back into sample bothle and continued filtering until all remaining water was drown through 1319 - water had been drown through filter 11, and a small amount of waterial was retained on the filter consisting of very fine sittle pointries and corse to the saids Replaced Filter when P5(5-10 un) Filter primed in UPDI and powed all of remaining sample into the filter affaratus 1336 - all water has been drown through the filter (filter # 12) Small amount of material has been retained on the filter and consists of fine sittle a particles along with some coarse gund and large organic particles. Total weight of sample 2 36/12-1000 = 161.2 a M Total weight of sample 2 36/12-1000 = 167.3 a Homogenized Sample which is posinly fine dark brown silt particles	material into somple jar, replaced filter w/ new 15 (5-10 mm)
continued filtering until all remainings water was drawn through continued filtering until all remainings water was drawn through 1319 - water had been draw in through filter 11, and a small amount of material was retained on the filter consisting of very fine sittled pointriles and coarse to fine sands Replaced Filter of new P5(5-10 mm) Filter, primed in UPDI and powed all of remaining sample into the filter affaratus  1336 - all water has been drawn through the filter (filter# 12). Small amount of material has been retained on the filter and coarse grand and large organic particles along with some coarse grand and large organic particles.  Total weight of sample 2 361.2-2000 - 161.2 The GIRIE Total weight of sample 2 361.2-2000 - 161.2	triter and poured off remainder of bottle into filter apparatus:
continued filtering and it dil remaining mater was drawn through 1319 - water had been drawn through filter 11; and a small amount of material was retained on the filter consisting of very fine stilling pourtales and coarse to fine sands. Replaced filter my new P5(5-10 mm) Filter, primed my UPDI and powed all at remaining sample into the filter affaratus.  Sample into the filter affaratus.  Small amount of material has been retained on the filter and coarse and coarsists at fine sittlelay particles along with some coarse gund and large organic particles.  Total weight of sample 2 36/2-2000 and brown silt particles.  Homogenized sample which is mainly fine dark brown silt particles.	1317 tilter clogged before all water was drawn Through, so powed oft
of matiental was retained on the filter 11, and a small amount of matiental was retained on the filter consisting of very fine self-clay pointriles and coarse to the sends. Replaced filter of new P5(5-10 mm) Filter, primed by UPDI and powed all of remaining semple into the filter affaratus.  1336 - all water has been drawn through the filter (filter# 12).  Small amount of material has been retained on the filter and coarse and coarsists at the sittles, particles along with some coarse and and large organic particles.  Total weight of sample 2 36/2-2000 - 16t. 2 PC 6/18/19  Homogenized sample which is warmly fine dark brown silt particles	remaining water in filter apparatus back into sample bottle and
of material was retained on the filter 11, and a small mount of material was retained on the filter consisting of very fine self-clay pointriles and coarse to the sands. Replaced filter of new P5(5-10 mm) Filter, primed by UPDI and powed all of remaining semple into the filter affaratus.  1336 - all water has been drawn through the filter (filter# 12).  Small amount of material has been retained on the filter and coarse and coarsists at the sittles, particles along with some coarse and and large organic particles.  Total weight of simple 2 361.2-2000 - 167.2 College Homogenized sample which is warmly fine dark brown silt particles.	continued tilterne andil all remaining water was drawn through
stifcley pointrales and coarse to fine sands. Replaced filter when P5(5-10 un) filter primed of UPOI and powed all at remaining sample into the filter affaratus.  1336 - all water has been drawn through the filter (filter# 12).  Sorall amount of material has been retained on the filter and coarse one coarse sand and large organic particles.  From 1339 - weighed Fall sample jar = 361.2 a # Exp Total weight of sample = 361.2 - 2000 = 161.3.  Homogenized sample which is waimly fine dark brown silt particles.	1319 - water had been drawn through tilter 11, and a small amount
Scample into the filter apparatus  1336 - all water has been drawn through the filter (filter# 12).  Small amount of material has been retained on the filter  and consists of the sittley particles along with some coarse  gound and large organic particles.  For 1339 - weighed Fall sample jar = 361.2 a # Fre  Total weight of sample = 361.2-2000 = 161.3 a Fre  Homogenized sample which is mainly fine dark brown silt particles	
Sample into the filter offaratus  (336 - all water has been drawn through the filter (filter# 12).  Small amount of material has been retained on the filter  and consists of fine silficlar particles along with some coarse  sund and large organic particles.  From 1339 - weighed Fall sample jar = 361.2 = # 61819  Total weight of sample = 361.2 - 2000 = 167.2 = 61819  Homogenized sample which is possibly fine dark brown silt particles	stitled fourtreles and course to the sands Keplacod filter w/ new
Small amount at material has been retained on the filter # 12).  Small amount at material has been retained on the filter and congists of fine sitticlay particles along with some coarse sand and large organic particles.  For 1339 - weighed Fall sample jar = 361.2 + 100.0 = 161.2 the GO 6/18/19  Total weight of sample = 361.2 - 100.0 = 161.2 the GO 6/18/19  Homogenized sample which is wornly fine dark brown silt particles	15/2 Town filter primed in UPDI and pourced all of remaining
Sovall amount at material has been retained on the filter and consists at fine sitticles particles along with some coarse good and large organic particles.  From 1339 - weighed Fall sample jar = 361.2 g # 6/18/19  Total weight of sample = 361.2 - 200.0 = 161.2 g # 6/18/19  Homogenized sample which is wornly fine dark brown silt particles	
and consists at fine sitticles particles along with some coarse good and large organic particles.  FEED 1339 - weighed Fall sample jar = 361.2 = 161.2 pt (FRE)  Total weight of sample = 361.2 - 100.0 = 161.2 pt (6118)9  Homogenized sample which is usinly fine dark brown silt particles	
Formagen red sample which is warnly fine dark brown silt particles	ENDER DE LA COMPANION DE LA CO
Total weight of sample = 361.2-2000 = 161.2 CH 6/18/9  Homogenized sample which is wornly fine dark brown silt particles	
Homogenized sample which is wornly fine dark brown silt particles	
Homogenized sample which is wornly fine dark brown silt particles	
그는 마양이 가장 있는 사람들이 있는 사람들이 많아 있었다. 그는 사람들이 가장 하는 사람들이 되었다는 사람들이 되는 사람이 되었다.	[하다 사람들 마음 등 사람들이 다른 사람들이 살아 살아 하다는 데임 하다는 사람들이 되었다. 그 사람들이 나는 사람들이 되었다.]
of snall amount of coarse particles sample new an odor of decomposed	of small amount of coarse particles sample was an odor of decomposed
Attachments organic material capped for @ 1345	Attachments organic material capped for @ 1345





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Project Portland Harbor Stormwater Samp Project No. 1020.005
Location WPUL Field Lab Date 6/1/09
Subject Basin 44 A Sedinant trop processing By MJS
1350 - begin processing 44A_5T1_B2. Begon w/ P5 (5-10 um)
filter. 1353 . Filter #1 cloqued in/ no recoverable solids
1355 - Installed a new P8 (30-25 um) filter and will attempt
to filter all of the superviste with this larger fore filter.
1409 - Filter #2 alogged. Small amount of iccoverable ingterial
is left on the filter which consists of mainly large organic
Hartriles . Starged this material . Installed new P5/5-10 man)
tarticles . Starped this material Installed new P5/5-10 ment filter (seconded mare successifully filtered all supernate), primed my
sumple.
3 cmple-
1431 -Filter#7: sclogged. Solids retained on filter, consisting
of fine silt/clay particles and organic material Susception of material
18th filter and inserted into sample jar, Replaced Filter W/ new
1446 - Filter # 4 is closed organic and five sittles anticle retainer
on filter surface, which was supported into sample jar. Replaced when
195 Filter, primed and resumed processing
1503 - Filter #5 is clossed, Organic and fine siltfolar particles retained
swapped into sample jar and replaced when FS Filter tresumed.
1512 - Filter # 6 is a clogged, very fine silt/clay particles retained
scopped into sample iar and replaced my new P5 filters resured
1527 - tilter # 7 is classed very time sittles and
organics retained. Whaple material into sangle jar and replaced
and 550 - titer # 8 is closed in the still and organic
and VYA.STEBO remaining aliquots  Soundle in the test of the Anger soint of the DXB 6/18/09
seeled of filtrom change to all or other in
Attachments 51, rase-
And the second of the contract

Photo take

Mototale 500 6118109

**DAILY FIELD REPORT** 





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Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020-005
Location WPCL Field Lab Date 6/2/09
subject Basin 44A Sed Trap Processing By LAP
0715 Retrieved sample bottle & jar from
fridge installed a new YP5 (5-10 mm) 9
filter, primed of UPDIS resumed
filter, primed of UPDID resumed filtration. TOD
0728 Filter # 9 is clogged. Organic 2
fine silt/clan particles retained on 5xB filter sixface. which was safeta into 61181 sample jar. Replaced w/ new P5rfilter,
filter surface, which was safe into 6/18/
sample jar. Replaced of new P5 filter,
primed & resumed processing
0738 Filter # 10 is clogged Organic &
0738 Filter # 10 is clogged. Organic & fine silt/day material (dayle
brown in color) retained on titer
Surface - scraped into Sample jar. Replaced w/ a new P5 filter primed
Keplaced W/ a new P5 filter primed
& Vesumed processing
0756: Filter #11 is cloqued Organic & fine
silt/clay malerial retained on filter
gurtace, which was scraped into sample
Jav. Keplaced w/ a new P5 tilter,
primed & vesimed processing Added
approx. 10 ml of UPDi to Sample
Attachments





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Page
Project PURTLAND HARBUR STURMWATER SAMP: Project No. 1020.005  Location WPCL Field Lab Date 6-2-09  Subject BASIN 44A Sed Trap Processing By LAP
0803: Filter # 12 is dogged. Organic &
tine Silt/chan material retained on filter
Surface, which was scraped into Sample
jar Replaced of a new P5 filter, primed
& recomed filtration Added approx 20 ml
of UPDi to sample bottle to mobilize solids.
(Subtotal = 30 me VPDI).
0842: Filter # 13 15 clogged Primarily fine
sits & day particles retarized or filter
surface, which was scraped into
sample jav. Replaced w/a new P5
filter, princed & resumed filtration
filter, primed & resumed filtration. Added approx 20 ml UPDI to V Sample bottle (subtotal = 50 ml).
Sample bottle (subtotal = 50 ml).
0900: Filter # 14 is clogged Material consists of fine silts & clain - scraped into
of fine silts & claim - scraped into
sample jar. Replaced of a new 75 filter,
primed & resumed processing. Added approx.
50 ml to sample bottle to mobilize
remaining solids. (Subtotal = 100 ml).
0911 Filter # 15 is chagged. Fine sand
material primarity, scraped into sample
iav. Replaced W a new 195 filter primed
Attachments & resumed processing Added approx. 50 ml
UPDI to Sample bottle (subtotal= 150 ml)

#### DAILY FIELD REPORT





Page <u>ba</u> of <u>ba</u>

Project PORTLAND HAMPONT STORMWATER SAMP. Project No. 1020.005 Location WPCL Field Lab Date 6-2-09 Subject BASIN 44A Sed Trap Processing By LAP  1923: Filter #16 is clogged. Small amount of fine Sand material scraped wite sample jav. Replaced w a view P5 filter: primed & vesymed processing. Added approx 20 ml UPD i to mobilize remaining solids in Soumple jav. (~170mi total) toxal 6/18/07  0934: Removed Filter #17. 44A - S71 B2 has been therovaphy processed Trace amounts of fine sand & some arguma material scraped into sample jav. 2 capped.  Solids juntia) Weight of fill sample jax = 365.9 grams Less veignt of empty sample jar -202.1 g (1/101)  Weight of devotatived & filtered sediment = 163.8 g  Holzer			
Subject BASIN 44A Sed Trap Processing  1923: Filter #16 is clogged. Small amount of fine Sand material scraped into sample jar.  Replaced w/a view P5 filter, primed by vesimed processing. Added approx 20 ml UPDi to mobilizer remaining Solids in Sample jar. (~130ml total) 5500 6/18/09  0934: Removed Filter #17. 44A-S71-B2  has been therovally processed trace amounts of fine sand & some organic material scraped into sample jar & capped.  Condestination Whighed full sample jar = 365.9 grams  Less weight of empty sample jar - 202.1 g  (1/10)  Weight of dr. watered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used	antina di Santa 🖠 di Langua di Santa Antina di Santa		
1923: Filter #16 is clogged. Small amount of fine Sand material scraped into sample jar. Replaced W a new P5 filter, primed & vesymed processing. Added approx 20 ml UPDi to mobilize remaining solids in Sample jar. (~170me total) 5xxx 6/18/09  0934: Removed Filter #17: 49A-S71-B2 has been thoroughly processed. Trace amounts of fine sand & some organic material scraped into sample jar & capped.  Colisso (w/113) Weighted full sample jar = 365.9 grams Less weight of empty sample jar -202.1 g (w/11a)  Weight of dravatered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used	Location W	PCL Field Lab	Date 6-2-09
1923: Filter #16 is chagged. Small amount of fine Sand material scraped into sample jar. Replaced W a new P5 filter, primed & vesnmed processing. Added approx 20 ml UPDi to mobilize remaining solids in sample jar. (~170ml total) 5xxx 6/18/09  0934: Removed Filter #17. 44A-STI-B2 has been therevally processed. Trace amounts of fine sand & some organic material scraped into sample jar & capped.  Colisco (w/112)  Weight of dr. watered & filtered sediment = 163.8 g  Weight of dr. watered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used	Subject B1A	SIN 44A Sed Trap Processing	By LAP
Fine Sand material scraped into sample jar.  Replaced W a vew P5 filter; primed 2  Vesymed processing. Added approx 20 ml  UPDi to mobilize remaining solids in  sample jar. (~170ml total) (5x0) 6/18/09  0934. Removed Filter # 17. 44A-S71_B2  has been therovally processed. Trace  amounts of fine sand & some organic  material scraped into sample jar 2  capped.  Colidst jurt 112) Weighted full sample jar = 365.9 grams  Less weight of empty sample jar -202.1 g  ("/ via)  Weight of de watered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used			
Fine Sand material scraped into sample jar.  Replaced W a vew P5 filter; primed 2  Vesymed processing. Added approx 20 ml  UPDi to mobilize remaining solids in  sample jar. (~170ml total) (5x0) 6/18/09  0934. Removed Filter # 17. 44A-S71_B2  has been therovally processed. Trace  amounts of fine sand & some organic  material scraped into sample jar 2  capped.  Colidst jurt 112) Weighted full sample jar = 365.9 grams  Less weight of empty sample jar -202.1 g  ("/ via)  Weight of de watered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used	0923.	Filter #16 is cloqued Com	all amount of
Replaced of a new P5 filter, primed & vesymed processing. Added approx 20 ml UPDi to mobilize remaining solids in sample jar. (~170ml total) 5x0 6/18/09  0934: Removed Filter #17. 44A-STI_B2  has been therovolving processed. Trace amounts of fine sound & some organic material scraped into sample jar & capped.  Colider (w/112) Weighted full sample jar = 365.9 grams Less weight of empty sample jar -202.1 g  (m/11a)  Weight of de watered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used			
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Sample jar (~170ml total) 5x0 6/18/09  0934: Removed Filter #17. 44A-STI_B2  has been thoroughly processed Trace amounts of fine sand & some organic material scraped into sample jar &  capped.  Colidst jurt 112) Whighed full sample jar = 365.9 grams Less weight of empty sample jar -202.1 g  (v/ via)  Weight of de watered & filtered sediment = 163.8 g  — Approx. 170 ml UPDi used			
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has been thoroughly processed. Trace amounts of fine sand & some organic material scraped into sample jar 2 capped.  Colissipertion Whighed full sample jar = 365.9 grams Less weight of empty sample jar -202.1g (n/via)  Weight of deviatined & filtered sediment = 163.8g  — Approx. 170 ml UPDi used	0004		
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capped.  Colidst jurt 11id) Whighed full sample jar = 365.9 grams  Less weight of empty sample jar -202.1 g  (n/ via)  Whight of deviatined & filtered sediment = 163.8 g  Approx. 170 ml uppi used	요즘 등 15 분들이 함께 보고 있다. 18 분들에는 15 분들이 10 분들이 15 분들이	Mas been yorovony pro	cessed wace
Colidst jurt 113) Whighed full sample jar = 365.9 grams Less weight of empty sample jar -202.1 g  (n/ via)  Weight of de watered & filtered sediment = 163.8 g  - Apprex. 170 ml uppi used		material straned with sa	mode in &
Colider jurt 112) Whighed full sample jar = 365.9 grams  Less weight of empty sample jar -202.1 g  (n/ via)  Whight of de watered & filtered sediment = 163.8 g  Approx. 170 ml uppi used		capped.	)
Weight of dewatered & filtered sediment = 163.8g  - Approx. 170 ml UPDi used			
Weight of dewatered & filtered sediment = 163.8g  - Approx. 170 ml UPDi used	(solidst jartlid)	Weighed full sample jar	= 365.9 grams
Weight of dewatered & filtered sediment = 163.8g  - Approx. 170 ml UPDi used		Less weight of empty sample	jar - 202 1 g
- Approx. 170 ml uppi used		(v/ ua)	
- Approx. 170 ml uppi used		11/0.11 C \ +\ C.L.	1 - 1 · 4 = 1 / 2 · Q
		Vylight of de walked of tillere	a seaming 10% 00
		- Approx. 17	O mel UPDI used
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보통하다는 사람이 많아 보는 사람들이 되었다. 그는 사람들은 사람들이 되었다. 그들은 이번에 모든 보는 사람들이 되었다. 그런 사람들이 모든 사람들이 되었다. [문항] - 보고 사람들이 자료되었다. 이 사람들은 사람들이 되었다. 그는 사람들이 되었다. 사람들이 사람들이 자료하는 사람들이 모든 사람들이 있었다.			
Attachments	Attachments		





Page <u>b</u> of \_

Project PORTLAND HARBOR STORMWATER SAMP. Location WPCL FIELD LAB / 44A-STI Subject BASIN 44A SED TRAP PROCESSING.

Project No. 1020.006 Date 6/1/09 - 6/2/09 By JXS

#### ALLTIMES IN PST

1057- Set-up decored PDX Harbor microfiltration system. Equipped Filtration system w/a PS, 5-10 um qualitative cellulose filter frimed filtration system of ultra pure de ionized water (upoi) Took a photo of secondary sed trap bottle 44A-STI-B3. MJS will process (44A-STI-BI & 44A-STI-BZ) W/ a second decored filtration System. Note: Time reference for 44A-STI-B3 photo was in PDT.

1001- Began processing 44A-STI-B3

1015 - Clogged Filter. Retained solids on surface of filter were primarily medium coarse sands of large coarse organic particles. Took a photo of retained solids. Serepted filtered solids off of filter surface using a decomed stainless spatula. Placed filtered solids in labeled sample jar. Removed spent filter, replaced w/another P5, 570 um filter, promed Filtration system of continued to process 14A-5TI-B3

1038 - Clogged Filter. Retained solids primarily consist of fine silts & lay particles of coarse medium sands of the large coarse organic particles scrapped solids off of filter & placed retained solids in sample iar. scrapped solids off of Filter & placed retained solids in sample jar. Removed spent filter, equipped filtration system w/ another PS, 5-10 nm Filter, primed Filter Wuppi of continued processing

1058 - Closged Filter. Sampleable solids retained on surface of Filter. Took a photo of retained solids. Scrapped retained solids "cake! off of filter of placed in sample jar. Equipped Filtration system When Attachments PS, 5-10 mm filter, frimed filter WIUPDI & continued processing.





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Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1070,005
Location WPCL FIELD LAB / 444-5T1 Date 6/1109 - 6/2/09
Subject BASIN 44A SED, TRAP PROCESSING BY JXB
그는 경기도 들어 있는 경쟁 그리고 있는 사람들은 사람들은 사람들이 있는 사람들이 가는 그리고 있다면 가장 그리고 사람들이 가장 함께 되었다.
1110 - Clagged filter. Substantial filtered solids retained on
of fine silts & cky particles, coarse medium sands & large organic
particles. Strayfled filtered solids of placed into sample jar. Romand
spent filter, equipped filtration system w 5th P5, 5-10 mm
Filter. Primed Filter & continued processing.
1、天民民主义、体验、经济、国际、国际、民族、民族、民族、民族、国际、民族、国际、民族、国际、民族、民族、民族、民族、民族、民族、民族、民族、民族、民族、民族、民族、民族、
1155- Clogged Filter, Substantial Filtered solids retained on surface
of Filter. Swapped filtered solids off of filter surface of placed in
sample for Equipped filtration system w/ new section of pensial tre
fund system WINPOI. Aided "100min to sample bottle to semobilize solids to adhered to inside surfaces of bottle Poured Solids-UPDI
fring system w/ UPDI. Added "100minto sample bottle to semobilize
solids to adhered to inside surfaces of bottle Poured solids - UPDI
sluny into filtration system & continual processing
1225 - Clagged Filter. Scrapfed retained solids off of surface of filter &
placed into sample jar. Removed filter. Equipped filtration system w
7th ps, 5-10 mm Filten Armed Filter of proceeds to process remaining
Ramobilized solids-400I slumy.
1755 - Charly Cillage Filler I all manager contailized Salida Labort
1255- Clogged Filter Filtered all remaining remobilized Solids-4PDI
Slump Retained solids on surface of Filter are primarily large course
Sand particles of small angular coarse gravels. Took photo scrapped JKB filter, removing filtered solids of added to retained solids in sample
jar
Total wet weight of Filtered solids = 165.39
Attachments





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Project PODTI ANN HARDON OF STORMAN ATER SAMAD Project No 1020 005
Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020.005
Location WPCL FIELD LAB/44A-STI Date 6/1/09-6/2/09
Subject BASIN YYA SED TRAP PROFESSIONS BY JXB
ALL TIMES IN PST
1335 - Equipped microfiltration system w/ a PS, 5-10 um qualitative
Filter. Primed filter WIMPUI. Took a photo of 44A-STI-BY MJS to
process 44A-STI-BI & 44A-STI-BD concurrently W/ secondary traps
(44A-STI-B3 & 44A-STI-B4). Began processing 44A-STI-B4
1415- Filter clagged. ~ 80% of supernalant filtered through microfiltrati
system. Trace amounts of solids retained on filter, primarily some
coarse sands & organics (woody particles). Little-to-no solids recovered
Removed Filler & replaced Wanother P5, 5-10 rum Filter. Primed Filter
onthured processing, the GIZZIEG
1430 - Second Filter clogged About to Filter remaining supernale. Trace solids
retained on surface of filter, primarily coarse sands & woody particles.
No solids recovered Removed Filter of equipped filtration system Wanother
P5,5-10mm filter. Continued processing, pouring a portion of solids
Slurry into filtration system.
1440 - Clogged third filter: Retained solids on filter were primarily fine silts of clays of woody, organic particles. Scrappen solids of placed into a tared sample
clays of woody, organic particles. Scrapped solids of placed into a taked sample
jar Removed filter continued processing using another PS, 5-10. mm filter. Attempted processing another 20% of Asolids slumy from 44A-STI-BY
mremples processing another 20 10 or sollas stury from 774-511-194
1500 - Clogged fourth filter. Sampleable solids on surface of filter.
Policial sald a usua or many course for said for site tolar mytholes
Attachments in taved sample ar. Domoved filter equipped system W/new P5 filter of the action of the attachments in taved sample ar. Domoved filter equipped system W/new P5 filter of attachments in taved sample ar.
Attachments in trived sample ar. Domoved filter paulinged system W/new PS filter &
and a stemanting the state of t

**Attachments** 

#### **DAILY FIELD REPORT**





	Page <u>75</u> of +
Project PORTLAND HAPPOR STORMWATER SAME	Project No. <u>/DZO.co</u> S
Location WPCL FIELD LAB 44A-5TI	Date 6/1/09 - 6/2/09
Subject BASIN 44A SED TRAP PROCESSING	By Jx3
1520 - Clogged Fifth Filter. Sampleable:	solids retained on
surface of filter. Took photo of retainer	
primarily of fine silts & clay particles w/c	
inclusions y some woody organic parti	N.C.
filter of placed into taxed sample jar. Place	
processed solids in the Lab Anage.	
Allahan 199 and an Europe to and be a seen	1 m 200 1 1 1 2 2 200 1 1 1
Added ~ 100 mL of uppt to sed trap bottle	
solids adhered to the bottom & sides of the	bottle Remaining mou
solids will be processed on 6/2/09.	
Covered microfiltration system of aluminum Parafilm in order to close off system	im loil a mapped boxts
of reparism in order to close off system	n from Lab's atmospher
overnight.	
/	
6/2/09@0715PST   - Removed sed trap bot	THE YYA-STI-BY, Front
rymobilized solids WUPDI & tared Sample jo	av From lab refrigerate
Removed aluminum Fail of Parafilm from	microfiltration system.
Equipped system W/ New PS, 5-10 mm filt	ten frimed Filter's
continued processing remaining mobilized	solids from YYASTLBY.
0826-Clagged sixth filter. Took photo of retained	I solids on filer Added s
to retained solids in toped sample jar. Solid	s primarily consist of
Fine silts & clay particles of medium woody orga	unic debos. Removed ensur
filter. Equipped system whanoner Ps filter of	continued novestile.





Page <u>5 b</u> of <u>7</u>b

Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020,005
Location WPCL FIELD LAB/ 44A_STI Date 6/1/09 - 6/2/09
Subject BASIN 44A SED TRAP PROCESSING By JXB
0852- Clogged seventu filter. Solids retained on surface of filter.
Filtered solids were primarily fine silts & clay particles & woody
organic debris. Removed solids. Equipped system W/ new P5,5-1011
Filter. Continued processing final solids mobilized MUPDI.
5×8 6/22/09
0915 - Filtration of last-solids mobilized W/ UPDI taking a long time -
Slower than previous filtrations.
마이 경우의 현재에 살아 있다는 경우 보다 되는 것이 하는 것이 되었다. 그는 경우에 되는 모든 보고 생각하는 이 전에 되는 것이 되었다. 그런 이 이 경우로 하는 모든 
0935 - Clogged eighth filter, Minimal solids retained on filter.
Scrapped off solids & placed into tared sample jar. Filtered solids
appear to have more fine sands compared to previous filtered solids.
Removed spout filter of equipped system Wnew PS filter. Proxessed
The last of the remobilized solids.
1000- TUPDI filtered through filter; last of the remobilized solids
retained on surface of Filter. Removed Filtered solids & placed
into tared sample jour containing processed solids from 44A-STLB4.
Weighed Filtered solids.
Total wet weight of filtered solids
For 44A-STLB4 = 141.4g
Tare weight of sample
jar 4/1/2 = 700.93
Processed Solids Haved jar total weight = 342.30
342.30
200.9
Attachments 41,44

(all)





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	Project PORTLAND HARBOR STORMWATER SAMP Project No. 10 20.005 6/2
	Location WPCL FIELD LARY 44A-571 COMP. Date 6/1/09-6/7/09
	Subject BASIN YYA SED TRAPPROCESSING BY JXR
	1015 - Successfully processed of filtered solids from all four
	Sed trap bottles (Primary & secondary). Filtered/retained solids
	From each sed trap bottle were placed into individual 807 sample jan
	Primary Sed Traps  44A_STI-B1  44A_STI-B2  44A_STI-B3  44A-STI-B4
are cight of	10 회사는 이 그는 그는 이 회사 전에서 가고 생각을 하지 않는데, 경험적으로 하나 이 분석 관계에 가장 경험적인 기업이 회장 한 분석 모임.
mpleja Hid (g	200.0g / 202.1g / 199.1g / 200.9g /
ota i ma:	
- Sample	
filtered	361. Zg / 365,9g / 364,4g / 342.3g /
voe weic	y+ 2/1 2 2/2 2
are wels -) total	$\frac{1}{361.29}$ $\frac{365.9}{200.0}$ $\frac{369.9}{200.9}$ $\frac{342.39}{199.19}$ $\frac{342.39}{200.9}$
1455 (g)	[161.29 V+ 163.89 V+ 165.39 V+ 141.49 V
500 C	A Filtered wet wet we will fill the solid (g) 7" " 7" 7" 7" 7" 7" 7" 7" 7" 7" 7" 7" 7
-61c	SUBSCINENT
	javs into a decomed stainless steel how! for homogenization.
	(Filtered sample volumes exceeded 8 07 javs). Bowlasample pried intridge
	Weight of composite spoon = 110.2g  Weight of sample bowl = + 739.5g  Total mass of filtered
[	Tare weight of composite I wet weight solids = 631,70
1	sample bonil & spoon = 849.79   Prior to composite
	Containing residual solid
	1050 - Added 10-35 ml of UPDI to each sample japation the processing
	of each sed trap bottle. Mabilized solids at filtered in order to
	mitigate solids. Used a 15, 5-10 mm filter to capture residual solids.  Total residual solids lost from process = 9,59
	Attachments — Csi Cyar Collas 7527 17 Ma (173 253





	Page 75 of h
Project PORTLAND HARPOR STORMWATER SA Location WPCL FIFLD LABJ 44A STI COM! Subject BASIN44A SED TRAP PROCESSIA	P. Date <u>6/1/09</u> - 6/2/09
1143 - Thoroughly mixed all filtered decomed stainless bowl, Took phoplaced equal aliquots; splitting homo two taxed 80% sample jars	sto of final composite. geneous composite into
44A_STla(jara) 44A	-5716(jarb)
Total mass of 508.18	-5716(jarb) 506.93
a Filtered solids (a)	
weight of tared 200.7g jar w/lid (g)	Z02.4 g
Filtered wet weight of 307.4g + Solids in grams[total mass	304.5 g => 44A_STI total  Wet weight of filters
Solids in grams[total mass	wet weight of filters
(-) tared jar]	5011ds=  611.9g
Mass /	
Weight of dirty boult spront residual solids	= 860.10
Take weight of comments to comme to boult comme	= 000.1
Tare weight of composite sample bowl + spoon	
	1009 & retained on comp.
	10.49
	10 01 retained on inside surfaces
Total solids lost =   due to compositing process!	19,99 of sample jars lost
1151- Capped Sample jars & placed in Lab Solids samples for Albina Riverlots to be sub	fridge. All processed sed trap E litrion sequenty relinguished of
- <b>Λ 1.b 1.b</b>	ouse in order to determine
analyte priorities.	

#### Solids Sampling: Grab Samples



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



### **Bureau of Environmental Services** Chain-of-Custody Sin Citation



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			,		Grain Si	TOC Total So	NWTPH-	SVOCs (		Sample S	Sample Sa	Sample S Date	Point Code	Location	WPCL Sample I.D.
	ر آن این این این این این این این این این ای	,	,,	tals (As, C Ni, Ag, Zn)		lids	Dx	CAS)	Phthalates	clors - LL		<u>IEVE</u>	BY #10 S	ALL SAMPLES WERE SIEVED BY #10 SIEVE	ĄL
							٠.		(TA)				ver Lots)	OUTFALL 44A (Albina River Lots)	
3	Field Comments		Metals	M	eral	General		Organics	Org				ž		
,	nalyses	Requested Analyses	Req								SEDIMENT	Matrix: S			File Number: 1020.001
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#### **DAILY FIELD REPORT**



Page \_\_\_



Project PORTLAND HARBOR INLINE SAMP Project No. 1020.00 Location BASINYYA Date 4/8/09 Subject INLINE SED SAMP! CB SOLIDS SAMPLING BY JXBIMJSILASIPTB X-All times in PST 0951 - Arrive in Basin 44A @ catch basin ADZ315 on NE Russell St. Grate of CR was plugged w/ 30-40% sediment, organics plastics carefully removed debris from CB grate of them grate. Solids deposited in bottom of CB floor were primarily organic my some trace amounts of sands, silts & minor fines Due to low solids volume in floor of CB ADZ315, st sampled along CB perimeter (grate collar primarily overall composite volume, & Then solids from CB + were subsequently added to overall bulk sample [44A-1] 1027 - Armine on site @ unmapped CB on normnest corner of NE Russell & Rodney Ave. CB is connected to stor ABC516: CBarrie was plugged ~2500 of organics plastics. Carefully removed debris from grate of Removed top-most layer of debis from deposited solids in bottom of CB (top-most layor of debn's consisted primarily of fluffy, dry organics) 1036 - Remaining solids deposited in CB were collected. Maknal tlet was also added to bulk sample Attachments

Project Number:



Project Name:

## CITY OF PORTLAND

## **ENVIRONMENTAL SERVICES**

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



# CATCH BASIN SOLIDS SAMPLING FIELD DATA SHEET

Portland Harbor In	ine So	imp.		l	1020.001	
Sampling Team:	Date:	418109		Arrival <sup>-</sup>		
Basin: ŸŸA	Node:	12315		Addres	s: CB on Nik Russe	ou et
Current weather and last known rainfa		Chan A. F. San Control of the Contro		<u>-</u>	CB ON TOP RUSSE	11 51.
Coolf Overcast Last	measi	arable preci	) Nic	25 >	5 days	
100 pt 10			<i>V</i>			
SECTION :	I - PRE-	SAMPLING VIS	UAL (	DBSE	RVATION REPORT	
Describe potential solids or contamina sources that could impact catch basin activities, erosion, vehicles, material stora processes, etc.):	(const.				PdL substation on	
Describe debris and/or clogging aro catch basin grate/cover:	und, or in	CB grate was	plugg icles.	ed"30	-40% with sedim	nents, organics
Is there standing water in catch basin	?	No				
Describe visual or olfactory observentamination at catch basin if a sheen, discoloration, etc.)	ations of ny (odor,	None				
Describe depth of sediments presen basin and the total depth of the catcl sump:	t in catch i basin or	Solids in ce, p in average dep CB depth was	rimar th w/a	ily le	aves d organics we wow average on he c	re~0,75" corrers of appro
SITE DIAGRAM: Include street inters						
	A	100 100512				
3€" <u>T</u>	-	mH)			36" <u>T</u>	
		8" Whay		<del>&gt;</del>	N. Russell ST.	
$\stackrel{\varnothing}{\longrightarrow}$	<u> </u>	MMM CB ADZ	315	San	upte location=	7
Side walk		- Second			Sic	lemonik

SECTION 3 - I	PHOTOGRAPH LOG
Overview of CB showing drainage area	yes
Catch basin plan view prior to sampling showing solids	yes
Lateral connections to/from CB	yes
Homogenized sample (sediment in bowl)	yes

## City of Portland Environmental Services

## **DAILY FIELD REPORT**





Project Portland Harbor Inline Sod. Samp. Project No. 1020.001
Location IL - 44A _ ADZ315_0409 44A_1 Date 4[10]09
Subject Sample Processing JYB JUM, PHA
0910 Started recording weights of processing receptacles foriginal sample Captured photo of original bulk sample after vigorously mixing, Normagenizing sample.
Captured photo of original bolk sample after vigorously mixing
0970 Initiated dry sieving. Sample is approximately 20% organics, 5%
gravels Sieved through No. 10 (2mm) stainless steel Mesh
0947 Completed dry sieving. Cuptured Photo of final sieved material.
0970 Initiated dry sieving. Sample is approximately 20% organics, 5% gravels Sieved through No. 10 (2mm) stainless steel Mesh 0947 Completed dry sieving. Cuplured Photo of final sieved material. 0945 Filled 6 Aoz. sample, 3 802. javs.
는 사용하다 하는 사용하다 하는 사용하다는 사람들이 하는 사용자를 하는 생활을 하는 하는 생활을 하는 사용하는 물론이 하는 사용하다는 사용을 하는 사용을 하는 것이다. - 사용자들은 사용자들은 사용자들은 사용자를 하는 사용자를 하는 사용자를 하는 사용자를 하는 것이다. 사용자를 하는 사용자를 가득하는 것이다.
는 현실에 가는 경기에 가는 사람들이 되었다. 이렇게 되는 사람들이 되는 것이 되는 것이 되는 것이 되었다. 그는 사람들은 생각이 되었다는 것이다. - 사용기 기업에 가는 사람들이 가는 기업에 가는 사람들이 되었다. 그 사람들이 되었다. 그 사람들이 기업을 받는 것이 되었다. 그렇게 되었다. 그렇게 되었다.
요한 기계 10년 전에 가는 그는 이번 기계 시간 기계 기계 기계 10년 12년 1일
는데 이렇게 하는데 보고 있는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하
Original bolk composite weight=2.23kg
Sieved sample weight = 1.49 kg F0095477
Excluded material neight = 0.73/cg
Attachments



## CITY OF PORTLAND

## **ENVIRONMENTAL SERVICES**

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



# CATCH BASIN SOLIDS SAMPLING FIELD DATA SHEET

Portland Harbor Inline Samp Sampling Team: Date:	1020.001
JXB/MJS/LAS/PTB 4/8/09	Arrival Time:
Basin: 411 Node:  Current weather and last known rainfall:  Connected to ARCS 16	Address: NE Russell & Rodney Ave
Cool overcast Wlast measurable precip > 6	

Cool overcast-Wlast measur	able plecip 15 days
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.):	Parked vehicles & adjacent opport substation. ON NE Pussen ST
Describe debris and/or clogging around, or in catch basin grate/cover:	CB grade was partially plugged tof (25%) w/ large organics, sedimental plastics.
Is there standing water in catch basin?	No
Describe visual or olfactory observations of contamination at catch basin if any (odor, sheen, discoloration, etc.)	None
Describe depth of sediments present in catch basin and the total depth of the catch basin or sump:	Pemored top layer of fluffy, dry organics in bottom of of CB from sample. Removed remaining solids Wan away Jeptn of 2,0-2,5" from CB bottom & CB outlet. Total deptn of CB was ~18"
SITE DIAGRAM: Include street intersections, in	lets and outlets, catch basin dimensions, etc.
An a second	Z A
N.E Rodney Ave	Plugged ~ 611 From manhote
concrete A	Sample Location = Jeb

Date: SECTION	12 - SAMPLE COLLECTION RE	PORT	Node: Unmapped
Sampling Equipment:	Stainless steel spoon & stainless steel bucket  OTHER (DESCRIBE)		Chronnected to Storm nave ABCSIL
Equipment decontamination procedure:	文Per SOP7.01a □ OTHER (DESCRIBE)		
Sample date: 4/8/09	Sample time: /036		
Sample Identification Code: TCB to NE-046  TH-44A-CBM20DNEY-0469	Sample collection technique and if/hor	w overlying war	ter was removed; nic Material from dyr nere subsampled;
Subsample number and location:	of 20 3 5" on average. Also	removed sol	nds(1911) from upstream
Color of sample:	Both of subsample materi	of HOVE	from CB Dutlej
Texture/particle size:	CB was exclusively organics CB water 40% organics of ~60	% Sanded	- The wilming Go a
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	None		SILIS MINUTING
Amount and type of debris in bulk sample:	Organics (large proportion)	, sands as	ilts & minor fires
Amount and type of debris removed from final sample:	410% Large organics (in	e., leaves & C	herry tree blossoms)
Compositing notes: Bulk sample was for	offed & will be processed & sieve	d back@n	IPCL for subsequent
Sample jars collected (number, size, full or pa	rtial)? 1x full Z. 5 gallon stain	iless bucke	+
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).			
FO095478			
Lab ID	Duplicate sample collected? Y(N) D	upe ID	
Duplicate sample identification # on COC:			
Any deviations from standard procedures:	10		

SECTION 3 -	PHOTOGRAPH LOG
Overview of CB showing drainage area	yes
Catch basin plan view prior to sampling showing solids	yes
Lateral connections to/from CB	Y05
Homogenized sample (sediment in bowl)	Ves

## **DAILY FIELD REPORT**





- IL- YUA-NEROdney-CBtoNE-P4P9 Page \_\_\_\_ Hard Harbor Inline Samp Project No. 1020-001 Date 4/10/2009 subject Sample Sieving 1100-Compositing began after transfer of bulk sample to Shallow composite bowl. Took picture 1.52 water (nanopyre 01) for wet sieving and began sieving. Sample is 285% organic material, and " 70% sank, silts and miscelleneous garbage. Sample also has a in sample very little organic content the sieve. Before organic dumps/masses are resqueezed to expel any water rantaining fin of nanopure of to facilitate wet siening - of nanopure DV sieving. Took photo of sievel materia BULK SAMPLE WEIGHT: 6.94Kg SIEVED SAMPLE WEIGHT: 2-38th EXCLUDED MATERIAL WEIGHT = 4.75 kg FO095478 Attachments





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## 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
  - o Total Metals EPA 200.8
  - o Total Mercury WPCL SOP M-10.02
  - o Total suspended solids (TSS) SM 2540D
- Test America (TA)
  - o Polycyclic Aromatic Hydrocarbons (PAHs) EPA 8270M-SIM
  - o Phthalates EPA 8270M-SIM
- Columbia Analytical Services (CAS)
  - o Semivolatile Organic Compounds (SVOCs) EPA 8270C
- Pace Analytical Services (Pace)
  - o 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/LCDS recoveries for benzoic acid may indicate a low bias for this analyte.



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## **Laboratory Data QA/QC Review Albina Riverlots Source Control Investigation** Fourth Quarter 2008 Stormwater Sampling – Event 2

File To:

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
  - o Metals EPA 200.8
  - o Mercury WPCL SOP M-10.02
  - Total suspended solids (TSS) SM 2540D
- Test America (TA)
  - o Polycyclic Aromatic Hydrocarbons (PAHs) EPA 8270M-SIM
  - Phthalates EPA 8270M-SIM
- Columbia Analytical Services (CAS)
  - o 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-dinotrophenol; however, CAS reorts 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 glagged 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 reported as estimated ("EST") because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD.

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 bank 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.



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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
  - o Total Metals EPA 200.8
  - o Total Mercury WPCL SOP M-10.02
  - o Total suspended solids (TSS) SM 2540D
- Test America (TA)
  - o Polycyclic Aromatic Hydrocarbons (PAHs) EPA 8270M-SIM
  - Phthalates EPA 8270M-SIM
- Columbia Analytical Services (CAS)
  - o Semivolatile Organic Compounds (SVOCs) EPA 8270C
  - o Organochlorine Pesticides EPA 8081
- Pace Analytical Services (Pace)
  - o 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 reported as estimated ("P") because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD.

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 bank 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.



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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
  - o Total Metals EPA 200.8
  - o Total Mercury WPCL SOP M-10.02
  - o Total Suspended Solids (TSS) SM 2540D
- Test America (TA)
  - o Polycyclic Aromatic Hydrocarbons (PAHs) EPA 8270M-SIM
  - Phthalates EPA 8270M-SIM
- Columbia Analytical Services (CAS)
  - o Semivolatile Organic Compounds (SVOCs) EPA 8270C
  - Organochlorine Pesticides EPA 8081
- Pace Analytical Services (Pace)
  - o 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 WPCL<sup>1</sup>, 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/MDS 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,

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<sup>&</sup>lt;sup>1</sup> 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.



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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
  - o Total Solids SM 2540 G
  - o Metals EPA 6020
  - Polychlorinated Biphenyl (PCB) Aroclors EPA 8082
- Analytical Resources, Incorporated (ARI)
  - o Grain Size ASTM D421/422
- Columbia Analytical Services (CAS)
  - Organochlorine Pesticides EPA 8081A
- Test America (TA)
  - o Polycyclic Aromatic Hydrocarbons (PAHs) and Phthalates EPA 8270M-SIM
  - o Total Organic Carbon (TOC) EPA 9060 MOD

- Pace Analytical Services (Pace)
  - o 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 from Outfall Basin 43.



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# Laboratory Data QA/QC Review Upland Source Control Investigation Outfall Basins 44 and 44A (April 7 and 8, 2009)

**To:** File

From: Julia Fowler, GSI

**Date:** May 29, 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 7 and 8, 2009. The City collected ten inline solids samples in Outfall Basin 44 and two inline solids samples in Outfall Basin 44A and submitted the samples 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
  - o Total Solids SM 2540G
  - o 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)
  - o Grain Size ASTM D421/422
- Columbia Analytical Services (CAS)
  - o Semivolatile Organic Compounds (SVOCs) EPA 8270C
  - Chlorinated Pesticides EPA 1699M (on two samples only FO096567 and FO095468)
- Test America (TA)

- o Polynuclear Aromatic Hydrocarbons (PAHs) and Phthalates EPA 8270M-SIM
- o 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 recommended method-specific holding times with the exception of the two samples analyzed for pesticides. The pesticide analyses were conducted approximately 3 weeks past the recommended holding time of 14 days.

## **Method Blanks**

Method blanks were processed during the subcontracted laboratory analysis of SVOCs, PAHs phthalates, pesticides and TOC. Bis(2-ethylhexyl)phthalate (BEHP) was detected in the method blank at a concentration between the method detection limit (MDL) and the method reporting limit (MRL). Because BEHP concentrations detected in the field samples were greater than 10 times the method blank detection, the sample data are not affected.

Hexachlorobenzene, 4,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDT and 4,4'-DDT were detected at concentrations between the MDL and the MRL. The sample results for these constituents should be considered slightly biased high. Methoxychlor was detected in the method blank at a concentration greater than the MRL. Sample results for these constituents are flagged "B" if the concentration is less than 10 times the method blank concentration and should be considered

biased high or false positives. If the sample results are greater than 10 times the blank concentrations, the data are not flagged.

## **Surrogate Recoveries**

Surrogate recoveries were completed during the subcontracted laboratory analysis of SVOCs, PAHs, phthalates and pesticides. For the SVOC analyses, CAS reports that the control criteria for all surrogates in sample FO095470 and for surrogate Terphenyl-d14 in some samples are not applicable. The samples required dilution which resulted in surrogate concentrations below the reporting 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**

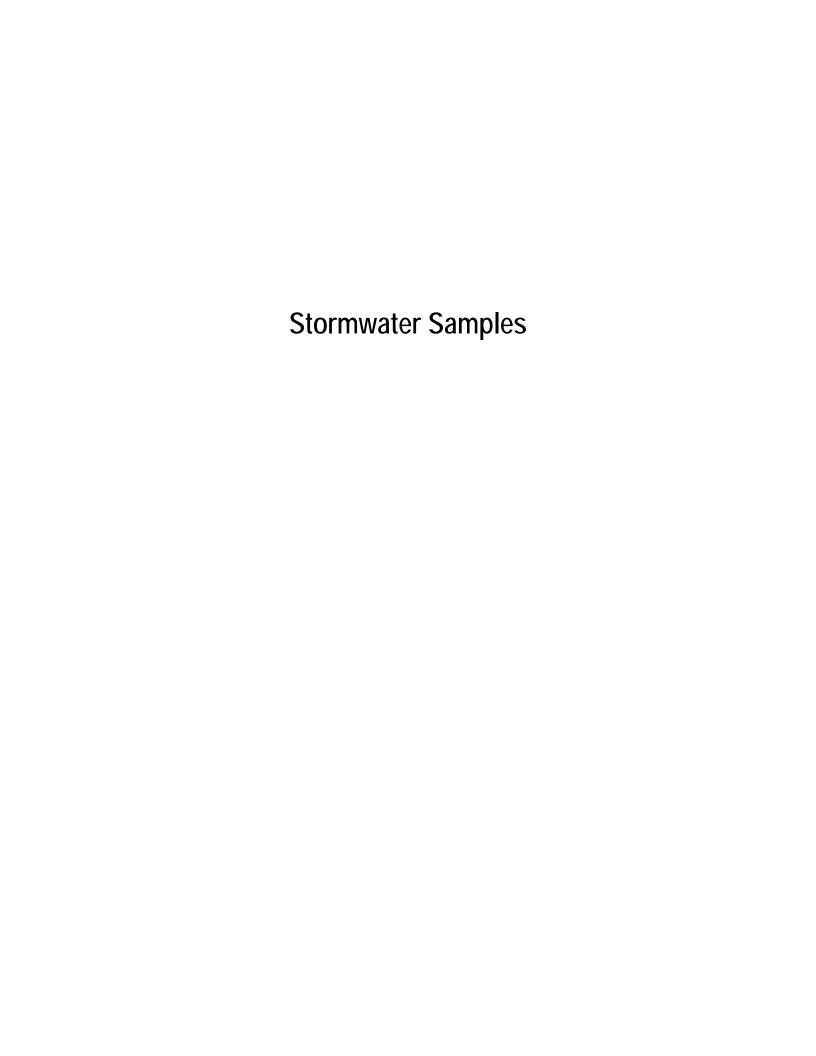
Laboratory control samples (LCS) were processed during the laboratory analysis of PAHs, phthalates, pesticides and TOC. The LCS recoveries were within the laboratory control limits. LCS and duplicate laboratory control samples were processed during the laboratory analysis of SVOCs. The LCS recoveries were within the laboratory control limits. CAS reports that the RPD criterion for 2,4-dimethylphenol was not applicable because the analyte concentration was not significantly greater than the MRL. Refer to the CAS report for further discussion.

The recovery of 2,4'-DDD during the pesticide analysis in the LCS was outside the control limits. CAS reports that, based on the method and historic data, the recoveries observed were in the range expected for this procedure, no further corrective action was taken.

## **Other**

The method reporting limits (MRL) for all samples were significantly elevated during the EPA 8270C analyses and for the two samples analyzed for pesticides due to the presence of non-target background components.

WPCL reports that chlordane was detected at a significant concentration during the Aroclor analysis of sample FO095467. As a result, the MRLs for the Aroclors are raised due to interference from the pesticide contamination.



Event 1: November 20, 2008

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

Project Name: PORTLAND HARBOR STORMWATER SAMP



# Chair of Cestock



Date: 11/20/08

Page: of (

Collected By: \( \mathcal{LCB} / F/H/A

**Bureau of Environmental Services** 

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## LABORATORY ANALYSIS REPORT

Sample ID: FO081412

Sample Collected: 11/20/08 Sample Received: 11/20/08 09:56

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 1 of 4

Address/Location:

SW-44A-ABC311-1108

System ID:

AM10908

Sample Point Code:

N LARABEE & RANDOLPH 44A\_SW1

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
FIELD		a.,			
CONDUCTIVITY (FIELD)	43	µmhos/cm	1	SM 2510 B	11/20/08
pH (FIELD)	7.0	pH Units	0.1	SM 4500-H B	11/20/08
TEMPERATURE	10.7	Deg. C	0.1	SM 2550 B	11/20/08
GENERAL					
TOTAL SUSPENDED SOLIDS	13	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	0.47	μg/L	0.1	EPA 200.8	11/24/08
CADMIUM	0.21	μg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	0.98	μg/L	0.4	EPA 200.8	11/24/08
COPPER	9.89	$\mu$ g/L	0.2	EPA 200.8	11/24/08
LEAD	3.05	$\mu$ g/L	0.1	EPA 200.8	11/24/08
NICKEL	1.37	$\mu$ g/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	μg/L	0.1	EPA 200.8	11/24/08
ZINC	98.4	μg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONG	ENERS -PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHA	LATES - TA				
Acenaphthene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	11/21/08
Acenaphthylene	0.0380	$\mu$ g/L	0.0194	EPA 8270M-SIM	11/21/08
Anthracene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	1.05	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	0.0160	μg/L	0.00971	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	11/21/08
		11	* * * * * * * * * * * * * * * * * * * *		

Report Date: 01/02/09





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Sample ID: FO081412

Sample Collected: 11/20/08 Sample Received: 11/20/08

09:56

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 2 of 4

Address/Location:

SW-44A-ABC311-1108

N LARABEE & RANDOLPH

System ID:

AM10908

Sample Point Code: Sample Type:

44A\_SW1

EID File #: LocCode:

1020.005 **PORTHASW** 

Sample Matrix:

**GRAB 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	<0.971	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	0.0334	μg/L	0.0194	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	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	11/21/08
Naphthalene	0.0648	μg/L	0.0194	EPA 8270M-SIM	11/21/08
Phenanthrene	0.0342	μg/L	0.0194	EPA 8270M-SIM	11/21/08
Pyrene-	0.0349	μg/L	0.0194	EPA 8270M-SIM	11/21/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.22	μg/L	0.22	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.22	$\mu$ g/L	0.22	EPA 8270	11/26/08
1,3-Dichlorobenzene	< 0.22	$\mu$ g/L	0.22	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.22	μg/L	0.22	EPA 8270	11/26/08
2,4,5-Trichlorophenol	< 0.53	$\mu$ g/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	<4.3	$\mu$ g/L	4.3	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.3	μg/L	4.3	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.22	μg/L	0.22	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.22	μg/L	0.22	EPA 8270	11/26/08
2-Chloronaphthalene	<0.22	μg/L	0.22	EPA 8270	11/26/08
2-Chlorophenol	< 0.53	μg/L	0.53	EPA 8270	11/26/08
2-Methylnaphthalene	<0.22	μg/L	0.22	EPA 8270	11/26/08
2-Methylphenol	< 0.53	μg/L	0.53	EPA 8270	11/26/08
2-Nitroaniline	<0.22	μg/L	0.22	EPA 8270	11/26/08
2-Nitrophenol	< 0.53	μg/L	0.53	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.2	μg/L	2.2	EPA 8270	11/26/08
3-Nitroaniline	<1.1	μg/L	1.1	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.2	μg/L	2.2	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.22	μg/L	0.22	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.53	μg/L	0.53	EPA 8270	11/26/08
4-Chloroaniline	<0.22	μg/L	0.22	EPA 8270	11/26/08

Report Date: 01/02/09





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Sample ID: FO081412

Sample Collected: 11/20/08 Sample Received: 11/20/08 09:56

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 3 of 4

Address/Location:

SW-44A-ABC311-1108

AM10908

N LARABEE & RANDOLPH

System ID: EID File #:

1020.005

Sample Point Code: Sample Type:

44A\_SW1 **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
4-Chlorophenylphenyl ether	<0.22	μg/L	0.22	EPA 8270	11/26/08
4-Methylphenol	0.65	μg/L	0.53	EPA 8270	11/26/08
4-Nitroaniline	<1.1	μg/L	1.1	EPA 8270	11/26/08
4-Nitrophenol	<2.2	$\mu g/L$	2.2	EPA 8270	11/26/08
Acenaphthene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Acenaphthylene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Anthracene	<0.22	$\mu$ g/L	0.22	EPA 8270	11/26/08
Benzo(a)anthracene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Benzo(a)pyrene	< 0.22	μg/L	0.22	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Benzoic acid	<5.3	μg/L	5.3	EPA 8270	11/26/08
Benzyl alcohol	3.2	μg/L	0.53	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.22	μg/L	0.22	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.22	μg/L	0.22	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.22	μg/L	0.22	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	<1.1	$\mu$ g/L	1.1	EPA 8270	11/26/08
Butyl benzyl phthalate	0.27	μg/L	0.22	EPA 8270	11/26/08
Chrysene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Dibenzofuran	<0.22	μg/L	0.22	EPA 8270	11/26/08
Diethyl phthalate	<0.22	μg/L	0.22	EPA 8270	11/26/08
Dimethyl phthalate	<0.22	μg/L	0.22	EPA 8270	11/26/08
Di-n-butyl phthalate	0.24	$\mu$ g/L	0.22	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.22	μg/L	0.22	EPA 8270	11/26/08
Fluoranthene	< 0.22	μg/L	0.22	EPA 8270	11/26/08
Fluorene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Hexachlorobenzene	< 0.22	μg/L	0.22	EPA 8270	11/26/08
Hexachlorobutadiene	< 0.22	μg/L	0.22	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.1	μg/L	1.1	EPA 8270	11/26/08
Hexachloroethane	< 0.22	μg/L	0.22	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Isophorone	<0.22	μg/L	0.22	EPA 8270	11/26/08
Naphthalene	<0.22	μg/L	0.22	EPA 8270	11/26/08

Report Date: 01/02/09





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## LABORATORY ANALYSIS REPORT

Sample ID: FO081412

Sample Collected: 11/20/08 Sample Received: 11/20/08 09:56

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 4 of 4

Address/Location:

SW-44A-ABC311-1108

N LARABEE & RANDOLPH

System ID:

AM10908

Sample Point Code:

44A\_SW1

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.

est Parameter	Result	Units	MRL	Method	Analysis Date
Nitrobenzene	<0.22	μg/L	0.22	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.22	μg/L	0.22	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.22	μg/L	0.22	EPA 8270	11/26/08
Pentachlorophenol	<1.1	μg/L	1.1	EPA 8270	11/26/08
Phenanthrene	<0.22	μg/L	0.22	EPA 8270	11/26/08
Phenol	0.80	μg/L	0.53	EPA 8270	11/26/08
Pyrene	< 0.22	μg/L	0.22	EPA 8270	11/26/08

End of Report for Sample ID: FO081412

Report Date: 01/02/09



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#### LABORATORY ANALYSIS REPORT

Sample ID: **FO081413** 

Sample Collected: 11/20/08 Sample Received: 11/20/08 10:06

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Page 1 of 4 Report Page:

Address/Location:

FIELD DECON BLANK

System ID:

AM10909

Sample Point Code:

**FDBLANK** 

EID File #:

1020.005

Sample Type:

**GRAB** 

LocCode:

**PORTHASW** 

Sample Matrix:

**DIWTR** 

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	<2	mg/L	2	SM 2540 D	11/20/08
	~_	mg/ =	<u>-</u>	CM 2010 B	
METALS			2 222	WDOLOOD M 10.00	44/04/00
MERCURY	<0.0010	μg/L	0.002	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8	•				•
ARSENIC	<0.10	μg/L	0.1	EPA 200.8	11/24/08
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	<0.40	μg/L	0.4	EPA 200.8	11/24/08
COPPER	<0.20	μg/L	0.2	EPA 200.8	11/24/08
LEAD	<0.10	μg/L	0.1	EPA 200.8	11/24/08
NICKEL	<0.20	μg/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	μg/L	0.1	EPA 200.8	11/24/08
ZINC	<0.50	μg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CON	GENERS -PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHA	ALATES - TA				
Acenaphthene	<0.0198	$\mu$ g/L	0.0198	EPA 8270M-SIM	11/21/08
Acenaphthylene	<0.0198	$\mu$ g/L	0.0198	EPA 8270M-SIM	11/21/08
Anthracene	< 0.0198	$\mu$ g/L	0.0198	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	<0.00990	μg/L	0.00990	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	< 0.00990	μg/L	0.00990	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	<0.00990	μg/L	0.00990	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	<0.0198	μg/L	0.0198	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	<0.00990	μg/L	0.00990	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	<0.990	μg/L	0.990	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<0.990	μg/L	0.990	EPA 8270M-SIM	11/21/08
Chrysene	<0.00990	μg/L	0.00990	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	< 0.00990	μg/L	0.00990	EPA 8270M-SIM.	11/21/08
Diethyl phthalate	< 0.990	$\mu$ g/L	0.990	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	< 0.990	μg/L	0.990	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	< 0.990	μg/L	0.990	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	< 0.990	μg/L	0.990	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09





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### LABORATORY ANALYSIS REPORT

Sample ID: FO081413 Sample Collected: 11/20/08 10:06 Sample Status: COMPLETE AND

Sample Received: 11/20/08 VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 2 of 4

Address/Location: FIELD DECON BLANK

Sample Point Code: FDBLANK System ID: AM10909

EID File #: 1020.005

Sample Type: GRAB LocCode: PORTHASW Sample Matrix: DIWTR 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	<0.0198	μg/L	0.0198	EPA 8270M-SIM	11/21/08
Fluorene	<0.0198	μg/L	0.0198	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	<0.00990	μg/L	0.00990	EPA 8270M-SIM	11/21/08
Naphthalene	<0.0198	μg/L	0.0198	EPA 8270M-SIM	11/21/08
Phenanthrene	<0.0198	μg/L	0.0198	EPA 8270M-SIM	11/21/08
Pyrene	<0.0198	μg/L	0.0198	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	<0.52	μg/L	0.52	EPA 8270	11/26/08
2,4,6-Trichlorophenol	< 0.52	μg/L	0.52	EPA 8270	11/26/08
2,4-Dichlorophenol	< 0.52	μg/L	0.52	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	<0.52	μg/L	0.52	EPA 8270	11/26/08
2-Methylnaphthalene	<0.21	μg/L	0.21	EPA 8270	11/26/08
2-Methylphenol	<0.52	μg/L	0.52	EPA 8270	11/26/08
2-Nitroaniline	<0.21	μg/L	0.21	EPA 8270	11/26/08
2-Nitrophenol	<0.52	μg/L	0.52	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	<0.52	μg/L	0.52	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	<0.52	μg/L	0.52	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





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### LABORATORY ANALYSIS REPORT

Sample ID: FO081413 Sample Collected: 11/20/08 10:06 Sample Status: COMPLETE AND

Sample Received: 11/20/08 VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 3 of 4

Address/Location: FIELD DECON BLANK

Sample Point Code: FDBLANK System ID: AM10909

EID File #: 1020.005

Sample Type:GRABLocCode:PORTHASWSample Matrix:DIWTRCollected 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
					11/26/08
Acenaphthene	<0.21	μg/Ľ	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	
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	<5.2	μg/L	5.2	EPA 8270	11/26/08
Benzyl alcohol	<0.52	μg/L	0.52	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	<1.1	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	<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	<0.21	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





# City of Portland **Water Pollution Control Laboratory**

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656





Sample Status: COMPLETE AND Sample ID: FO081413 10:06 Sample Collected: 11/20/08

Sample Received: 11/20/08

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 4 of 4

FIELD DECON BLANK Address/Location:

> AM10909 System ID: EID File #: 1020.005 **FDBLANK**

Sample Point Code: **PORTHASW** Sample Type: **GRAB** LocCode:

Collected By: RCB/PHA Sample Matrix: **DIWTR** 

#### 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	<0.52	μg/L	0.52	EPA 8270	11/26/08
Pyrene	<0.21	μg/L	0.21	EPA 8270	11/26/08

End of Report for Sample ID: FO081413

Validated By:

Report Date: 01/02/09



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 <u>37</u>

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

Client:

Portland, City of

Service Request No.:

K0811464

Project:

Portland Harbor Stormwater

Date Received:

11/21/2008

Sample Matrix:

Water

#### 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.

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Approved by	V :	Date

# Chain of Custody Documentation

Columbia Analytical Services™

PHONE #

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P REMARKS ĝ Z Z CIRCLE ONE > S Sn F F Š Š Se Se Š S 10991 XOF OTHER Ag Ag 10, Cl, SO4, PO4, F, NC (circle) NO2+NO3, TC (circle) TSS4, F, NC (circle) TSS4, F, N 0506 XOT × ¥ 9 Z NORTHWEST ž Mn Mo Cond C Mn Нех-Сугоп Ma Pb Mg Total or Dissolved (wolded PAGE ≷ d d CA e L Œ. dod 0 O Ä M1818. 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068 ö Ö sebioide/Hebbioides 808 A1808 800 \*INDICATE STATE HYDROCARBON PROCEDURE: ô ô O Cq 1508 4991 CHAIN OF CUSTODY Be B Ca Qa SPECIAL INSTRUCTIONS/COMMENTS: Be B Circle which metals are to be analyzed Old Cas Diesel D Вa Ва でなる Sp Sb Semivolatile Organics by GCMS As As Dissolved Metals: Al Total Metals: Al 3 NUMBER OF CONTAINERS TURNAROUND REQUIREMENTS INVOICE INFORMATION MATRIX YNMMER LAB 1.D. 24 hr. 0986 BIII To: 2 29 90 なる P.O. # する TIME 3 大名の子 <u>8</u> Report Dup., MS, MSD as DATE X I. Routine Report: Method REPORT REQUIREMENTS Data Validation Report Blank, Surrogate, as 1 017130 いのたえの 614120 エナスの 0840 しする SAMPLE I.D. required D8 14 required SAMPLER'S SIGNATURE PROJECT MANAGER PROJECT NUMBER PROJECT NAME E-MAIL ADDRESS CITY/STATE/ZIP

230 Pate/Time RELINQUISHED BY: RECEIVED BY: Requested Report Date ignature Almov 03 Date/Time RELINQUISHED BY: Printed Name V. EDD Signature

Summed IN ame

Standard (10-15 working days)

5 Day

Provide FAX Results

IV. CLP Deliverable Report

(includes all raw data)

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RCOC #1 06/03

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Client / Project: City of W	Hand				Servic	e Requ	est <i>K08</i>	114	64	
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<ol> <li>Samples were received via?</li> <li>Samples were received in: (circle</li> <li>Were <u>custody seals</u> on coolers?         If present, were custody seals int     </li> <li>Is shipper's air-bill filed? If not,</li> </ol>	act?	Y	UPS DX N N	Envel If <u>y</u>	ope yes, how	t, were	nd where? they signed an		er Hand D NA Y NA Y	
<ul> <li>5. Temperature of cooler(s) upon Temperature Blank (°C):</li> <li>6. If applicable, list Chain of Custo</li> <li>7. Packing material used. <i>Inserts</i></li> </ul>	dy Number	s:	-   N   P  rap   G	el Pac	ks Wei	Tice S	Sleeves Othe	r		
<ul> <li>8. Were custody papers properly fil</li> <li>9. Did all bottles arrive in good co</li> <li>10. Were all sample labels complete</li> <li>11. Did all sample labels and tags ag</li> </ul>	ondition (u. (i.e analys. cree with cu	nbroken)? is, preservationstody papers	Indicate on, etc.) ? Indica	? ate in l	the table	below	<i>3</i>		NA Y NA Y NA Y	N ( N ( N (
<ul> <li>12. Were appropriate bottles/conts</li> <li>13. Were the pH-preserved bottles te</li> <li>14. Were VOA vials and 1631 Merc</li> <li>15. Are CWA Microbiology sampl</li> <li>16. Was C12/Res negative?</li> </ul>	sted* recei ury bottles	ved at the appressived with	oropriation hea	e pH? dspace	Indicaté ? Indica	in the t te in th	able below e table below.	on?	NA Y NA Y NA Y NA Y NA Y	И И И И
Sample ID on Bottle	Samp	ie ID on COC			Sample	ID on E	Bottle	Sar	nple ID on COC	
Sample ID	Bottle	Bottle Type	Out of Temp		Broken	На	Reagent	Volume added	Reagent Lot Number	Initials
*Does not include all pH preserved sample aliq Additional Notes, Discrepancies, &			peiving SC	)P (SMC	D-GEN).					

# Semi-Volatile Organic Compounds EPA Method 8270C

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 081412

Lab Code:

K0811464-005

**Extraction Method:** 

EPA 3520C

**Analysis Method:** 

8270C

Units: ug/L Basis: NA

Level: Low

Analyta Nama	D a grald	^	WDI	MATE	Dilution	Date	Date	Extraction	Mada
Analyte Name	Result		MRL	MDL	Factor	Extracted	Analyzed	<b>Lot</b> KWG0812669	Note
Bis(2-chloroethyl) Ether	ND <b>0.80</b>	U	0.22 0.53	0.037 0.067	1	11/26/08 11/26/08	12/09/08 12/09/08	KWG0812669	
Phenol 2-Chlorophenol	0.80 ND	тт	0.53	0.067	1 1	11/26/08	12/09/08	KWG0812669	
1,3-Dichlorobenzene	ND		0.22	0.023	1	11/26/08	12/09/08	KWG0812669	
1,4-Dichlorobenzene	ND		0.22	0.031	1	11/26/08	12/09/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
Benzyl Alcohol	3.2		0.53	0.077	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND		0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
2-Methylphenol	0.25	J	0.53	0.12	1	11/26/08	12/09/08	KWG0812669	
Hexachloroethane	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.22	0.039	1	11/26/08	12/09/08	KWG0812669	
4-Methylphenol†	0.65		0,53	0.13	1	11/26/08	12/09/08	KWG0812669	
Nitrobenzene	ND	U	0.22	0.030	1	11/26/08	12/09/08	KWG0812669	
Isophorone	ND	U	0.22	0.017	1	11/26/08	12/09/08	KWG0812669	
2-Nitrophenol	0.10	J	0.53	0.067	1	11/26/08	12/09/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.3	2.4	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.53	0.050	1	11/26/08	12/09/08	KWG0812669	
Benzoic Acid	1.7		5.3	1.2	1	11/26/08	12/09/08	KWG0812669	
1,2,4-Trichlorobenzene	ND		0.22	0.017	1	11/26/08	12/09/08	KWG0812669	
Naphthalene	0.075	J	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
4-Chloroaniline	ND		0.22	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobutadiene	ND		0.22	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		0.22	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	0.062	1	11/26/08	12/09/08	KWG0812669	
2,4,5-Trichlorophenol	ND		0.53	0.033	1	11/26/08	12/09/08	KWG0812669	
2-Chloronaphthalene	ND		0.22	0.044	1	11/26/08	12/09/08	KWG0812669	
2-Nitroaniline	ND		0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
Acenaphthylene	ND		0.22	0.016	1	11/26/08	12/09/08	KWG0812669	
Dimethyl Phthalate	0.19		0.22	0.023	1	11/26/08	12/09/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.22	0.035	1	11/26/08	12/09/08	KWG0812669	

Comments:

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Form 1A - Organic

SuperSet Reference: RR96724

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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 081412

Lab Code:

K0811464-005

**Extraction Method:** 

EPA 3520C

**Analysis Method:** 

8270C

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND		0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
3-Nitroaniline	ND		1.1	0.031	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.3	0.18	1	11/26/08	12/09/08	KWG0812669	
Dibenzofuran	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
4-Nitrophenol	ND	U	2.2	0.30	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
Fluorene	ND		0.22	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.22	0.029	1	11/26/08	12/09/08	KWG0812669	
Diethyl Phthalate	0.18	J	0.22	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	2.2	0.027	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.22	0.051	1	11/26/08	12/09/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobenzene	ND	U	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
Pentachlorophenol	0.47	J	1.1	0.36	1	11/26/08	12/09/08	KWG0812669	
Phenanthrene	0.033		0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
Anthracene	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
Di-n-butyl Phthalate	0.24		0.22	0.025	1	11/26/08	12/09/08	KWG0812669	
Fluoranthene	ND		0.22	0.022	1	11/26/08	12/09/08	KWG0812669	
Pyrene	0.039	J	0.22	0.020	1	11/26/08	12/09/08	KWG0812669	
<b>Butyl Benzyl Phthalate</b>	0.27		0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.2	0.46	1	11/26/08	12/09/08	KWG0812669	
Benz(a)anthracene	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
Chrysene	ND	U	0.22	0.030	1	11/26/08	12/09/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	0.66	J	1.1	0.14	1	11/26/08	12/09/08	KWG0812669	
Di-n-octyl Phthalate	ND		0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.22	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.22	0.033	1	11/26/08	12/09/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	11/26/08	12/09/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.22	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.22	0.020	1	11/26/08	12/09/08	KWG0812669	

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Form 1A - Organic

SuperSet Reference:

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RR96724

24

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 081412

Lab Code:

K0811464-005

Units: ug/L Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	12/09/08	Acceptable
Phenol-d6	72	31-121	12/09/08	Acceptable
Nitrobenzene-d5	70	29-121	12/09/08	Acceptable
2-Fluorobiphenyl	69	25-109	12/09/08	Acceptable
2,4,6-Tribromophenol	89	30-131	12/09/08	Acceptable
Terphenyl-d14	60	20-140	12/09/08	Acceptable

#### † Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Comments:

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Form 1A - Organic 25

SuperSet Reference:

RR96724

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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 081413

Lab Code:

K0811464-006

**Extraction Method:** 

EPA 3520C

**Analysis Method:** 

8270C

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND		0.21	0.037	1	11/26/08	12/09/08	KWG0812669	
Phenol	ND		0.52	0.065	1	11/26/08	12/09/08	KWG0812669	
2-Chlorophenol	ND	U	0.52	0.056	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	0.030	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	ND	U	0.52	0.076	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
2-Methylphenol	ND	U	0.52	0.12	1	11/26/08	12/09/08	KWG0812669	
Hexachloroethane	ND		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	0.52	0.13	1	11/26/08	12/09/08	KWG0812669	
Nitrobenzene	ND		0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
Isophorone	ND		0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
2-Nitrophenol	ND	U	0.52	0.065	1	11/26/08	12/09/08	KWG0812669	
2,4-Dimethylphenol	ND		4.2	2.3	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND		0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.52	0.049	1	11/26/08	12/09/08	KWG0812669	
Benzoic Acid	ND		5.2	1.2	1	11/26/08	12/09/08	KWG0812669	
1,2,4-Trichlorobenzene	ND		0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
Naphthalene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
4-Chloroaniline	ND		0.21	0.026	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobutadiene	ND		0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.52	0.039	1	11/26/08	12/09/08	KWG0812669	
2-Methylnaphthalene	ND		0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorocyclopentadiene	ND		1.1	0.20	1	11/26/08	12/09/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.52	0.060	1	11/26/08	12/09/08	KWG0812669	
2,4,5-Trichlorophenol	ND		0.52	0.032	1	11/26/08	12/09/08	KWG0812669	
2-Chloronaphthalene	ND		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		0.21	0.016	1	11/26/08	12/09/08	KWG0812669	
Dimethyl Phthalate	ND		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	

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Form 1A - Organic

Page SuperSet Reference:

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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 081413

Lab Code:

K0811464-006

**Extraction Method:** 

EPA 3520C

**Analysis Method:** 

8270C

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND		0.21	0.027	1	11/26/08	12/09/08	KWG0812669	11000
3-Nitroaniline	ND		1.1	0.030	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrophenol	ND		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	0.29	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	0.028	1	11/26/08	12/09/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
Diethyl Phthalate	0.052	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	0.026	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	0.027	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	ND	U	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	0.12	J	0.21	0.024	1	11/26/08	12/09/08	KWG0812669	
Fluoranthene	ND	U	0.21	0.021	1	11/26/08	12/09/08	KWG0812669	
Pyrene	ND	U	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	
<b>Butyl Benzyl Phthalate</b>	0.055	J	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	0.029	1	11/26/08	12/09/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	0.26	J	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	0.032	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:

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Form 1A - Organic 27

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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 081413

Lab Code:

K0811464-006

Units: ug/L Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2-Fluorophenol	79	21-119	12/09/08	Acceptable	
Phenol-d6	78	31-121	12/09/08	Acceptable	
Nitrobenzene-d5	80	29-121	12/09/08	Acceptable	
2-Fluorobiphenyl	73	25-109	12/09/08	Acceptable	
2,4,6-Tribromophenol	90	30-131	12/09/08	Acceptable	
Terphenyl-d14	101	20-140	12/09/08	Acceptable	

#### † Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

**Comments:** 

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Form 1A - Organic

28

SuperSet Reference: RR96724

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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		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		4.0	2.2	1	11/26/08	12/05/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND		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		0.20	0.025	1	11/26/08	12/05/08	KWG0812669	
Hexachlorobutadiene	ND		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		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		0.20	0.015	1	11/26/08	12/05/08	KWG0812669	
<b>Dimethyl Phthalate</b>	0.023		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	

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Comments:	

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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

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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	<b>0.022</b> 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	<b>0.10</b> 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	
<b>Butyl Benzyl Phthalate</b>	<b>0.061</b> 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	

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Form 1A - Organic

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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: Lab Code: Method Blank

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:** 

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Form 1A - Organic

SuperSet Reference: F

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QA/QC Report

Client:

Portland, City of

**Project:** 

Portland Harbor Stormwater

**Sample Matrix:** 

Water

**Surrogate Recovery Summary** Semi-Volatile Organic Compounds by GC/MS

**Extraction Method:** EPA 3520C

**Analysis Method:** 

8270C

Service Request: K0811464

Units: PERCENT

Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	<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.

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Form 2A - Organic 35

Page

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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

Lab Control Sample KWG0812669-1

**Duplicate Lab Control Sample** KWG0812669-2

		VG0812669-1 Control Spik			VG0812669-2 e Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

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Form 3C - Organic

SuperSet Reference: RR96724 Page

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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

	KW	Control Samp VG0812669-1 Control Spik		KW	Lab Control /G0812669-2 Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

Printed: 12/11/2008 17:26:42

Form 3C - Organic 37

RR96724

SuperSet Reference:

2 of 2

Page



PORTLAND, OR 9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132

ph: (503) 906.9200 fax: (503) 906.9210 ORELAP#: OR100021

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.

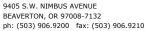
If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PRK0762	Portland Harbor	36238

TestAmerica Portland

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 Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 12/12/08 15:28

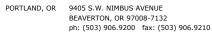
# ANALYTICAL REPORT FOR SAMPLES

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 **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 12/12/08 15:28

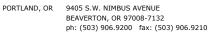
# Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-05 (FO081412)			W	ater		Samp	led: 11/20/			
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.05	0.511	0.971	ug/l	1x	8110790	11/21/08 17:50	11/26/08 01:15	
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	"	"	"	"	11/25/08 18:07	
Acenaphthylene	"	0.0380	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0160	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0334	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.0648	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.0342	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0349	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10	1			94.0%		25 - 125 %	"			"
Pyrene-d10				90.6%		23 - 150 %	"			"
Benzo (a) pyro	ene-d12			70.9%		10 - 125 %	"			"
PRK0762-06 (FO081413)			w	ater		Samp	led: 11/20/	08 10:06		
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.521	0.990	ug/l	1x	8110790	11/21/08 17:50	11/26/08 01:46	
Butyl benzyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Diethyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Acenaphthene	"	ND	0.0198	0.0198	"	"	"	"	11/25/08 18:37	
Acenaphthylene	"	ND	0.0198	0.0198	"	"	"	"	"	
Anthracene	"	ND	0.0198	0.0198	"	"	"	"	"	

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Prepared

Analyzed

Notes



THE LEADER IN ENVIRONMENTAL TESTING

Method

Analyte

City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

Result MDL\*

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 12/12/08 15:28

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Units

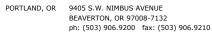
Batch

MRL

Analyte		Methou	Kesuit	MIDL	MIKL	Units	Dil	Datti	ттератец	Allalyzeu	riotes
PRK0762-06	(FO081413)			W	ater		Sampled: 11/20/08 10:06				
Benzo (a) anthracer	ne	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) fluoranth	nene	"	ND	0.00990	0.00990	"	"	"	"	"	
Benzo (ghi) peryler	ne	"	ND	0.0198	0.0198	"	"	"	"	"	
Benzo (k) fluoranth	nene	"	ND	0.00990	0.00990	"	"	"	"	"	
Chrysene		"	ND	0.00990	0.00990	"	"	"	"	"	
Dibenzo (a,h) anthr	racene	"	ND	0.00990	0.00990	"	"	"	"	"	
Fluoranthene		"	ND	0.0198	0.0198	"	"	"	"	"	
Fluorene		"	ND	0.0198	0.0198		"	"	"	"	
Indeno (1,2,3-cd) p	yrene	"	ND	0.00990	0.00990		"	"	"	"	
Naphthalene		"	ND	0.0198	0.0198		"	"	"	"	
Phenanthrene		"	ND	0.0198	0.0198		"	"	"	"	
Pyrene		"	ND	0.0198	0.0198	"	"	"	"	"	
Surrogate(s):	Fluorene-d10				101%		25 - 125 %	"			"
	Pyrene-d10				116%		23 - 150 %	"			"
	Benzo (a) pyreno	e-d12			106%		10 - 125 %	"			"
PRK0762-07	(FO081414)			w	ater		Samn	led: 11/20/	08 00:00		
			2.23	0.516	0.980	ug/l	1x	8110790	11/21/08 17:50	11/26/08 02:17	
Bis(2-ethylhexyl)p		Er A 62/0111	0.647	0.516	0.980	ug/i	"	8110790	"	"	J
Butyl benzyl phtha Di-n-butyl phthalat		,,		0.516	0.980		,,	,,		,,	J
Di-n-octyl phthala		,,	ND <b>0.516</b>	0.516	0.980		,,	"		,,	J
Diethyl phthalate	te	,,		0.516	0.980		,,	"	,,	,,	3
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 ND	0.0196	0.0196		,,	"		"	
Benzo (a) anthrace	ana	"	0.0409	0.00980	0.00980		,,	,,		"	
Benzo (a) pyrene		,,	0.0358	0.00980	0.00980	,,	,,	,,	"	,,	
Benzo (b) fluorant	hene	"	0.0338	0.00980	0.00980	,,	"	"	"	"	
Benzo (ghi) peryle		"	0.0453	0.00980	0.0196		,,	,,	"	"	
Benzo (gni) peryie Benzo (k) fluorant		"		0.0196	0.00980	,,	,,	,,	,,	"	
	лене	"	0.0268		0.00980	,,	,,	,,	,,	"	
Chrysene Dibanza (a b) anthr	ragana	"	0.0671	0.00980	0.00980	,,	,,	,,	,,	"	
Dibenzo (a,h) anthr	acene	,,	ND	0.00980					"	,	
Fluoranthene			0.116	0.0196	0.0196	-				"	
Fluorene		"	ND	0.0196	0.0196	"	"	"	"	"	

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City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 12/12/08 15:28

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

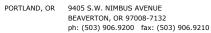
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QC Batch: 8110790	Water P	reparation	Method: 35	20B Liq-l	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8110790-BLK1)								Extr	racted:	11/21/08 17	:50			
Bis(2-ethylhexyl)phthalate	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%	Lin	nits: 25-125%	6 "							11/25/08 14:03	7
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%				,,	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

36238 6543 N. Burlington Ave. Project Number: Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 12/12/08 15:28

# Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

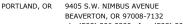
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QC Batch: 8110790	Water I	Preparation	n Method:	3520B Liq-	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
LCS (8110790-BS1)								Ext	racted:	11/21/08 17	7:50			
Benzo (ghi) 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)			"	
Surrogate(s): Fluorene-d10		Recovery:	99.0%	Lin	nits: 25-125%	, ,,							11/25/08 14:36	
Pyrene-d10		,	136%		23-150%								"	
Benzo (a) pyrene-d12			101%		10-125%	6 "							"	
Matrix Spike (8110790-MS1)				OC Source:	PRK0765-0	2		Ext	racted:	11/21/08 17	7:50			
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)			"	
Surrogate(s): Fluorene-d10 Pyrene-d10		Recovery:	93.2% 89.0%	Lin	nits: 25-125% 23-150%								11/25/08 15:06	

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.





ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 12/12/08 15:28

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results TestAmerica Portland 3520B Liq-Liq QC Batch: 8110790 Water Preparation Method: Source Spike Analyte Method Result MDL\* MRL Units Dil (Limits) Analyzed Notes (Limits) REC Matrix Spike (8110790-MS1) QC Source: PRK0765-02 Extracted: 11/21/08 17:50 11/25/08 15:06 Recovery: 73.7% Surrogate(s): Benzo (a) pyrene-d12 Limits: 10-125% Matrix Spike Dup (8110790-MSD1) QC Source: PRK0765-02 Extracted: 11/21/08 17:50 Bis(2-ethylhexyl)phthalate 0.521 11/25/08 19:35 EPA 8270m 3 97 0.990 1 15 3 96 71.2% (10-150)15.5% (50) ug/l 1xButyl benzyl phthalate 3.13 0.521 0.990 ND 79.0% 8.42% 0.521 ND 92.9% 7.98% Di-n-butyl phthalate 3.68 0.990 3.41 0.521 0.990 ND 9.50% Di-n-octvl phthalate 86.0% Diethyl phthalate 3.39 0.521 0.990 ND 85.5% 5.16% 2.97 0.521 0.990 ND 74.9% 3.90% Dimethyl phthalate 0.0198 0.0198 ND 11/25/08 15:36 Acenaphthene 1.69 2.48 68.2% (35-120)0.406% (45) 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%2.19 0.00990 0.00990 ND Benzo (a) anthracene (22-129)12.6% 0.00990 0.00990 ND Benzo (a) pyrene 1.65 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)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 (30-126) 2.91% Phenanthrene 2.39 0.0198 0.0198 0.0299 95.3% (34-126) 10.4% 0.0198 0.0535 2.00 0.0198 78.8% (14-168)8 96% Pyrene Surrogate(s): Fluorene-d10 Recovery: 90.1% Limits: 25-125% 11/25/08 15:36 Pvrene-d10 93.4% 23-150%

10-125%

TestAmerica Portland

Howard Holmes, Project Manager

Benzo (a) pyrene-d12

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79.9%



9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210



City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford12/12/08 15:28

#### **Notes and Definitions**

#### Report Specific Notes:

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.

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 - 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

425-420-9200 FAX 420-9210 [ 509-924-9200 FAX 924-9290

9405 SW Nimbus Ave, Beaverton, OR 97008-7145 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 503-906-9200 FAX 906-9210 X 907-563-9200 FAX 563-9210

TAL-1000(0408)

CHAIN OF CUSTODY REPORT Work Order #: CLIENT: INVOICE TO: TURNAROUND REQUEST Charles Lytle Jennifer Shackelford REPORT TO: in Business Days \* ADDRESS: Organic & Inorganic Analyses PHONE: P.O. NUMBER: 36238 PROJECT NAME: ER: Portland Harbor Stormwater PRESERVATIVE REQUESTED ANALYSES OTHER \* Turnaround Requests less than standard may incur Rush Charges CLIENT SAMPLE SAMPLING MATRIX # OF LOCATION/ IDENTIFICATION DATE/TIME (W, S, O) CONT. COMMENTS WO ID FO 08 1408 0932 W 2 FO 081409 X 0854 D χ FO 081410 4F0 08 1411 0941 L FO 081412 2 0956 6F0081413 1006 2 ,FO 0814KH 0000 RECEIVED BY: PRINT NAME: RECEIVED BY: PRINT NAME: PRINT NAME:

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Received by:	Unpacked by:	Work Order No.							
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Initials:					_	Not enough Ice			
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#Cooler(s)		UPS	l IDs	Match COC?	Y	N			
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None (#	Other:)	Client		nide Checked?	Υ	N (NA)			
Coolant Type:		TDP	Corı	rect Type & Preservation?	Y	N			
Gél Ice		DHL	Ade	quate Volume?	Y	N			
Loose Ice		SDS		in Hold Time?	$\begin{pmatrix} & & & & & & & & & & & \\ & & & & & & & $	N			
None		Mid-Valley		Oil Quality:					
Packing Material:		GS/TA GS/Senvoy		Syringes free of Headspa	ce? Y	N NA			
Bubble Bag	IS	Other:	l TBon	COC? not provided	Υ	N NA			
Styrofoam			<u>Metals</u> :	•					
Peanuts			HNC	3 Preserved?	Υ	N \ NA			
None (	Other:)		Diss	solved Metals Filtered?	Υ	N \ NA			
***ESI Clients Only:			FED EX/ UPS:	Was the tracking paper k	eepable?	YES NO			
Temperature Blank:	°C not provide	d Digi: # 1 #2	If circled No	O, what is the Tracking nun	nber?				
All preserved bottle	es checked Y N	NA (voas/soils/all unp.)	FED EX G	Other:					
All preserved acco	rdingly? Y N (see	NOD) NA (voas/soils/all unp.)							
Comments		Project	Managers:						

\_ (Initial/Date)

PM Reviewed:



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

# **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:

got C. Muye

Scott Unze, Project Manager (612) 607-6383

(612) 607-6444 (fax) scott.unze@pacelabs.com



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.

December 22, 2008



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

#### **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 precsion for these determinations. Matrix spikes were not prepared with the sample set.

#### REPORT OF LABORATORY ANALYSIS

# 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 09:3	2 00 (
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 08:5	4 002
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 08:54	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)			e e e e e e e e e e e e e e e e e e e	
Sample ID: PRK0762-03	Water		Sampled: 11/20/08 09:1	1 003
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 09:4	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 09:5	605
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 10:09	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)			<u>, , , , , , , , , , , , , , , , , , , </u>	

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. <u>///24/6</u>8 Date/Time

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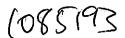
Release Report No....1085193\_1688 Time

Received By

Date/TimPage 4 of 66

#### **SUBCONTRACT ORDER**

# TestAmerica Portland PRK0762



Analysis	Units	Due	Expires	Comments
Sample ID: PRK0762-07	Water		Sampled: <b>11/20/08 00:00</b>	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 Face Analytical Client Noma: K

Face Analytical Client Nar	ne: <u>Test</u> P	truecica	Project #	1085193
,		, ,	Professional Profe	
Courier: K Fed Ex UPS USPS UC Tracking #: 979 (287) 152	Jilent L.J.Commerc	ial LJ Pace Other		onal Due Date:
Custody Seal on Cooler/Box Present: 🔲 y	es 🗵 no Se	eals intact: 🔲 yes	no Proj	Name:
Packing Material: Bubble Wrap Bub	ble Bags 🔲 None	⊖ ☐ Other	Temp Blank: Y	′es No 🗙
Thermometer Used 80344042 (79425)	Type of Ice: (V	Vet Blue None	C	cooling process has begun
Cooler Temperature 2.0	Biological Tiss	ue is Frozen: Yes No		lals of person examining
Temp should be above freezing to 6°C		Comments:	coments	11-25-28
Chain of Custody Present:	OXes □No □N	CHARLE CONTRACTOR CONTRACTOR IN CONTRACTOR I	landar da de la companya de la comp	
Chain of Custody Filled Out:	Yes 🗆 No 🗀 N	VA 2.		DESPERANCE OF THE PROPERTY OF
Chain of Custody Relinquished:	Žγes □No □N	I/A 3.	-verkin bette beske king king kan kendan beske bes	
Sampler Name & Signature on COC:		VA 4.	The same of the sa	
Samples Arrived within Hold Time:	Øves □no □n	/A 5.	of the second control of the second s	
Short Hold Time Analysis (<72hr):	□Yes DiNo □N	/A 6.		
Rush Turn Around Time Requested:	□Yes NNo □N/	A 7.		
Sufficient Volume:	Yes Ono On	A 8.		
Correct Containers Used:	Yes DNo DN/	A 9.		And the state of t
-Pace Containers Used:	□Yes No □N/	1		
Containers Intact:	ØYes □No □N/A	10.	5) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PARTICITION CONTROL REPORTS AND PROPERTY OF A WHICH PERSON PROTECTION AND
Filtered volume received for Dissolved tests	□Yes □No N/A	11.		The second secon
Sample Labels match COC:	MYes DNo DN/A	12.	The Balleton House, and Mark Marcell (1994) But Marcell (1997) White the State of St	Trades also the Ball of Carlot
Includes date/time/ID/Analysis Matrix:  It containers needing acid/base preservation have been hecked. Noncompliance are noted in 13.	□Yes □NO MINA	13.	ECOLOR MICHANISMO DE CONTRACTOR DE CONTRACTO	
all containers needing preservation are found to be in ompliance with EPA recommendation.	□Yes □No NNA			
xceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	□Yes Alvo	Initial when completed	Lot # of added preservative	TO THE SAME OF THE
amples checked for dechlorination:	□Yes □No DIVA	14.	The control of the second seco	
eadspace in VOA Vials ( >6mm):	□Yes □No DAVIA		718 P. F. F. F. B. S.	A THE PARTY OF THE
ip Blank Present:	□Yes □No XN/A	16.	77.75 - 72.75 - 77.75 - 77.75 - 77.75	NEW PROPERTY OF THE PROPERTY O
ip Blank Custody Seals Present	□Yes □No XN/A			
ace Trip Blank Lot # (if purchased):				
ient Notification/ Resolution:			Field Data Required?	V. A. A.
Person Contacted:	Date/Ti		•	Y / N
Comments/ Resolution:		me:	V	
				and the said on the specific of the specific o
	We are a second to the second			
Project Manager Review:	_ (W		Date: [/ /	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

# Appendix B

Sample Analysis Summary



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Matrix

Water

Client's Sample ID PRK0762-05
Lab Sample ID 1085193005
Filename P81218A\_12
Injected By SMT
Total Amount Extracted 1030 mL
% Moisture NA

% 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 15:45

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.157	2.96	2.0	1.32	66
13C-4-MoCB	3	10.213	3.02	2.0	1.47	73
13C-2,2'-DiCB	4	10.548	1.60	2.0	1.33	67
13C-4,4'-DiCB	15	18.431	1.53	2.0	1.68	84
13C-2,2',6-TrCB	19	14.801	1.09	2.0	1.55	77
13C-3,4,4'-TrCB	37	26.711	1.04	2.0	1.86	93
13C-2,2',6,6'-TeCB	54	18.729	0.82	2.0	1.52	76
13C-3,4,4',5-TeCB	81	34.055	0.78	2.0	1.91	95
13C-3,3',4,4'-TeCB	77	34.642	0.79	2.0	1.89	95
13C-2,2',4,6,6'-PeCB	104	25.285	1.61	2.0	1.57	79
13C-2.3.3'.4.4'-PeCB	105	38.281	1.59	2.0	1.86	93
13C-2,3,4,4',5-PeCB	114	37.627	1.55	2.0	1.82	91
13C-2,3',4,4',5-PeCB	118	37.091	1.59	2.0	1.86	93
13C-2,3',4,4',5'-PeCB	123	36.755	1.55	2.0	1.89	95
13C-3,3',4,4',5-PeCB	126	41.501	1.55	2.0	1.75	88
13C-2,2',4,4',6,6'-HxCB	155	31.590	1.28	2.0	1.75	88
13C-HxCB (156/157)	156/157	44.570	1.26	4.0	3.56	89
13C-2,3',4,4 <sup>'</sup> ,5,5'-HxĆB	167	43.413	1.28	2.0	1.82	91
13C-3,3',4,4',5,5'-HxCB	169	47.890	1.30	2.0	1.66	83
13C-2,2',3,4',5,6,6'-HpCB	188	37.594	1.07	2.0	2.28	114
13C-2,3,3',4,4',5,5'-HpCB	189	50.424	1.06	2.0	2.12	106
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.111	0.90	2.0	2.11	105
13C-2,3,3',4,4',5,5',6-OcCB	205	52.989	0.89	2.0	1.73	86
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.713	0.79	2.0	1.68	84
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.885	0.81	2.0	1.80	90
13CDeCB	209	56.308	0.69	2.0	1.59	80
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.116	1.06	2.0	1.89	94
13C-2,3,3',5,5'-PeCB	111	34.726	1.60	2.0	1.87	94
13C-2,2',3,3',5,5',6-HpCB	178	40.763	1.07	2.0	1.89	95
Recovery Standards						
13C-2,5-DiCB	9	13.328	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.262	0.80	2.0	NA	ŇA
13C-2,2',4,5,5'-PeCB	101	31.842	1.60	2.0	NA	NA NA
13C-2,2',3,4,4',5'-HxCB	138	40.293	1.27	2.0	NA	NA NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	52.514	0.93	2.0	NA NA	NA
100 2,2,0,0,1,1,0,0 0000	101	32.01 r	0.00	2.0	1 1/1	1 1/1

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-05 1085193005 P81218A\_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.485
2				ND		0.485
3				ND		0.485
4				ND		0.485
				ND		0.485
5 6				ND		0.485
7				ND		0.485
8				ND		0.485
9				ND		0.485
10				ND		0.485
11				ND		0.581
12	12/13			ND		0.485
13	12/13			ND		0.485
14	, . 0			ND		0.485
15				ND		0.485
16				ND		0.485
17				ND		0.485
18	18/30			ND		0.485
19	. 5, 55			ND		0.485
20	20/28			ND		0.581
21	21/33			ND		0.485
22	2.700			ND		0.485
23				ND		0.485
24				ND		0.485
25				ND		0.485
26	26/29			ND		0.485
27	20/20			ND		0.485
28	20/28			ND		0.581
29	26/29			ND		0.485
30	18/30			ND		0.485
31	10/00			ND		0.485
32				ND		0.485
33	21/33			ND		0.485
34	21/00			ND		0.485
35				ND		0.485
36				ND		0.485
37				ND		0.485
38				ND		0.485
39				ND		0.485
40	40/41/71			ND		0.485
41	40/41/71			ND		0.485
42	70/71/11			ND		0.485
43				ND		0.485
44	44/47/65			ND ND		0.581
45	45/51			ND		0.485
46	<del>1</del> 0/0 I			ND ND		0.485
40 47	44/47/65			ND ND		0.581
48	<del></del> //			ND ND		0.485
40				ND		0.400

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-05 1085193005 P81218A\_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		0.485
50	50/53			ND		0.485
51	45/51			ND		0.485
52				ND		0.485
53	50/53			ND		0.485
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		0.485
60				ND		0.485
61	61/70/74/76			ND		0.485
62	59/62/75			ND		0.485
63				ND		0.485
64				ND		0.485
65	44/47/65			ND		0.581
66				ND		0.485
67				ND		0.485
68				ND		0.485
69	49/69			ND		0.485
70	61/70/74/76			ND		0.485
71	40/41/71			ND		0.485
72	10/ 11// 1			ND		0.485
73				ND		0.485
73 74	61/70/74/76			ND		0.485
7 <del>5</del>	59/62/75			ND		0.485
76	61/70/74/76			ND		0.485
77	01/10/14/10			ND		0.485
78				ND		0.485
79				ND		0.485
80				ND ND		0.485
81				ND ND		0.485
82				ND ND		0.485
83				ND ND		0.485
84				ND ND		0.485
85	85/116/117			ND ND		0.465
86	86/87/97/108/119/125			ND ND		0.969
87	86/87/97/108/119/125			ND ND		0.969
88	88/91			ND ND		0.485
89	00/91					
89 90	90/101/113			ND ND		0.485 0.485
91	88/91			ND ND		0.485
92	02/08/400/402			ND ND		0.485
93	93/98/100/102			ND		0.727
94				ND		0.485
95				ND		0.485
96				ND		0.485

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Loss than 10 times higher than method blank love

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-05 Lab Sample ID 1085193005 Filename P81218A\_12

II IDAO	On abothers	DT	D-C-	Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
97	86/87/97/108/119/125			ND		0.969
98	93/98/100/102			ND		0.727
99				ND		0.485
100	93/98/100/102			ND		0.727
101	90/101/113			ND		0.485
102	93/98/100/102			ND		0.727
103				ND		0.485
104				ND		0.485
105				ND		0.485
106				ND		0.485
107	107/124			ND		0.485
108	86/87/97/108/119/125			ND		0.969
109				ND		0.485
110	110/115	33.938	1.55	0.617		0.485
111				ND		0.485
112				ND		0.485
113	90/101/113			ND		0.485
114				ND		0.485
115	110/115	33.938	1.55	(0.617)		0.485
116	85/116/117			ND		0.581
117	85/116/117			ND		0.581
118	00/110/11/	37.124	1.54	0.542		0.485
119	86/87/97/108/119/125			ND		0.969
120	00/01/31/100/110/120			ND		0.485
121				ND		0.485
122				ND		0.485
123				ND		0.485
124	107/124			ND		0.485
125	86/87/97/108/119/125			ND		0.969
126	00/07/97/100/119/123			ND		0.485
127				ND		0.485
128	128/166			ND ND		0.465
120	129/138/163	40.327	1.27	0.552		0.485
130	129/130/103	40.327	1.27	0.552 ND		0.485
131				ND ND		0.485
132				ND ND		0.485
132				ND ND		0.485
	134/143					
134	134/143			ND ND		0.485
135	135/151			ND ND		0.494
136						0.485
137	100/100/160	40.227	 1 07	ND (0.552)		0.485
138	129/138/163	40.327	1.27	(0.552)		0.485
139	139/140			ND		0.485
140	139/140			ND		0.485
141				ND		0.485
142	40.4/4.40			ND		0.485
143	134/143			ND		0.485
144				ND		0.485

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
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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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-05 1085193005 P81218A\_12

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		0.485
148				ND		0.485
149	147/149			ND		0.485
150				ND		0.485
151	135/151			ND		0.494
152				ND		0.485
153	153/168			ND		0.581
154				ND		0.485
155				ND		0.485
156	156/157			ND		0.969
157	156/157			ND		0.969
158	100/107			ND		0.485
159				ND		0.485
160				ND		0.485
161				ND		0.485
162				ND		0.485
163	129/138/163	40.327	1.27	(0.552)		0.485
164	123/100/100			(0.552) ND		0.485
165				ND		0.485
166	128/166			ND		0.969
167	120/100			ND		0.485
168	153/168			ND		0.581
169	133/100			ND		0.485
170				ND		0.485
171	171/173			ND		0.485
172	17 1/173			ND		0.485
173	171/173			ND		0.485
173	17 1/173			ND		0.485
175				ND		0.485
176				ND		0.485
176				ND ND		0.485
178				ND		0.485
179				ND ND		0.485
180	180/193			ND ND		0.485
181	160/193			ND ND		0.485
182				ND ND		0.485
183	102/105			ND ND		0.485
183	183/185			ND ND		
185	183/185			ND ND		0.485 0.485
186	103/103	<b></b>		ND ND		0.485
187		<b></b>		ND ND		0.485
187				ND ND		0.485 0.485
100						0.465
189				ND ND		0.485
190				ND ND		0.485
191				ND ND		0.485
192				ND		0.485

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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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
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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-05 Lab Sample ID 1085193005 Filename P81218A\_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		0.485
194				ND		0.485
195				ND		0.485
196				ND		0.678
197	197/200			ND		2.42
198	198/199			ND		0.485
199	198/199			ND		0.485
200	197/200			ND		2.42
201				ND		0.485
202				ND		0.485
203				ND		0.485
204				ND		0.485
205				ND		0.485
206				ND		0.485
207				ND		0.485
208				ND		0.485
209				ND		0.485

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-05 1085193005 P81218A\_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	1.16	
Total Hexachloro Biphenyls	0.552	
Total Heptachloro Biphenyls	ND	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	1.71	

ND = Not Detected



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID PRK0762-06 Lab Sample ID 1085193006 Filename P81218A\_13 Injected By **SMT** 991 mL **Total Amount Extracted** % Moisture NA

Dry Weight Extracted NA **ICAL ID** P81218A03 Received CCal Filename(s) P81218A 02

Method Blank ID BLANK-18405 Matrix Water Dilution NA Collected 11/20/2008

11/25/2008 Extracted 12/02/2008 Analyzed 12/18/2008 16:46

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.145	3.01	2.0	1.42	71
13C-4-MoCB	3	10.201	3.19	2.0	1.55	78
13C-2,2'-DiCB	4	10.524	1.59	2.0	1.40	70
13C-4,4'-DiCB	15	18.409	1.53	2.0	1.75	88
13C-2,2',6-TrCB	19	14.778	1.08	2.0	1.58	79
13C-3,4,4'-TrCB	37	26.684	1.05	2.0	1.98	99
13C-2,2',6,6'-TeCB	54	18.701	0.81	2.0	1.58	79
13C-3,4,4',5-TeCB	81	34.014	0.78	2.0	2.08	104
13C-3,3',4,4'-TeCB	77	34.601	0.79	2.0	2.09	105
13C-2,2',4,6,6'-PeCB	104	25.276	1.65	2.0	1.59	80
13C-2,3,3',4,4'-PeCB	105	38.240	1.57	2.0	2.00	100
13C-2,3,4,4',5-PeCB	114	37.586	1.54	2.0	1.94	97
13C-2,3',4,4',5-PeCB	118	37.049	1.56	2.0	1.97	98
13C-2,3',4,4',5'-PeCB	123	36.714	1.59	2.0	1.96	98
13C-3,3',4,4',5-PeCB	126	41.460	1.55	2.0	1.97	99
13C-2,2',4,4',6,6'-HxCB	155	31.565	1.27	2.0	1.66	83
13C-HxCB (156/157)	156/157	44.530	1.27	4.0	3.85	96
13C-2,3',4,4',5,5'-HxĆB	167	43.372	1.26	2.0	1.97	99
13C-3,3',4,4',5,5'-HxCB	169	47.834	1.25	2.0	1.88	94
13C-2,2',3,4',5,6,6'-HpCB	188	37.569	1.05	2.0	2.70	135
13C-2,3,3',4,4',5,5'-HpCB	189	50.371	1.04	2.0	2.82	141
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.071	0.93	2.0	2.57	128
13C-2,3,3',4,4',5,5',6-OcCB	205	52.936	0.90	2.0	2.13	107
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.660	0.80	2.0	2.00	100
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.832	0.80	2.0	2.37	118
13CDeCB	209	56.256	0.73	2.0	1.91	95
Cleanup Standards						
13C-2,4,4'-TrCB	28	22,106	1.08	2.0	2.01	100
13C-2,3,3',5,5'-PeCB	111	34.701	1.57	2.0	1.96	98
13C-2,2',3,3',5,5',6-HpCB	178	40.722	1.06	2.0	1.99	100
Daggyory Standards						
Recovery Standards	0	12 216	1.60	2.0	NΙΛ	NΙΛ
13C-2,5-DiCB	9	13.316	1.60	2.0	NA NA	NA NA
13C-2,2',5,5'-TeCB	52 101	24.236	0.80	2.0	NA NA	NA NA
13C-2,2',4,5,5'-PeCB	101	31.816	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.253	1.26	2.0	NA NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	52.462	0.91	2.0	NA	NA

Conc = Concentration

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EMPC = Estimated Maximum Possible Concentration

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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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-06 1085193006 P81218A\_13

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.505
2				ND		0.505
3				ND		0.505
4				ND		0.505
5				ND		0.505
6				ND		0.505
7				ND		0.505
8				ND		0.505
9				ND		0.505
10				ND		0.505
11				ND		0.606
12	12/13			ND		0.505
13	12/13			ND		0.505
14	12/13			ND ND		0.505
15				ND ND		0.505
16				ND ND		0.505
17				ND ND		0.505
17	10/20					0.505
18	18/30			ND		0.505
19	00/00			ND		0.505
20	20/28			ND		0.606
21	21/33			ND		0.505
22				ND		0.505
23				ND		0.505
24				ND		0.505
25				ND		0.505
26	26/29			ND		0.505
27				ND		0.505
28	20/28			ND		0.606
29	26/29			ND		0.505
30	18/30			ND		0.505
31				ND		0.505
32				ND		0.505
33	21/33			ND		0.505
34				ND		0.505
35				ND		0.505
36				ND		0.505
37				ND		0.505
38				ND		0.505
39				ND		0.505
40	40/41/71			ND		0.505
41	40/41/71			ND		0.505
42				ND		0.505
43				ND		0.505
44	44/47/65			ND		0.606
45	45/51			ND		0.505
46	10/01			ND ND		0.505
47	44/47/65			ND		0.606
48	<del></del> -, <del></del> 1705			ND		0.505
40				טאו		0.505

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-06 1085193006 P81218A\_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		0.505
50	50/53			ND		0.505
51	45/51			ND		0.505
52	10,01			ND		0.505
53	50/53			ND		0.505
54	30/33			ND		0.505
5 <del>5</del>				ND ND		0.505
56				ND ND		
50						0.505
57				ND		0.505
58	/ /			ND		0.505
59	59/62/75			ND		0.505
60				ND		0.505
61	61/70/74/76			ND		0.505
62	59/62/75			ND		0.505
63				ND		0.505
64				ND		0.505
65	44/47/65			ND		0.606
66				ND		0.505
67				ND		0.505
68				ND		0.505
69	49/69			ND		0.505
70	61/70/74/76			ND		0.505
71	40/41/71			ND		0.505
71 72	40/41/71					0.505
				ND		
73	04 170 174 170			ND		0.505
74	61/70/74/76			ND		0.505
75	59/62/75			ND		0.505
76	61/70/74/76			ND		0.505
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		0.606
86	86/87/97/108/119/125			ND		1.01
87	86/87/97/108/119/125			ND		1.01
88	88/91			ND ND		0.505
89	00/31			ND ND		0.505
00	90/101/113					
90				ND		0.505
91	88/91			ND		0.505
92	00/00/400/455			ND		0.505
93	93/98/100/102			ND		0.757
94				ND		0.505
95				ND		0.505
96				ND		0.505

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

NA = Not Applicable
NC = Not Calculated
\*= See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

ng's = Nanograms

ND = Not Detected



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-06 Lab Sample ID 1085193006 Filename P81218A\_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		1.01
98	93/98/100/102			ND		0.757
99				ND		0.505
100	93/98/100/102			ND		0.757
101	90/101/113			ND		0.505
102	93/98/100/102			ND		0.757
103	30,30,100,100			ND		0.505
104				ND		0.505
105				ND		0.505
106				ND		0.505
107	107/124			ND		0.505
108	86/87/97/108/119/125			ND		1.01
109	00/01/31/100/113/129			ND		0.505
110	110/115			ND		0.505
111	110/113			ND		0.505
112				ND		0.505
113	90/101/113			ND		0.505
114	30/101/113			ND		0.505
115	110/115			ND		0.505
116	85/116/117			ND		0.606
117	85/116/117 85/116/117			ND ND		0.606
118	03/110/117			ND ND		0.505
119	86/87/97/108/119/125			ND ND		1.01
120	00/07/97/100/119/125			ND ND		0.505
120				ND ND		0.505
121				ND ND		
122				ND ND		0.505
	107/124			ND ND		0.505
124						0.505
125	86/87/97/108/119/125			ND		1.01
126				ND		0.505
127	400/400			ND		0.505
128	128/166			ND		1.01
129	129/138/163			ND		0.505
130				ND		0.505
131				ND		0.505
132				ND		0.505
133	404/440			ND		0.505
134	134/143			ND		0.505
135	135/151			ND		0.515
136				ND		0.505
137	400/400/400			ND		0.505
138	129/138/163			ND		0.505
139	139/140			ND		0.505
140	139/140			ND		0.505
141				ND		0.505
142	10.1/1.10			ND		0.505
143	134/143			ND		0.505
144				ND		0.505

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



# Method 1668A Polychlorobiphenyl **Sample Analysis Results**

Client Sample ID Lab Sample ID Filename

PRK0762-06 1085193006 P81218A\_13

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			ND		0.505
148				ND		0.505
149	147/149			ND		0.505
150				ND		0.505
151	135/151			ND		0.515
152				ND		0.505
153	153/168			ND		0.606
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		0.505
164	129/130/103			ND		0.505
165				ND		0.505
166	128/166			ND ND		1.01
167	120/100			ND ND		0.505
168	153/168			ND ND		0.606
169	155/166			ND ND		0.505
170				ND ND		0.505
170	474/470					0.505
	171/173			ND ND		0.505 0.505
172	474/470			ND		
173	171/173			ND		0.505
174				ND		0.505
175				ND		0.505
176				ND		0.505
177				ND		0.505
178				ND		0.505
179	100/100			ND		0.505
180	180/193			ND		0.505
181				ND		0.505
182				ND		0.505
183	183/185			ND		0.505
184				ND		0.505
185	183/185			ND		0.505
186				ND		0.505
187				ND		0.505
188				ND		0.505
189				ND		0.505
190				ND		0.505
191				ND		0.505
192				ND		0.505

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-06 Lab Sample ID 1085193006 Filename P81218A\_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		0.505
194				ND		0.505
195				ND		0.505
196				ND		0.707
197	197/200			ND		2.52
198	198/199			ND		0.505
199	198/199			ND		0.505
200	197/200			ND		2.52
201				ND		0.505
202				ND		0.505
203				ND		0.505
204				ND		0.505
205				ND		0.505
206				ND		0.505
207				ND		0.505
208				ND		0.505
209				ND		0.505

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRK0762-06 1085193006 P81218A\_13

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



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID

Filename
P81218A\_07
Injected By
SMT
Total Amount Extracted
ICAL ID
P81218A03
CCal Filename(s)

PBLANK-18405
P81218A\_07
P81218A03
P81218A\_02

 SMT
 Matrix
 Water

 955 mL
 Extracted
 12/02/2008

 P81218A03
 Analyzed
 12/18/2008 10:37

 P81218A\_02
 Dilution
 NA

Coal Fileriame(s)	FOIZIOA_	02		Dilution	INA	
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'-HxĆB	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'-OcCB	202	43.018	0.90	2.0	1.13	57
13C-2,3,3',4,4',5,5',6-OcCB	205	52.889	0.90	2.0	1.13	<u>56</u>
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
13CDeCB	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'-OcCB	194	52.415	0.91	2.0	NA	NA

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EMPC = Estimated Maximum Possible Concentration

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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



# 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
1				ND		0.524
2		<del></del>		ND ND		0.524
3				ND		0.524
4				ND ND		0.524
4 5 6 7				ND		0.524
6				ND ND		0.524
7				ND ND		0.524
8				ND ND		0.524
9				ND		0.524
10				ND		0.524
11		17.619	1.50	0.667		0.628
12	12/13	17.019	1.50	ND		0.524
13	12/13			ND ND		0.524
13	12/13			ND ND		0.524
15				ND ND		0.524
16						0.524 0.524
				ND		0.524
17	40/00			ND		0.524
18	18/30			ND		0.524
19	00/00			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 35				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

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

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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



# 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
46				ND		0.524
47	44/47/65			ND		0.628
48	11/11/00			ND		0.524
49	49/69			ND		0.524
50	50/53			ND		0.524
51	45/51			ND		0.524
52	40/01			ND		0.524
53	50/53			ND		0.524
54	00/00			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	00/02/10			ND		0.524
61	61/70/74/76			ND		0.524
62	59/62/75			ND		0.524
63	33/02/13			ND		0.524
64				ND		0.524
65	44/47/65			ND		0.628
66	44/47/05			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
70 71	40/41/71			ND		0.524
72	40/41/71			ND		0.524
73				ND		0.524
74	61/70/74/76			ND		0.524
75 75	59/62/75			ND ND		0.524
76 76	61/70/74/76			ND ND		0.524
77 77	01/10/14/10			ND		0.524
77 78				ND ND		0.524
78 79				ND ND		0.524
80				ND ND		0.524
81				ND ND		0.524
82				ND ND		0.524
83				ND ND		0.524
84				ND ND		0.524
85	85/116/117			ND ND		0.628
86	86/87/97/108/119/125			ND ND		1.05
87	86/87/97/108/119/125			ND ND		1.05
88	88/91			ND ND		0.524
89	00/31			ND ND		0.524 0.524
90	90/101/113			ND ND		0.524 0.524
90	30/101/113			טא		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



# 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
91	88/91			ND		0.524
92	00/91			ND ND		0.524
93	93/98/100/102			ND		0.786
94	93/90/100/102			ND ND		0.524
95				ND ND		0.524
96				ND		0.524
97	86/87/97/108/119/125			ND ND		1.05
98	93/98/100/102			ND ND		0.786
99	33/30/100/102			ND ND		0.524
100	93/98/100/102			ND ND		0.786
101	90/101/113			ND ND		0.524
101	93/98/100/102			ND ND		0.786
102	93/90/100/102			ND ND		0.786
103				ND ND		0.524
104				ND ND		0.524
105				ND ND		0.524
107	107/124			ND ND		0.524
107	86/87/97/108/119/125			ND ND		1.05
	00/07/97/100/119/125			ND ND		0.524
109	440/445					
110	110/115			ND		0.524
111 112				ND		0.524
	00/404/440			ND		0.524
113	90/101/113			ND		0.524
114	440/445			ND		0.524
115	110/115			ND		0.524
116	85/116/117			ND		0.628
117	85/116/117			ND		0.628
118	00/07/07/400/440/405			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	10=/101			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

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



# 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	100/110			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

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



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-18405 P81218A\_07

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	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

NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits RT = Retention Time

ND = Not Detected

I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKBC BLANK-18405 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



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCS-18406 P81218A\_04 965 mL

P81218A03 P81218A\_02 BLANK-18405 Matrix Water Dilution NA

Extracted 12/02/2008 Analyzed 12/18/2008 07:35

Injected By SMT

	N	lative Analy	tes	Lal	beled Analyt	es
PCB Isomer	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

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

! = See Discussion

ng = Nanograms

I = Interference

Nn = Result obtained from alternate analysis



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCSD-18407 P81218A\_05 961 mL

P81218A03 P81218A\_02 BLANK-18405 Matrix Water Dilution NA

Extracted 12/02/2008 Analyzed 12/18/2008 08:34

Injected By SMT

	N	lative Analy	tes	La	abeled Analyt	es
PCB Isomer	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 F	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

<sup>! =</sup> See Discussion

ng = Nanograms I = Interference



# Method 1668A Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

 Spike 1 ID
 LCS-18406
 Spike 2 ID
 LCSD-18407

 Spike 1 Filename
 P81218A\_04
 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

Event 2: December 12, 2008

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

Page:

Collected By: 19 55 J 573

# Project Name: PORTLAND HARBOR STORMWATER SAMP

S:\EID\1000\1020.005	Printed Name: Kong Kuch	signature: / Corallina		Matt Sullivas	Man Wall	Signature: // ///		FO 081481		FO 081480	FO 081479	FO 081478	FO 081477 -	FO 081476	FO 081475	WPCL Sample I.D.		FY 2008-		File Number: 1020.005
S:\EID\1000\1020.005 - Portland Harbor Stormwater Samp\Sampdoc\Portland Harbor Stormwater OF Grab COC FY08-09.xls	12/12/08			30/ci/ci			DUPLICATE	FIELD DECON BLANK		SW-44A-ABC311-1208 NLARABEE & RANDOLPH	SW-44-ABC352-1208 N HARDING & RIVER	SW-43-ABC439-1208 N KERBY & TILLAMOOK	SW-43-ABC552-1208	SW-43-ABC539-1208 N KERBY & WHEELER	SW-43-ABC290-1208 N ALBINA & RIVER	Location	Sample Time recorded in PST	FY 2008-09 Stormwater Grab Chain-of-custody		
⊮ Samp\Sampdoc\Portland	Printed Name:	Signature:	Received By: 2.		Shinthie.	Relinquished By: 2.	31/61/61 and	FDB 13/12/08		80/ci/ei 1MS_A44	44_SW1 12/12/08	43_SW4 13/13/108 1510	43_SW3 12/12/08/330	43_SW2 18/18/08 1321	43_SW1 12/12/18 1157	Point Sample Code Date	orded in PST	ab Chain-of-cust		Matrix:
Harbor Stormwater OF Gra	Date:	Time:		Date:	inge	Timo	G	1344 G		1120 G	1144 G	<i>1</i> 310 G	&133∂ G	1321 G	1157 G	Sample Sample Time Type		Vpo		STORMWTR
b COC FY08-09.xls	Printed Name:	Signature:	Received By:	Printed Name:	signature:	Relinquished B		•		•	•	•	•		•	TSS	9 Halland Ben		General	
	e:		By: 3.	ē:	·	shed By: 3.	•	•		•	•	•	•	•	•	<del></del>		· · · · · ·	Organics	₽.
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	Date:	Time:		Date:	line:					في	0	シナー	6 7.2		87.9	pH (pH ur		Solly	Field	



6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



#### LABORATORY ANALYSIS REPORT

Sample ID: FO081480 Sample Status: COMPLETE AND 11:20 Sample Collected: 12/12/08

Sample Received: 12/12/08

**VALIDATED** 

AM11639

1020.005

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 1 of 4

Address/Location: SW-44A-ABC311-1208

N LARABEE & RANDOLPH

Sample Point Code: 44A\_SW1

Sample Type: **GRAB** Sample Matrix: **STORMWTR**  LocCode: **PORTHASW** Collected By: MJS/JXB

System ID:

EID File #:

#### 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)	38	μmhos/cm	1	SM 2510 B	12/12/08
pH (FIELD)	6.2	pH Units	0.1	SM 4500-H B	12/12/08
TEMPERATURE	7.2	Deg. C	0.1	SM 2550 B	12/12/08
GENERAL	•				
TOTAL SUSPENDED SOLIDS	118	mg/L	2	SM 2540 D	12/13/08
METALS			•		
MERCURY	0.025	μg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8				,	
ARSENIC	0.85	μg/L	0.1	EPA 200.8	12/15/08
CADMIUM	0.54	μg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	5.13	μg/L	0.4	EPA 200.8	12/15/08
COPPER	29.2	μg/L	0.2	EPA 200.8	12/15/08
LEAD	12.5	μg/L	0.1	EPA 200.8	12/15/08
NICKEL	3.53	μg/L	0.2	EPA 200.8	12/15/08
SILVER	< 0.10	μg/L	0.1	EPA 200.8	12/15/08
ZINC	190	μg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS	•	-		•	
4,4'-DDD	<3.0	ng/L	3.0	EPA 8081	12/17/08
4,4'-DDE	<0.53	ng/L	0.53	EPA 8081	12/17/08
4,4'-DDT	<1.1	ng/L	1.1	EPA 8081	12/17/08
Aldrin	EST 5.3	ng/L	0.53	EPA 8081	12/17/08
Alpha-BHC	< 0.53	ng/L	0.53	EPA 8081	12/17/08
Alpha-Chlordane	< 0.53	ng/L	0.53	EPA 8081	12/17/08
Beta-BHC	<1.7	ng/L	1.7	EPA 8081	12/17/08
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	12/17/08
Dieldrin	< 0.53	ng/L	0.53	EPA 8081	12/17/08
Endosulfan I	< 0.53	ng/L	0.53	EPA 8081	12/17/08
Endosulfan II.	<0.53	ng/L	0.53	EPA 8081	12/17/08
Endosulfan Sulfate	<1.1	ng/L	1.1	EPA 8081	12/17/08
Endrin	< 0.53	ng/L	0.53	EPA 8081	12/17/08
Endrin Aldehyde	<0.53	ng/L	0.53	EPA 8081	12/17/08

Report Date: 02/02/09

Validated By:





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081480 Sample Collected: 12/12/08 11:20 Sample Status: COMPLETE AND

Sample Received: 12/12/08 VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 2 of 4

Address/Location: SW-44A-ABC311-1208

 N LARABEE & RANDOLPH
 System ID:
 AM11639

 Sample Point Code:
 44A\_SW1
 EID File #:
 1020.005

Sample Type:GRABLocCode:PORTHASWSample Matrix:STORMWTRCollected 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).

Endrin Ketone						Analysis
Gamma-BHC(Lindane)         <0.53         ng/L         0.53         EPA 8081         12/17/08           Gamma-Chlordane         <0.63         ng/L         0.63         EPA 8081         12/17/08           Heptachlor         <2.0         ng/L         2.0         EPA 8081         12/17/08           Heptachlor Epoxide         EST 1.7         ng/L         0.53         EPA 8081         12/17/08           Methoxychlor         <0.53         ng/L         0.53         EPA 8081         12/17/08           POLYCHLORINATED BIPHENYL CONGENERS -PACE           Refer to Contract Report         Completed         ng/L         EPA 1668 MOD         01/05/09           POLYCHLORINATED BIPHENYL CONGENERS -PACE           Refer to Contract Report         Completed         ng/L         EPA 8081         12/17/08           POLYCHLORINATES PHTHALATES - TA           Acenaphthene         <0.0194         μg/L         0.0194         EPA 8270M-SIM         12/17/08           POLYCHLORINATE Report         Completed         ng/L         0.0194         EPA 8270M-SIM         12/17/08           POLYCHLORINATE Photostate Report         Completed         ng/L         0.0194         EPA 8270M-SIM         12/17/08	Test Parameter	Result	Units	MRL	Method	
Gamma-Chlordane	Endrin Ketone	<0.84	ng/L	0.84	EPA 8081	12/17/08
Gamma-Chlordane	Gamma-BHC(Lindane)	< 0.53	ng/L	0.53	EPA 8081	12/17/08
Heptachlor Epoxide		< 0.63	ng/L	0.63	EPA 8081	12/17/08
Methoxychlor	Heptachlor	<2.0	ng/L	2.0	EPA 8081	12/17/08
Toxaphene   473 ng/L   73 EPA 8081   12/17/08	Heptachlor Epoxide	EST 1.7	ng/L	0.53	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	Methoxychlor	< 0.53	ng/L	0.53	EPA 8081	12/17/08
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         0.0312         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         0.0312         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(b)fluoranthene         0.0312         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(b)fluoranthene         0.0516         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(b)fluoranthene         0.0516         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0572         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.0971         EPA 8270M-SIM         12/17/08	Toxaphene	<73	ng/L	73	EPA 8081	12/17/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA           Acenaphthene         <0.0194	POLYCHLORINATED BIPHENYL CON	GENERS -PACE				
Acenaphthene         <0.0194         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Acenaphthylene         0.0312         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Anthracene         <0.0194	Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
Acenaphthylene         0.0312         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Anthracene         <0.0194					·	
Anthracene         <0.0194         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(a)anthracene         0.0312         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(a)pyrene         0.0383         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(b)fluoranthene         0.0516         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(ghi)perylene         0.0704         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.0971         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.0971         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.971         EPA 8270M-SIM         12/17/08           Bis(2-ethylhexyl) phthalate         2.24         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Chrysen						
Benzo(a)anthracene         0.0312         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(a)pyrene         0.0383         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(b)fluoranthene         0.0516         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(ghi)perylene         0.0704         μg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Bis(2-ethylhexyl) phthalate         2.24         μg/L         0.971         EPA 8270M-SIM         12/17/08           Butyl benzyl phthalate         <0.971	· · ·					
Benzo(a)pyrene         0.0383         µg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(b)fluoranthene         0.0516         µg/L         0.00971         EPA 8270M-SIM         12/17/08           Benzo(ghi)perylene         0.0704         µg/L         0.0194         EPA 8270M-SIM         12/17/08           Benzo(k)fluoranthene         0.0372         µg/L         0.00971         EPA 8270M-SIM         12/17/08           Bis(2-ethylhexyl) phthalate         2.24         µg/L         0.971         EPA 8270M-SIM         12/17/08           Butyl benzyl phthalate         <0.971		and the second s				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		0.0312	_	the state of the s		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	, ,, ,				EPA 8270M-SIM	
Benzo(k)fluoranthene         0.0372         μg/L         0.00971         EPA 8270M-SIM         12/17/08           Bis(2-ethylhexyl) phthalate         2.24         μg/L         0.971         EPA 8270M-SIM         12/17/08           Butyl benzyl phthalate         <0.971	• •			į.	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate         2.24 $\mu$ g/L         0.971         EPA 8270M-SIM         12/17/08           Butyl benzyl phthalate         <0.971	Benzo(ghi)perylene	0.0704	μg/L	0.0194		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Benzo(k)fluoranthene	0.0372	μg/L	0.00971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Bis(2-ethylhexyl) phthalate	2.24	μg/L	0.971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Butyl benzyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Chrysene	0.0906	μg/L	0.00971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Dibenzo(a,h)anthracene	0.0104	μg/L	0.00971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Diethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Dimethyl phthalate	< 0.971		0.971	EPA 8270M-SIM	12/17/08
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Di-n-butyl phthalate	<0.971		0.971	EPA 8270M-SIM	12/17/08
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		< 0.971		0.971	EPA 8270M-SIM	12/17/08
Fluorene 0.0194 $\mu$ g/L 0.0194 EPA 8270M-SIM 12/17/08 Indeno(1,2,3-cd)pyrene 0.0326 $\mu$ g/L 0.00971 EPA 8270M-SIM 12/17/08 Naphthalene 0.781 $\mu$ g/L 0.0194 EPA 8270M-SIM 12/17/08 Phenanthrene 0.139 $\mu$ g/L 0.0194 EPA 8270M-SIM 12/17/08	Fluoranthene	0.192	-	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene       0.0326 $μ$ g/L       0.00971       EPA 8270M-SIM       12/17/08         Naphthalene       0.781 $μ$ g/L       0.0194       EPA 8270M-SIM       12/17/08         Phenanthrene       0.139 $μ$ g/L       0.0194       EPA 8270M-SIM       12/17/08	Fluorene	0.0194		0.0194	EPA 8270M-SIM	12/17/08
Naphthalene       0.781 μg/L       0.0194       EPA 8270M-SIM       12/17/08         Phenanthrene       0.139 μg/L       0.0194       EPA 8270M-SIM       12/17/08	Indeno(1,2,3-cd)pyrene	0.0326		0.00971	EPA 8270M-SIM	12/17/08
Phenanthrene 0.139 μg/L 0.0194 EPA 8270M-SIM 12/17/08	,					
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			_			

**SEMI-VOLATILE ORGANICS - CAS** 

Report Date: 02/02/09 Validated By:





6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



#### LABORATORY ANALYSIS REPORT

Sample ID: FO081480 Sample Collected: 12/12/08 11:20 Sample Status: COMPLETE AND VALIDATED

Sample Received: 12/12/08

PORTLAND HARBOR STORMWATER SAMP Report Page: Page 3 of 4

Proj./Company Name: Address/Location: SW-44A-ABC311-1208

N LARABEE & RANDOLPH System ID: AM11639

44A\_SW1 EID File #: Sample Point Code: 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	. υ 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 <i>.</i> 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	<5.1	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	<1.1	μg/L	4.1	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	<5.1	μg/L	5.1	EPA 8270	12/18/08
4-Nitrophenol	<11	μg/L	11	EPA 8270	12/18/08
Acenaphthene	<1.1	$\mu g/L$	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:





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081480 Sample Status: COMPLETE AND Sample Collected: 12/12/08 11:20 **VALIDATED** 

Sample Received: 12/12/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 4 of 4

Address/Location: SW-44A-ABC311-1208

N LARABEE & RANDOLPH System ID: AM11639

Sample Point Code: 44A\_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. 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	<5.1	μg/L	5.1	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	<5.1	μg/L	5.1	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	. <i>μ</i> g/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	<5.1	μg/L	5.1	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: FO081480

Report Date: 02/02/09 Validated By:





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Sample ID: FO081481

Sample Collected: 12/12/08

13:44

Sample Status: COMPLETE AND

Sample Received: 12/12/08

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 1 of 4

Address/Location:

FIELD DECON BLANK

AM11640

Sample Point Code:

**FDBLANK** 

System ID: 1020.005 EID File #:

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
GENERAL					
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	12/13/08
METALS		J			
MERCURY	<0.0020	μg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC (FORTILE)	<0.10	μg/L	0.1	EPA 200.8	12/15/08
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	< 0.40	μg/L	0.4	EPA 200.8	12/15/08
COPPER	<0.20	μg/L	0.2	EPA 200.8	12/15/08
LEAD	<0.10	μg/L	0.1	EPA 200.8	12/15/08
NICKEL	<0.20	μg/L	0.2	EPA 200.8	12/15/08
SILVER	<0.10	μg/L	0.1	EPA 200.8	12/15/08
ZINC	<0.50	μg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					•
4,4'-DDD	<0.49	ng/L	0.49	EPA 8081	12/17/08
4,4'-DDE	< 0.49	ng/L	0.49	EPA 8081	12/17/08
4,4'-DDT	< 0.49	ng/L	0.49	EPA 8081	12/17/08
Aldrin	< 0.49	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	< 0.49	ng/L	0.49	EPA 8081	12/17/08
Dieldrin	< 0.49	ng/L	0.49	EPA 8081	12/17/08
Endosulfan I	< 0.49	ng/L	0.49	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	< 0.49	ng/L	0.49	EPA 8081	12/17/08
Endrin Aldehyde	< 0.49	ng/L	0.49	EPA 8081	12/17/08
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	< 0.49	ng/L	0.49	EPA 8081	12/17/08
Heptachlor	< 0.49	ng/L	0.49	EPA 8081	12/17/08
Heptachlor Epoxide	< 0.49	ng/L	0.49	EPA 8081	12/17/08

Report Date: 02/09/09

Validated By:





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081481

Sample Collected: 12/12/08

13:44 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:

FIELD DECON BLANK

System ID:

AM11640

Sample Point Code:

**FDBLANK** 

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
Methoxychlor	<0.49	ng/L	0.49	EPA 8081	12/17/08
Toxaphene	<25	ng/L	25	EPA 8081	12/17/08
POLYCHLORINATED BIPHENYL CONGI	ENERS -PACE				٠
Refer to Contract Report	Completed	ng/L	-	EPA 1668 MOD	01/05/09
POLYNUCLEAR AROMATICS & PHTHAI	LATES - 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	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	< 0.00971	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	< 0.00971	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	< 0.0194	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	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	12/17/08
SEMI-VOLATILE ORGANICS - CAS	•				
1,2,4-Trichlorobenzene	<0.20	μg/L	0.20	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.20	μg/L	0.20	EPA 8270	12/18/08
1,3-Dichlorobenzene	<0.20	μg/L	0.20	EPA 8270	12/18/08
1,4-Dichlorobenzene	<0.20	<i>μ</i> g/L	0.20	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<0.50	μg/L	0.50	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<0.50	μg/L	0.50	EPA 8270	12/18/08

Report Date: 02/09/09

Validated By:





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081481

Sample Collected: 12/12/08

13:44

Sample Status: COMPLETE AND

Sample Received: 12/12/08

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Page 3 of 4 Report Page:

Address/Location:

FIELD DECON BLANK

System ID:

AM11640

Sample Point Code:

**FDBLANK** 

EID File #:

1020.005

Sample Type: Sample Matrix: **GRAB STORMWTR**  LocCode: Collected By: MJS/JXB

**PORTHASW** 

#### 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.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
2,4-Dichlorophenol	<0.50	μg/L	0.50	EPA 8270	12/18/08
2,4-Dimethylphenol	<4.0	μg/L	4.0	EPA 8270	12/18/08
2,4-Dinitrophenol	<4.0	μg/L	4.0	EPA 8270	12/18/0
2,4-Dinitrotoluene	<0.20	μg/L	0.20	EPA 8270	12/18/08
2,6-Dinitrotoluene	<0.20	μg/L	0.20	EPA 8270	12/18/0
2-Chloronaphthalene	<0.20	μg/L	0.20	EPA 8270	12/18/0
2-Chlorophenol	< 0.50	μg/L	0.50	EPA 8270	12/18/0
2-Methylnaphthalene	<0.20	μg/L	0.20	EPA 8270	12/18/0
2-Methylphenol	< 0.50	μg/L	0.50	EPA 8270	12/18/08
2-Nitroaniline	<0.20	μg/L	0.20	EPA 8270	12/18/08
2-Nitrophenol	<0.50	μg/L	0.50	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<2.0	μg/L	2.0	EPA 8270	12/18/08
3-Nitroaniline	<1.0	μg/L	1.0	EPA 8270	12/18/0
4,6-Dinitro-2-methylphenol	<2.0	μg/L	2.0	EPA 8270	12/18/0
4-Bromophenylphenyl ether	<0.20	μg/L	0.20	EPA 8270	12/18/0
4-Chloro-3-methylphenol	<0.50	μg/L	0.50	EPA 8270	12/18/0
4-Chloroaniline	<0.20	μg/L	0.20	EPA 8270	12/18/0
4-Chlorophenylphenyl ether	<0.20	μg/L	0.20	EPA 8270	12/18/0
4-Methylphenol	<0.50	μg/L	0.50	EPA 8270	12/18/0
4-Nitroaniline	<1.0	μg/L	1.0	EPA 8270	12/18/0
4-Nitrophenol	<2.0	μg/L	2.0	EPA 8270	12/18/0
Acenaphthene	<0.20	μg/L	0.20	EPA 8270	12/18/0
Acenaphthylene	<0.20	μg/L	0.20	EPA 8270	12/18/0
Anthracene	<0.20	μg/L	0.20	EPA 8270	12/18/0
Benzo(a)anthracene	<0.20	μg/L	0.20	EPA 8270	12/18/0
Benzo(a)pyrene	<1.0	μg/L	1.0	EPA 8270	12/18/0
Benzo(b)fluoranthene	<1.0	μg/L	1.0	EPA 8270	12/18/0
Benzo(g,h,i)perylene	<1.0	μg/L	1.0	EPA 8270	12/18/0
Benzo(k)fluoranthene	<1.0	μg/L	1.0	EPA 8270	12/18/0
Benzoic acid	<5.0	μg/L	5.0	EPA 8270	12/18/0
Benzyl alcohol	<0.50	μg/L	0.50	EPA 8270	12/18/0
Bis(2-chloroethoxy) methane	<0.20	μg/L	0.20	EPA 8270	12/18/0
Bis(2-chloroethyl) ether	<0.20	μg/L	0.20	EPA 8270	12/18/0
Bis(2-chloroisopropyl) ether	<0.20	μg/L	0.20	EPA 8270	12/18/0
Bis(2-ethylhexyl) phthalate	<1.0	μg/L	1.0	EPA 8270	12/18/0
Butyl benzyl phthalate	<0.20	μg/L	0.20	EPA 8270	12/18/0

Report Date: 02/09/09





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081481

Sample Collected: 12/12/08 Sample Received: 12/12/08 13:44

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 4 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AM11640

Sample Point Code:

**FDBLANK** 

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
Chrysene	<0.20	μg/L	0.20	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<1.0	μg/L	1.0	EPA 8270	12/18/08
Dibenzofuran	<0.20	μg/L	0.20	EPA 8270	12/18/08
Diethyl phthalate	<0.20	μg/L	0.20	EPA 8270	12/18/08
Dimethyl phthalate	<0.20	μg/L	0.20	EPA 8270	12/18/08
Di-n-butyl phthalate	<0.20	μg/L	0.20	EPA 8270	12/18/08
Di-n-octyl phthalate	<1.0	μg/L	1.0	EPA 8270	12/18/08
Fluoranthene	<0.20	μg/L	0.20	EPA 8270	12/18/08
Fluorene	< 0.20	μg/L	0.20	EPA 8270	12/18/08
Hexachlorobenzene	<0.20	μg/L	0.20	EPA 8270	12/18/08
Hexachlorobutadiene .	<0.20	μg/L	0.20	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<1.0	μg/L	1.0	EPA 8270	12/18/08
Hexachloroethane	<0.20	μg/L	0.20	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<1.0	μg/L	1.0	EPA 8270	12/18/08
Isophorone	<0.20	μg/L	0.20	EPA 8270	12/18/08
Naphthalene	<0.20	μg/L	0.20	EPA 8270	12/18/08
Nitrobenzene	< 0.20	μg/L	0.20	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<0.20	μg/L	0.20	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<0.20	μg/L	0.20	EPA 8270	12/18/08
Pentachlorophenol	<1.0	μg/L	1.0	EPA 8270	12/18/08
Phenanthrene	< 0.20	μg/L	0.20	EPA 8270	12/18/08
Phenol	<0.50	μg/L	0.50	EPA 8270	12/18/08
Pyrene	<0.20	μg/L	0.20	EPA 8270	12/18/08

End of Report for Sample ID: FO081481

Report Date: 02/09/09 Validated By:



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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081482

Sample Collected: 12/12/08 Sample Received: 12/12/08 00:00

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 1 of 4

Address/Location:

FIELD DUPLICATE

System ID:

AM11641

Sample Point Code:

DUP

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 Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

105 0.018	mg/L μg/L	2 2	Method SM 2540 D	Date 12/13/08
			SM 2540 D	12/13/08
			0.07 20 10 2	
0.018	μg/L			
0.016	μg/L		WPCLSOP M-10.02	10/10/00
		0.002	WFGL30F W-10.02	12/10/00
	-			12/15/08
	· •			12/15/08
	_			12/15/08
29.0	μg/L	the state of the s		12/15/08
12.9	μg/L		EPA 200.8	12/15/08
3.44	μg/L	0.2	EPA 200.8	12/15/08
<0.10	μg/L	0.1	EPA 200.8	12/15/08
183	μg/L	0.5	EPA 200.8	12/15/08
<0.76	ng/L	0.76	EPA 8081	12/17/08
< 0.55	-	0.55	EPA 8081	12/17/08
<2.5	-	2.5	EPA 8081	12/17/08
		i i	EPA 8081	12/17/08
<0.58	_		EPA 8081	12/17/08
	-			12/17/08
	_			12/17/08
	-			12/17/08
	-			12/17/08
	_			12/17/08
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	_			12/17/08
	-			12/17/08
	~			12/17/08
	12.9 3.44 <0.10 183 <0.76 <0.55 <2.5 EST 5.3	0.52 μg/L 5.21 μg/L 29.0 μg/L 12.9 μg/L 3.44 μg/L <0.10 μg/L 183 μg/L  <0.76 ng/L <0.55 ng/L <2.5 ng/L <2.5 ng/L <1.8 ng/L <0.52 ng/L <3.1 ng/L <0.52 ng/L	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.52 μg/L 5.21 μg/L 0.4 EPA 200.8 5.21 μg/L 0.2 EPA 200.8 12.9 μg/L 0.1 EPA 200.8 3.44 μg/L 0.2 EPA 200.8 3.44 μg/L 0.2 EPA 200.8 3.44 μg/L 0.1 EPA 200.8 40.10 μg/L 0.5 EPA 200.8  183 μg/L 0.5 EPA 200.8  40.76 ng/L 0.55 ng/L 0.55 EPA 8081 40.55 ng/L 2.5 EPA 8081 40.58 ng/L 0.52 EPA 8081 40.58 ng/L 0.52 EPA 8081 41.8 ng/L 1.8 EPA 8081 43.1 ng/L 3.1 EPA 8081 40.52 ng/L 0.52 EPA 8081

Report Date: 02/09/09





6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



#### LABORATORY ANALYSIS REPORT

Sample ID: FO081482 Sample Collected: 12/12/08 00:00 Sample Status: COMPLETE AND

Sample Received: 12/12/08 VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 2 of 4

Address/Location: FIELD DUPLICATE

 Sample Point Code:
 DUP
 System ID:
 AM11641

 1020.005
 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 Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
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	<87	ng/L	87	EPA 8081	12/17/08
POLYCHLORINATED BIPHENYL CONGENE	RS -PACE			4	
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
POLYNUCLEAR AROMATICS & PHTHALAT	ES - TA				
Acenaphthene	< 0.0194	$\mu$ g/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	0.0287	$\mu$ g/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	0.112	$\mu$ g/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0231	$\mu$ g/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0263	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0362	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0527	$\mu$ g/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0271	$\mu$ g/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	2.13	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	0.0468	$\mu$ g/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	$\mu$ g/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	0.144	μg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	0.0365	μg/L·	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0216	μg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	0.551	$\mu g/L$	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	0.163	$\mu$ g/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0523	$\mu$ g/L	0.0194	EPA 8270M-SIM	12/17/08
SEMI-VOLATILE ORGANICS - CAS		-			
1,2,4-Trichlorobenzene	<1.1	$\mu$ g/L	1.1	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.21	$\mu$ g/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

Report Date: 02/09/09





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081482

Sample Collected: 12/12/08 Sample Received: 12/12/08

00:00

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 3 of 4

Address/Location:

FIELD DUPLICATE

System ID:

AM11641

Sample Point Code:

DUP

EID File #:

1020.005

Sample Type: Sample Matrix: **GRAB STORMWTR**  LocCode: Collected By: MJS/JXB

**PORTHASW** 

#### 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 Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. 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
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	$\mu$ g/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	<2.1	μg/L	2.1	EPA 8270	12/18/08
3-Nitroaniline	<5.2	$\mu$ g/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	0.69	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	<0.21	μg/L	0.21	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	0.97	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: 02/09/09





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO081482

Sample Collected: 12/12/08 Sample Received: 12/12/08 00:00

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 4 of 4

Address/Location:

FIELD DUPLICATE

AM11641

Sample Point Code:

System ID:

Sample Type:

DUP **GRAB**  EID File #: LocCode:

1020.005 **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 Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Foot Dougue of ou	D H	Ulaita	nami	8.6 - 41 I	Analysis Date
Test Parameter	Result	Units	MRL	Method	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	3.9	μg/L	1.1	EPA 8270	12/18/08
Butyl benzyl phthalate	0.43	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	<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	0.24	μg/L	0.21	EPA 8270	12/18/08

End of Report for Sample ID: FO081482

Report Date: 02/09/09 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 <u>53</u>

#### 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** 

Client:

Portland, City of

Service Request No.:

K0812190

Project:

Portland Harbor Stormwater Samp

Date Received:

12/16/2008

Sample Matrix:

Water

#### **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.

100

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

	W.	01/250	Mari
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.

	By .	01/23/09
Approved by	•	Date

# **Chain of Custody Documentation**



# CHAIN OF CUSTODY

OF \$R#: 608 2000

PAGE

An Emplayee - Owned Company PROJECT NAME PORTIGON Hachir PROJECT NUMBER	1317 South 13th Ave. •	ate Samp		(360) 5	(360) 577-7222 • (800) 695-7222x07 • F	FAX (360) 636-1068	PAGE	OF COC	)C #
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E-MAIL ADDRESS PHONE #	TAX#		ROF	Or C	latile O 8270 Organi 8260 [ Arbons Dies Finger, 4CID Si ease/7	8081A henolid Tetra	below)	COD, circle)	
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Columbia Analytical Services, Inc. Cogler Receipt and Preservation Form

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Client / Project: CHY of R	Man	gier Recei	1) ( 2111)				$\mu$ est $K08$	12/92	Ì	
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<ol> <li>Samples were received via? U</li> <li>Samples were received in: (circle)</li> <li>Were <u>custody seals</u> on coolers?         If present, were custody seals intact.     </li> <li>Is shipper's air-bill filed? If not, r</li> </ol>	N/	Y	UPS	Envelo	ope es, how If presen	t, were		d dated?	ier Hand De NA Y	elivered ON N
<ol> <li>Temperature of cooler(s) upon reference Blank (°C):</li> <li>If applicable, list Chain of Custody</li> <li>Packing material used. <i>Inserts</i></li> <li>Were custody papers properly filled</li> </ol>	Number  Baggies	s: Bubble Wi	- Constitution	el Pac	ks Wei	Ice .	Sleeves Other	<i>r</i>	NA Y	
9. Did all bottles arrive in good con	dition (u	nbroken)?	'ndicate	e in the	table bei	ow.			NA (Y	И
10. Were all sample labels complete (	i.e analys:	is, preservatio	on, etc.)	?			y		NA (Y	И
11. Did all sample labels and tags agre	ee with cu	stody papers'	? Indic	ate in l	he table .	below	ž.		NA Y	) N
12. Were appropriate bottles/contai	ners and	volumes rec	eived f	or the	tests indi	cated?	•		NA (Y	N
13. Were the pH-preserved bottles tes	ted* recei	ved at the app	propriat	e pH?	Indicate	in the	table below		(NA) Y	И
14. Were VOA vials and 1631 Mercui	•			•					(NA) Y	Ν
15. Are CWA Microbiology samples	received	with $>1/2$ th	ie 24hr	. hold	time rem	aining	g from collection	on?	(NA) Y	N
16. Was C12/Res negative?									NA (Y	) N
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*Does not include all pH preserved sample alique Additional Notes, Discrepancies, &			seiving S	OP (SMC	O-GEN).					

1

## Organochlorine Pesticides EPA Method 8081

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 081480

Lab Code:

K0812190-006

**Extraction Method:** 

EPA 3535

Units: ng/L Basis: NA

Level: Low

Analysis Method:

8081A

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	and the second second	0.53	0.53	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	Ui	1.7	1.7	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.53	0.50	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	2.5	2.5	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	2.0	2.0	1	12/17/08	01/04/09	KWG0813446	
Aldrin	5.3	P	0.53	0.12	1	12/17/08	01/11/09	KWG0813446	
Heptachlor Epoxide	1.7	P	0.53	0.23	1	12/17/08	01/11/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.63	0.63	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.53	0.27	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.53	0.29	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.53	0.39	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	Ui	0.53	0.53	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.53	0.52	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.53	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	Ui	3.0	3.0	1	12/17/08	01/11/09	KWG0813446	
Endrin Aldehyde	ND	U	0.53	0.23	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	Ui	0.84	0.84	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.53	0.30	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	73	73	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	41	10-121	01/04/09	Acceptable	
Decachlorobiphenyl	57	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:

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Form 1A - Organic 17

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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: Lab Code:

FO 081481 K0812190-007

**Extraction Method: Analysis Method:** 

EPA 3535

8081A

Units: ng/L Basis: NA

Level: Low

A R / TAY	70 B.	_	74. AF WY W	*****	Dilution	Date	Date	Extraction	W.T.
Analyte Name	Result		MRL	MDL	Factor	Extracted	Analyzed	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	54	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:

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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: Lab Code: FO 081482 K0812190-008

Extraction Method: Analysis Method:

EPA 3535 8081A Units: ng/L Basis: NA

Level: Low

Analyte Name	Result	O	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND		0.58	0.58	1	12/17/08	01/04/09	KWG0813446	e-mononproductions
beta-BHC		Ui	1.8	1.8	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	3.1	3.1	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	1.6	1.6	1	12/17/08	01/04/09	KWG0813446	
Aldrin	5.3	P	0.52	0.12	1	12/17/08	01/11/09	KWG0813446	
Heptachlor Epoxide	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.52	0.52	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	U	0.52	0.28	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND 1	Ui	0.55	0.55	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 '	U	0.52	0.36	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	Ui	0.76	0.76	1	12/17/08	01/11/09	KWG0813446	
Endrin Aldehyde	ND 1	U	0.52	0.22	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND 1	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND 1	Ui	2.5	2.5	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND 1	U	0.52	0.33	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND 1	U	0.52	0.29	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND 1	Ui	87	87	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	43	10-121	01/04/09	Acceptable	
Decachlorobiphenyl	56	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:

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Form 1A - Organic

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Merged

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: Lab Code:

Method Blank KWG0813446-3

**Extraction Method:** 

EPA 3535

**Analysis Method:** 

8081A

Units: ng/L Basis: NA

Level: Low

A X		76 W W W T	W WYS W	Dilution	Date	Date	Extraction	W.Y.
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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:

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QA/QC Report

Client:

Portland, City of

Project:

Portland Harbor Stormwater Samp

Sample Matrix:

Water

**Surrogate Recovery Summary Organochlorine Pesticides** 

**Extraction Method:** EPA 3535

Analysis Method:

8081A

Units: PERCENT

Level: Low

Service Request: K0812190

Sample Name	Lab Code	Sur1	Sur2
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.

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Form 2A - Organic

Page 1 of 1

SuperSet Reference:

RR98054

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

Lab Control Sample KWG0813446-1

**Duplicate Lab Control Sample** KWG0813446-2

		Control Spik			VGU813446-2 e Lab Control		%Rec		RPD	
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit	
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.

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1 of 1

### Semi-Volatile Organic Compounds EPA Method 8270C

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

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	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	Ъ	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		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		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		1.1	0.076	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate		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:
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Page

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: Lab Code:

FO 081480 K0812190-006

**Extraction Method:** 

Analysis Method:

8270C

EPA 3520C

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	<b>0.31</b> 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	

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: Lab Code:

FO 081480

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.

Merged

Comments:

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Form 1A - Organic

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SuperSet Reference:

RR97700

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:** Analysis Method:

EPA 3520C

8270C

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	CONTRACTOR DESCRIPTION OF THE PERSON NAMED IN CONTRACTOR DESCRIPTION	0.20	0.035	ractor 1	12/18/08	12/30/08	KWG0813479	14016
Phenol	ND ND		0.50	0.033	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND		0.50	0.053	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND						12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND ND		0.20 0.20	0.021 0.029	<u>1</u> 1	12/18/08 12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND ND		0.20	0.029	1	12/18/08	12/30/08	KWG0813479	
,									***************************************
Benzyl Alcohol Bis(2-chloroisopropyl) Ether	ND		0.50	0.073	1	12/18/08	12/30/08	KWG0813479 KWG0813479	
2-Methylphenol	ND ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
***			0.50	0.11	1	12/18/08	12/30/08		
Hexachloroethane	ND		0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND		0.20	0.037	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	ND		0.50	0.12	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND		0.20	0.028	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND		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		4.0	2.2	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane		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		5.0	1.1	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene	ND		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:

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Form 1A - Organic

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Analytical Results

Client:

Portland, City of

Project:

Portland Harbor Stormwater Samp

Sample Matrix:

Water

Service Request: K0812190 Date Collected: 12/12/2008

Units: ug/L

Basis: NA

Level: Low

**Date Received:** 12/16/2008

#### Semi-Volatile Organic Compounds by GC/MS

Sample Name: Lab Code:

FO 081481

**Extraction Method:** 

K0812190-007

EPA 3520C

Analysis Method:

8270C

						NAMES .		
A	W% 84	^	y news	Dilution		Date	Extraction	max 4
Analyte Name	Result					Analyzed	Lot	Note
Acenaphthene	ND 1			1	12/18/08	12/30/08	KWG0813479	
3-Nitroaniline	ND 1				12/18/08	12/30/08	KWG0813479	
2,4-Dinitrophenol	ND 1	U 4.0	0.17	1	12/18/08	12/30/08	KWG0813479	
Dibenzofuran	ND 1	U 0.2	0.018	1	12/18/08	12/30/08	KWG0813479	
4-Nitrophenol	ND 1		0.28	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrotoluene	ND 1	U 0.2	0.018	1	12/18/08	12/30/08	KWG0813479	
Fluorene	ND 1	U 0.2	0 0.027	1	12/18/08	12/30/08	KWG0813479	AMARINA AND AND AND AND AND AND AND AND AND A
4-Chlorophenyl Phenyl Ether	ND 1	U 0.2	0.027	1	12/18/08	12/30/08	KWG0813479	
Diethyl Phthalate	0.035	J 0.2	0.012	1	12/18/08	12/30/08	KWG0813479	
4-Nitroaniline	ND 1	U 1.0	0.019	1	12/18/08	12/30/08	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND 1	U 2.0	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodiphenylamine	ND I	U 0.2	0.048	1	12/18/08	12/30/08	KWG0813479	
4-Bromophenyl Phenyl Ether	ND I	U 0.2	0 0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobenzene	ND I	U 0.2	0.022	1	12/18/08	12/30/08	KWG0813479	
Pentachlorophenol	ND 1	U 1.0	0.34	1	12/18/08	12/30/08	KWG0813479	
Phenanthrene	ND I	U 0.2	0.022	1	12/18/08	12/30/08	KWG0813479	
Anthracene	ND I	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 I	U 0.20	0.020	1	12/18/08	12/30/08	KWG0813479	
Pyrene	ND I			1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	ND I	U 0.2	0.018	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND I	U 2.0	0.43	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	ND I	U 0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
Chrysene	ND I	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 I	U 1.0	0.090	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND I	U 1.0	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND I	U 1.0	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND I	U 1.0	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND U	U 1.0	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND U	U 1.0	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND U	U 1.0	0.095	5	12/18/08	01/02/09	KWG0813479	

Comments:
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Form 1A - Organic

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**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:

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Form 1A - Organic

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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

Units: ug/L

Basis: NA

Level: Low

#### Semi-Volatile Organic Compounds by GC/MS

 Sample Name:
 FO 081482

 Lab Code:
 K0812190-008

**Extraction Method:** 

EPA 3520C

Analysis Method: 8270C

Analyta Nama	Domle O	MRL	MDL	Dilution	Date	Date	Extraction Lot	%To4o
Analyte Name	Result Q			Factor	Extracted	Analyzed	KWG0813479	Note
Bis(2-chloroethyl) Ether  Phenol	ND U <b>0.38</b> J	0.21 0.52	0.036 0.065	1	12/18/08 12/18/08	12/30/08 12/30/08	KWG0813479 KWG0813479	
2-Chlorophenol	ND U	0.52	0.065	1 1	12/18/08	12/30/08	KWG0813479 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 KWG0813479	
1,2-Dichlorobenzene	ND U	0.21	0.023	1	12/18/08	12/30/08		
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 Ј	0.52	0.12	<u> </u>	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:

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Page 1 of 3

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: Lab Code:

FO 081482 K0812190-008

**Extraction Method:** 

EPA 3520C

**Analysis Method:** 

8270C

Units: ug/L Basis: NA

Level: Low

Accenaphthene	Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline			NATIONAL PROPERTY OF THE PARTY				TO THE OWNER OF THE PARTY OF TH		TAGEC
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         1.1         0.092         5         12/18/08         01/02/09         KWG0813479           2,4-Dinitrophenol         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         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           4-Bromophenyl Phenyl Ether         ND U         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           4-Bromophenyl Phenyl Ether         ND U									
Dibenzofuran									
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         5.2         0.097         5         12/18/08         01/02/09         KWG0813479           4-Nitroaniline         ND         U         5.2         0.097         5         12/18/08         01/02/09         KWG0813479           4-Britroaniline         ND         U         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           4-Britroaniline         ND         U         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           4-Bromophenyl Phenyl Ether         ND         U         1.1         0.12         5         12/18/									
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           Dicityl Phthalate         ND U         1.1         0.062         5         12/18/08         01/02/09         KWG0813479           4-Nitroaniline         ND U         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           2-Methyl-4,6-dinitrophenol         ND U         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           4-Bromophenyl Phenyl Ether         ND U         1.1         0.12         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           Phenathrene         0.24									
Fluorence	•								
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         1.1         0.13         5         12/18/08         01/02/09         KWG0813479           N-Nitrosodiphenylamine         ND         U         1.1         0.12         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         <	*								
Diethyl Phthalate									
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         0.12         5         12/18/08         01/02/09         KWG0813479           Pin-butyl Phthalate         0.32         JD         1.1         0.11         5         12/18/08         01/02/09         KWG0813479           Pin-butyl Ph									
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           Phenanthrene         0.20         JD         1.1         0.12         5         12/18/08         01/02/09         KWG0813479           Pin-n-butyl Phthalate         0.20         JD         1.1         0.11         5		·							.,
N-Nitrosodiphenylamine									
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           Pin-butyl Phthalate         0.32         JD         1.1         0.12         5         12/18/08         01/02/09         KWG0813479           Pin-butyl Phthalate         0.20         JD         1.1         0.11         5         12/18/08         01/02/09         KWG0813479           Pin-butyl Phthalate         0.21         0.21         0.020         1         12/18/08         12/30/08         KWG0813479           Pyrene         0.24         0.21         0.021         0.019         1         12/18/08	- · · · · · · · · · · · · · · · · · · ·								
Hexachlorobenzene   ND U   1.1   0.12   5   12/18/08   01/02/09   KWG0813479	N-Nitrosodiphenylamine	ND U	1.1	0.25	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           Benz(a)anthracene         0.057         J         0.21         0.044         1         12/18/08         12/30/08         KWG0813479           Chrysene         0.15         J         0.21         0.029         1         12/18/08         12/30/08         <	4-Bromophenyl Phenyl Ether	ND U	1.1	0.14	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           Benz(a)anthracene         0.057         J         0.21         0.019         1         12/18/08         12/30/08         KWG0813479           Chrysene         0.15         J         0.21         0.019         1         12/18/08         12/30/08         KWG0813479           Chrysene         0.15         J         0.21         0.029         1         12/18/08         12/30/08         K	Hexachlorobenzene	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         0.32         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           Benz(a)anthracene         0.057         J         0.21         0.019         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 <td>Pentachlorophenol</td> <td>ND U</td> <td>5.2</td> <td>1.8</td> <td>5</td> <td>12/18/08</td> <td>01/02/09</td> <td>KWG0813479</td> <td></td>	Pentachlorophenol	ND U	5.2	1.8	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           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	Phenanthrene	0.24 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(a)pyrene         ND U	Anthracene	ND U	1.1	0.13	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(a)pyrene         ND U         1.1         0.16         5         12/18/08         01/02/09         KWG0813479           Bibenz(a,h	Di-n-butyl Phthalate	<b>0.32</b> JD	1.1	0.12		12/18/08	01/02/09	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(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         0.087         5         12/18/08         01/02/09         KWG0813479           Dibenz(a,h)anthracene	Fluoranthene	0.20 JD	1.1	0.11	5	12/18/08	01/02/09	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	Pyrene	0.24	0.21	0.020	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(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	<b>Butyl Benzyl Phthalate</b>	0.43	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	3,3'-Dichlorobenzidine	ND U	2.1	0.44	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	Benz(a)anthracene	0.057 J	0.21	0.019	1	12/18/08	12/30/08		
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	Chrysene	0.15 J	0.21	0.029	1	12/18/08	12/30/08	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	Bis(2-ethylhexyl) Phthalate	3.9	1.1	0.14	1	12/18/08	12/30/08	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	Di-n-octyl Phthalate	ND U	1.1	0.092	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(b)fluoranthene	ND U	1.1	0.087	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(k)fluoranthene	ND U	1.1	0.13	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(a)pyrene	ND U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
112 0 1107 0 117 117	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	
Delizo(g, ii, i) per y i ene 110 0 1.1 0.07/ 3 12/10/00 01/02/07 KW 00013477	Benzo(g,h,i)perylene	ND U	1.1	0.097	5	12/18/08	01/02/09	KWG0813479	

Comments:
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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: Lab Code: FO 081482

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:

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Form 1A - Organic

Page 3 of 3

SuperSet Reference: RR97700

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: Lab Code:

Method Blank

KWG0813479-3

**Extraction Method:** 

EPA 3520C

Analysis Method:

8270C

Units: ug/L Basis: NA

Level: Low

Analyte Name	Result	o	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND		0.19	0.035	1	12/18/08	12/30/08	KWG0813479	
Phenol	0.25		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	the contract of the contract of the contract of
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		3.8	2.2	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane	ND		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		4.8	1.1	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene		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		0.19	0.025	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobutadiene	ND		0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chloro-3-methylphenol	ND		0.48	0.037	1	12/18/08	12/30/08	KWG0813479	
2-Methylnaphthalene	ND		0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorocyclopentadiene	ND		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		U	0.48	0.031	1	12/18/08	12/30/08	KWG0813479	
2-Chloronaphthalene		U	0.19	0.041	1	12/18/08	12/30/08	KWG0813479	
2-Nitroaniline	ND		0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Acenaphthylene	ND		0.19	0.015	1	12/18/08	12/30/08	KWG0813479	
Dimethyl Phthalate	ND		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:
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Page

Analytical Results

Client:

Portland, City of

Project: Sample Matrix: Portland Harbor Stormwater Samp

Water

Date Collected: NA

Service Request: K0812190

#### 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

					Dilution	Date	Date	Extraction	
Analyte Name	Result	NO DESCRIPTION OF THE PARTY OF	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND		0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
3-Nitroaniline	ND		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	
<b>Butyl Benzyl Phthalate</b>	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	ì	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	
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Comments:
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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:

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Form 1A - Organic

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SuperSet Reference:

RR97700

#### COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:

Portland, City of

Project:

Portland Harbor Stormwater Samp

Sample Matrix:

Water

**Surrogate Recovery Summary** Semi-Volatile Organic Compounds by GC/MS

**Extraction Method:** EPA 3520C **Analysis Method:** 

8270C

Units: PERCENT

Level: Low

Service Request: K0812190

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
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.

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Form 2A - Organic

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#### 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 Applyized:** 12/30/2008

**Date Analyzed:** 12/30/2008

#### Lab Control Spike/Duplicate Lab Control Spike Summary Semi-Volatile Organic Compounds by GC/MS

**Extraction Method: Analysis Method:** 

EPA 3520C

8270C

Units: ug/L Basis: NA

Level: Low

Extraction Lot: KWG0813479

Lab Control Sample KWG0813479-1 Duplicate Lab Control Sample KWG0813479-2

		Control Spik			e Lab Control		9/D		- ארמו פע
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	%Rec Limits	RPD	RPD Limit
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.

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Form 3C - Organic

52

SuperSet Reference: RR97700

Page

1 of 2

#### 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

Lab Control Sample KWG0813479-1

**Duplicate Lab Control Sample** KWG0813479-2

	Lab	Control Spik	e	Duplicate	Lab Control	Spike	%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.



PORTLAND, OR 9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

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.

Work Order	Project	<u>ProjectNumber</u>
PRL0548	Portland Harbor	36238

TestAmerica Portland







City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 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





City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

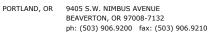
6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 01/21/09 13:37

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-05 (FO081479)			W	ater		Sampl	led: 12/12/	08 11:44		
Bis(2-ethylhexyl)phthalate	EPA 8270m	0.992	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 18:36	
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 23:25	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0113	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0123	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0217	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0252	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0133	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0410	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0883	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	0.0204	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0119	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.187	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.102	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0611	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d1	9			91.9%		25 - 125 %	"			"
Pyrene-d10	-			41.6%		23 - 150 %	"			"
Benzo (a) py	rene-d12			41.1%		10 - 125 %	"			"
PRL0548-06 (FO081480)			w	ater		Sampl	led: 12/12/	08 11:20		
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.24	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 19:07	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	0.579	0.511	0.971	"	"	"	"	"	J
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 23:55	
Acenaphthylene	"	0.0312	0.0194	0.0194	"	"	"	"	"	
Anthracene	,,	ND	0.0194	0.0194		,,	,,	,,	,,	

TestAmerica Portland





THE LEADER IN ENVIRONMENTAL TESTING

City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 01/21/09 13:37

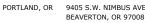
#### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

PRL0548-06   (FO081480)	Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
Benzo (a) pyrene   0.088   0.00971   0.0097	PRL0548-06 (FO081480)	<u> </u>		W	ater		Samp	led: 12/12/	08 11:20		
Benzo (phi prepiene   0.0818   0.00071   0.0	Benzo (a) anthracene	EPA 8270m	0.0312	0.00971	0.00971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 23:55	
Benzo (ghi) perylene   0.0704   0.0794   0.019	Benzo (a) pyrene	"	0.0383	0.00971	0.00971	"	"	"	"	"	
Penzo (k) Ruorauthene   0.0372   0.0971   0.0	Benzo (b) fluoranthene	"	0.0516	0.00971	0.00971	"	"	"	"	"	
Chrysene	Benzo (ghi) perylene	"	0.0704	0.0194	0.0194	"	"	"	"	"	
Dibenzo (a,h) anthracene   0,010   0,0097   0	Benzo (k) fluoranthene	"	0.0372	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	Chrysene	"	0.0906	0.00971	0.00971	"	"	"	"	"	
Fluorene   Color   C	Dibenzo (a,h) anthracene	"	0.0104	0.00971	0.00971	"	"	"	"	"	
Naphthalene   "   0.0326   0.00971   " " " " " " " " " " " " "   "   "	Fluoranthene	"	0.192	0.0194	0.0194	"	"	"	"	"	
Naphthalene         0.781         0.0194         0.0194         """"""""""""""""""""""""""""""""""""	Fluorene	"	0.0194	0.0194	0.0194	"	"	"	"	"	
Phenanthrene         0.133         0.0194         0.0194         """"""""""""""""""""""""""""""""""""	Indeno (1,2,3-cd) pyrene	"	0.0326	0.00971	0.00971	"	"	"	"	"	
Pyrene   " 0.0962   0.0194   0.0194   " " " " " " " " " " " "   "   "   "	Naphthalene	"	0.781	0.0194	0.0194	"	"	"	"	"	
Surrogate(s):   Fluorene-d10	Phenanthrene	"	0.139	0.0194	0.0194	"	"	"	"	"	
PRLO548-07   (FO081481)	Pyrene	"	0.0962	0.0194	0.0194	"	"	"	"	"	
PRLO548-07   PRL	Surrogate(s): Fluorene-d10				95.3%		25 - 125 %	"			n .
PRL0548-07   (FO081481)   FO081481)   FO081481   FOO81481   FOO8	Pyrene-d10				46.6%		23 - 150 %				
Bis(2-ethylhexyl)phthalate	Benzo (a) pyrene-a	!12			68.1%		10 - 125 %	"			"
Butyl benzyl phthalate	PRL0548-07 (FO081481)			W	ater		Samp	led: 12/12/	08 13:44		
Di-n-butyl phthalate	Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 19:37	
Di-n-octyl phthalate " ND 0.511 0.971 " " " " " " " " " " " " " " " " " " "	Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate " ND 0.511 0.971 " " " " " " " " " " " " " " " " " " "	Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate    ND   0.511   0.971	Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene "ND 0.0194 0.0194 "" " " 12/30/08 00:25  Acenaphthylene "ND 0.0194 0.0194 " " " " " " " 12/30/08 00:25  Anthracene "ND 0.0194 0.0194 " " " " " " " " " " " " " " " " " " "	Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthylene " ND 0.0194 0.0194 " " " " " " " " " " " " " " " " " " "	Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Anthracene " ND 0.0194 0.0194 " " " " " " " " " " " " " " " " " " "	Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/30/08 00:25	
Benzo (a) anthracene " ND 0.00971 0.00971 " " " " " " " " " " " " " " " " " " "	Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) pyrene " ND 0.00971 0.00971 " " " " " " " " " " " " " " " " " " "	Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (b) fluoranthene " ND 0.00971 0.00971 " " " " " " " " " " " " " " " " " " "	Benzo (a) anthracene	"	A IID	0.00071	0.00071	"	"	"	"	"	
Benzo (ghi) perylene " ND 0.0194 0.0194 " " " " " " " " " " " " " " " " " " "			ND	0.009/1	0.00971						
Benzo (k) fluoranthene " ND 0.00971 0.00971 " " " " " "	Benzo (a) pyrene	"				"	"	"	"	"	
TAD		"	ND	0.00971	0.00971	"	"		"	"	
Chrysene " ND 0.00971 0.00971 " " " " " "	Benzo (b) fluoranthene	" "	ND ND	0.00971 0.00971	0.00971 0.00971	"	"		" "	" "	
	Benzo (b) fluoranthene Benzo (ghi) perylene	" " "	ND ND ND	0.00971 0.00971 0.0194	0.00971 0.00971 0.0194	" "	" "		" " " " " " " " " " " " " " " " " " " "	" " "	
Dibenzo (a,h) anthracene " ND 0.00971 0.00971 " " " " " "	Benzo (b) fluoranthene Benzo (ghi) perylene Benzo (k) fluoranthene	" " " " " " " " " " " " " " " " " " " "	ND ND ND	0.00971 0.00971 0.0194 0.00971	0.00971 0.00971 0.0194 0.00971	" " "	" " "		" " " " " " " " " " " " " " " " " " " "		
Fluoranthene " ND 0.0194 " " " " " " "	Benzo (b) fluoranthene Benzo (ghi) perylene Benzo (k) fluoranthene Chrysene		ND ND ND ND	0.00971 0.00971 0.0194 0.00971 0.00971	0.00971 0.00971 0.0194 0.00971 0.00971				" " " " " " " " " " " " " " " " " " " "	" " " " " " " " " " " " " " " " " " " "	
Fluorene " ND 0.0194 " " " " " " "	Benzo (b) fluoranthene Benzo (ghi) perylene Benzo (k) fluoranthene Chrysene Dibenzo (a,h) anthracene	" " " " " " " " " " " " " " " " " " " "	ND ND ND ND ND	0.00971 0.00971 0.0194 0.00971 0.00971	0.00971 0.00971 0.0194 0.00971 0.00971	" " " " " " " " " " " " " " " " " " " "			"	" " " "	

TestAmerica Portland

Howard Holmes, Project Manager





9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 01/21/09 13:37

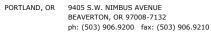
#### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-07 (FO08	1481)		W	ater		Samp	led: 12/12/	08 13:44		
Indeno (1,2,3-cd) pyrene	EPA 8270m	ND	0.00971	0.00971	ug/l	1x	8120560	12/17/08 10:20	12/30/08 00:25	
Naphthalene	"	ND	0.0194	0.0194	"	"	"	"	m .	
Phenanthrene	"	ND	0.0194	0.0194	"	"	"	"	m .	
Pyrene	"	ND	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluore	ene-d10			97.2%		25 - 125 %	"		"	
Pyren				56.4%		23 - 150 %	"		"	
Benzo	(a) pyrene-d12			83.0%		10 - 125 %	"		"	
PRL0548-08 (FO08	1482)		W	ater		Samp	led: 12/12/	08 00:00		
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.13	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 20:08	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	m .	
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	"	"	"		12/30/08 00:55	
Acenaphthylene	"	0.0287	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	0.112	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0231	0.0194	0.0194	"	2x	"	"	12/30/08 17:18	
Benzo (a) pyrene	"	0.0263	0.00971	0.00971	"	1x	"	"	12/30/08 00:55	
Benzo (b) fluoranthene	"	0.0362	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0527	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0271	0.00971	0.00971	"	"	"		"	
Chrysene	"	0.0468	0.0194	0.0194	"	2x	"	"	12/30/08 17:18	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	1x	"	"	12/30/08 00:55	
Fluoranthene	"	0.144	0.0194	0.0194	"	"	"		"	
Fluorene	"	0.0365	0.0194	0.0194	"	"	"		"	
Indeno (1,2,3-cd) pyrene	"	0.0216	0.00971	0.00971	"	"	"		"	
Naphthalene	"	0.551	0.0194	0.0194	"	"	"		"	
Phenanthrene	"	0.163	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0523	0.0388	0.0388	"	2x	"	"	12/30/08 17:18	
Surrogate(s): Fluore	ene-d10			93.6%		25 - 125 %	lx		12/30/08	00:55
Pyren	e-d10			29.2%		23 - 150 %	2x		12/30/08	17:18
Benzo	(a) pyrene-d12			63.6%		10 - 125 %	1x		12/30/08	00:55

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 01/21/09 13:37

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 8120560	Water P	reparation	Method: 35	520B Liq-l	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8120560-BLK1)								Extr	acted:	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	"	"							"	
Surrogate(s): Fluorene-d10		Recovery:	92.2%	Lin	nits: 25-125%	6 "							12/30/08 01:23	5
Pyrene-d10			54.5%		23-150								"	
Benzo (a) pyrene-d12			81.5%		10-125	% "							"	
LCS (8120560-BS1)								Extr	acted:	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





City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 01/21/09 13:37

### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

Part	QC Batch: 8120560	Water I	Preparation	Method:	3520B Liq-	Liq								
Bacon (A) Incommère   19	Analyte	Method	Result	MDL	* MRL	Units	Dil			(Limits)		(Limit	s) Analyzed	Notes
Bacon (A) Incommère   19	LCS (8120560-BS1)							Ext	racted:	12/17/08 10	:20			
Characteria	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	
Disease (a.h) unthrecence   "   2.8	Benzo (k) fluoranthene	"	2.32	0.0100	0.0100	"	"	 "	92.8%	(18-145)			"	
Procession	Chrysene	"	2.20	0.0100	0.0100	"	"	 "	88.1%	(16-137)			"	
Protect   Prot	Dibenzo (a,h) anthracene	"	2.28	0.0100	0.0100	"	"	 "	91.2%	(20-141)			"	
Naphtalater   1	Fluoranthene	"	2.69	0.0200	0.0200	"	"	 "	108%	(31-125)			"	
Naphthalemene	Fluorene	"	2.56	0.0200	0.0200	"	"	 "	102%	(27-124)			"	
Premiume	Indeno (1,2,3-cd) pyrene	"	2.29	0.0100	0.0100	"	"	 "	91.4%	(30-135)			"	
Pyrenge	Naphthalene	"	2.44	0.0200	0.0200	"	"	 "	97.7%	(30-113)			"	
Surrogate(s)   Fluorene-d10   Recovery   6.5 %   Lituits   25-135%   "	Phenanthrene	"	2.55	0.0200	0.0200	"	"	 "	102%	(34-126)			"	
Pyrone-d10   Sa. 84 %   23-15%   "   "   "   "   "   "   "   "   "	Pyrene	"	2.16	0.0200	0.0200	"	"	 "	86.6%	(21-141)			"	
Pyrene-dil   Section   S	Surrogate(s): Fluorene-d10		Recovery:	96.5%	Lin	nits: 25-125%	ó "						12/29/08 17:21	
Part													"	
Bis (2-ethylhexyl)phthalate	Benzo (a) pyrene-d12			88.4%		10-1259	% "						"	
Bis (2-ethylhexyl)phthalate														
Buryl benzyl phthalate   "   2.37   0.526   1.00   "   "   "   "   5.3%   "   5.12%   "   "   "   "   "   "   "   "   "	LCS Dup (8120560-BSD1)							Ext	racted:	12/17/08 10	:20			
DiribDuly Inhibitative 1 3.75 0.526 1.00 " " " " 39.8% " 4.29% " 1.00	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	
Dien-ortyl phthalate " 1.49 0.526 1.00 " " - " 37.3% " 38.4% " " Dientyl phthalate " 3.77 0.526 1.00 " " - " 94.2% " 8.04% " 10 Dientyl phthalate " 3.36 0.526 1.00 " " - " 84.1% " 63.5% " 10 Dientyl phthalate " 3.36 0.526 1.00 " " - " 84.1% " 63.5% " 10 Acenaphthene " 2.73 0.000 0.0000 " " - " 106% (34.1) 4.3% " 1229/08 17:53 Acenaphtylene " 2.64 0.000 0.0000 " " 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Butyl benzyl phthalate	"	2.37	0.526	1.00	"	"	 "	59.3%	"	5.12%	, "	"	
Diethylyphthalate  1.49	Di-n-butyl phthalate	"	3.75	0.526	1.00	"	"	 "	93.8%	"	4.29%	, "	"	
Diethyl phthalate	Di-n-octyl phthalate	"	1.49	0.526	1.00	"	"	 "	37.3%	"	38.4%	, "	"	
Shifted   Shif	Diethyl phthalate	"	3.77	0.526	1.00	"	"	 "	94.2%	"	8.04%	, "	"	
Acenaphthylene " 2.64 0.0200 0.0200 " " " 106% (34-116) 4.33% " " 1 Anthracene " 2.73 0.0200 0.0200 " " 1 2 3 100% (24-119) 6.22% " 1 3 1 3 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1	Dimethyl phthalate	"	3.36	0.526	1.00	"	"	 "	84.1%	"	6.35%	, "	"	
Anthracene " 2.54 0.0200 0.0200 " " 100% (34-11) 4.35% " 100% (34-11) 4.	Acenaphthene	"	2.73	0.0200	0.0200	"	"	 2.50	109%	(35-120)	5.05%	(35)	12/29/08 17:53	
Benzo (a) anthracene         "         2.14         0.0100         0.0200         "         "         1.0         1.0%         (24-11y)         0.0220         "         1.0         1.0         1.0%         (24-11y)         0.0220         "         1.0	Acenaphthylene	"	2.64	0.0200	0.0200	"	"	 "	106%	(34-116)	4.33%	, "	"	
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 " " " - " 92.3% (26-126) 2.03% " " " Dibenzo (a,h) anthracene " 2.32 0.0100 0.0100 " " " - " 93.0% (16-137) 5.34% " " Dibenzo (a,h) anthracene " 2.89 0.0200 0.0200 " " " - " 92.6% (20-141) 1.56% " " Thuoranthene " 2.89 0.0200 0.0200 " " " - " 116% (31-125) 7.07% " " Thuoranthene " 2.69 0.0200 0.0200 " " " - " 116% (31-125) 7.07% " " Thuoranthene " 2.32 0.0100 0.0100 " " " - " 108% (27-124) 5.24% " " Thuoranthene " 2.32 0.0100 0.0100 " " " - " 108% (34-126) 5.96% " " Thuoranthene " 2.34 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " 108% (34-126) 5.96% " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " " 108% (34-126) 5.96% " " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " " 108% (34-126) 5.96% " " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " " 108% (34-126) 5.96% " " " " Thuoranthene " 2.54 0.0200 0.0200 " " " - " " 108% (34-126) 5.96% " " " " " Thuoranthene " " 2.54 0.0200 0.0200 " " " " - " " 108% (34-126) 5.96% " " " " " " " " " " " " " " " " " " "	Anthracene	"	2.73	0.0200	0.0200	"	"	 "	109%	(24-119)	6.22%	, "	"	
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 (ghi) perylene " 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 " 2.32 0.0100 0.0100 " " " - " 108% (27-124) 5.24% " " Naphthalene " 2.32 0.0100 0.0100 " " " - " 108% (27-124) 5.24% " " Naphthalene " 2.32 0.0100 0.0200 " " " - " 108% (34-125) 5.6% " " Phenanthrene " 2.54 0.0200 0.0200 " " " - " 102% (30-113) 4.03% " " Phenanthrene " 2.71 0.0200 0.0200 " " " - " 102% (34-126) 5.96% " " Pyrene " 2.05 0.0200 0.0200 " " " - " 108% (21-141) 5.20% " " " " " Pyrene " 108% (21-141) 5.20% " " " " " " " " " " " " " " " " " " "	Benzo (a) anthracene	"	2.14	0.0100	0.0100	"	"	 "	85.8%	(36-128)	1.07%	, "	"	
Benzo (ghi) perylene " 2.31 0.0200 0.0200 " " " 92.3% (26-126) 2.03% " " Benzo (ghi) perylene " 2.31 0.0100 0.0100 " " " 93.0% (18-145) 8.72% " " Chrysene " 2.32 0.0100 0.0100 " " " 93.0% (16-137) 5.34% " " Dibenzo (a,h) anthracene " 2.89 0.0200 0.0200 " " " 92.6% (20-141) 1.56% " " Fluoranthene " 2.89 0.0200 0.0200 " " " 92.6% (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 " " " 92.9% (30-135) 1.59% " " Phenanthrene " 2.71 0.0200 0.0200 " " " 92.9% (34-126) 5.96% " " Pyrene " 2.05 0.0200 0.0200 " " " 92.9% (34-126) 5.96% " " " 92.9% (34-126) 5.96% " 92.9% (34-126) 5.96% " 92.	Benzo (a) pyrene	"	2.34	0.0100	0.0100	"	"	 "	93.8%	(17-128)	5.06%	, "	"	
Benzo (k) fluoranthene " 2.13 0.0100 0.0100 " " " 92.3% (18-145) 8.72% " " "  Chrysene " 2.32 0.0100 0.0100 " " " 93.0% (16-137) 5.34% " " "  Dibenzo (a,h) anthracene " 2.89 0.0200 0.0200 " " " 92.6% (20-141) 1.56% " " "  Fluoranthene " 2.69 0.0200 0.0200 " " " 116% (31-125) 7.07% " " " " 116mon (1,2,3-cd) pyrene  Indeno (1,2,3-cd) pyrene " 2.54 0.0200 0.0200 " " " " " 92.9% (30-135) 1.59% " " " Naphthalene  Phenanthrene " 2.71 0.0200 0.0200 " " " " 108% (34-126) 5.96% " " " Prene	Benzo (b) fluoranthene	"	2.60	0.0100	0.0100	"	"	 "	104%	(37-131)	21.2%	, "	"	
Chrysene " 2.32 0.0100 0.0100 " " " 93.0% (16-137) 5.34% " "  Dibenzo (a,h) anthracene " 2.89 0.0200 0.0200 " " " 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 " " " " 108% (34-126) 5.96% " "  Phenanthrene " 2.71 0.0200 0.0200 " " " " 108% (34-126) 5.96% " "  Pyrene " 2.05 0.0200 0.0200 " " " " 108% (34-126) 5.96% " "	Benzo (ghi) perylene	"	2.31	0.0200	0.0200	"	"	 "	92.3%	(26-126)	2.03%	, "	"	
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 " " " 108% (34-126) 5.96% " " 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% " "	Benzo (k) fluoranthene	"	2.13	0.0100	0.0100	"	"	 "	85.1%	(18-145)	8.72%	, "	"	
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% " "	Chrysene	"	2.32	0.0100	0.0100	"	"	 "	93.0%	(16-137)	5.34%	, "	"	
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% " "	Dibenzo (a,h) anthracene	"	2.32	0.0100	0.0100	"	"	 "	92.6%	(20-141)	1.56%	, "	"	
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%       "       "	Fluoranthene	"	2.89	0.0200	0.0200	"	"	 "	116%	(31-125)	7.07%	, "	"	
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%       "       "	Fluorene	"	2.69	0.0200	0.0200	"	"	 "	108%	(27-124)	5.24%	, "	"	
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%       "       "		"				"		 "					"	
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%       "       "	* * * * * * * * * * * * * * * * * * * *	"				"	"	 "					"	
Pyrene " 2.05 0.0200 0.0200 " " " 82.2% (21-141) 5.20% " "	-	"				"	"	 "					"	
<u> </u>		"				"	"	 "					"	
	Surrogate(s): Fluorene-d10		Recovery:			wita: 25 1250	ć "			` '			12/29/08 17:53	

TestAmerica Portland

Howard Holmes, Project Manager

Pyrene-d10

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.

23-150%

79.1%



PORTLAND, OR

9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 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 Spike % (Limits) % (Limits) Analyzed Notes Result Amt REC

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 Manage



9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

THE LEADER IN ENVIRONMENTAL TESTING

City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. 36238 Report Created: Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 01/21/09 13:37

#### **Notes and Definitions**

#### Report Specific Notes:

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.

Reporting limit raised due to sample matrix effects. RL1

#### **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.

Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet

on a Wet Weight Basis.

RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries). RPD

METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table. MRL

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 -Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and Limits

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



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	00105/18				
CLIENT City of Portland	INVOICE TO:	Work Order #: 10548				
REPORT TO:	C0 and $C0$	TURNAROUND REQUEST				
REPORT TO: ADDRESS: Jennifer Shackel ford	Charles Lytle	in Business Days * Organic & Inorganic Analyses				
PHONE: FAX:	P.O. NUMBER: 34238	7 5 4 3 2 1 <1 Petroleum Hydrocarbon Analyses				
PROJECT NAME: Partland Harbor	PRESERVATIVE	Petroleum Hydrocarbon Analyses				
PROJECT NUMBER: Starmwater Sa		5 4 3 2 1 <1				
SAMPLED BY:	REQUESTED ANALYSES	OTHER Specify:				
7000		* Turnaround Requests less than standard may incur Rush Charges.				
CLIENT SAMPLE SAMPLING DATE/TIME VAN DATE/TIME		MATRIX # OF LOCATION/ TA				
FO081475 12/12/08 1157 X X		COMMENTS WORD				
1,1,7/		W Z				
		W 2				
1332 X X		W Z				
1478 1310 X X						
		W 2				
		WZ				
6 1480 ) 1120 X X		WZ				
$\frac{1481}{1344} \times \times$						
1482 - XX		WZ				
8 1 1 1 0 2		W   Z				
9						
10						
RELEASED BY KUSTLA WAS A COLOCK NO.	DATE: 12/16/8 RECEIVED BY: 150CH					
PRINT NAME:  PRINT	MIME 13:24 PRINT NAME: Babt	DATE: 12/16/8				
PRINT NAME: DOS FIRM: TAD	TIME: 16.56 PRINT NAME: NAME: NAME:	DATE: 12/110/18				
ADDITIONAL REMARKS: Place U.S. CALL PRULAL	Li del l'al marie de la company de la compan	FIRM: TIME: TO TEMP:				
CACAL WAS UNS FORM I MITTIPA	Halate list as for UIC project of Ly	w DU, 13 11				
COngenera -	to Pace Analytical -	7 TAL-1000(0408)				
J	/ handes	2-1				

TestAmerica Sample Receipt Checklist Cooler (D(c) Work Order No. 110548 Received by: Unpacked by: Logged-in by: \*(section B) Client: (6 Initials: Temperature out of range: Initials:---Not enough ice \*\*\*ESI Clients (see Section C) No Ice \_lce Melted Diai #1 \_W/in 4 Hours Digi #2 Other: glass NA (oil/air samples, ESI client) Temperature Blank: Custody Seals: (# В Sample Status: (If N circled, see NOD) Signature: Y N Dated: General: Received from, None Intact? Ν **TA Courier** Container Type: # Containers Match COC? \_Senvoy none given #Cooler(s) UPS IDs Match COC? Ν #Box(s) Fed Ex For Analyses Requested: None ( #Other: Client Cyanide Checked? TDP Correct Type & Preservation? Coolant Type: DHL Gelice Adequate Volume? Ν SDS oose Ice Within Hold Time? \_\_\_\_Mid-Valley None Volatiles/ Oil Quality: GS/TA VOAs/ Syringes free of Headspace? Y Packing Material: GS/Senvoy NA **Bubble Bags** Other: TB on COC? not provided NA Styrøfoam Cubbies Metals: **Peanuts HNO3 Preserved?** NA None ( Other: **Dissolved Metals Filtered?** ESI Clients Only: FED EX/ UPS: Was the tracking paper keepable? Temperature Blank: °C not provided Digi: #1 #2 If circled NO, what is the Tracking number? \_\_ All preserved bottles checked NA (voas/soils/all unp.) FED EX Goldstreak **UPS** All preserved accordingly? DHL Other: \_\_\_\_ Y N (see NOD) NA (voas/soils/all unp.) Project Managers: Comments:

(Initial/Date)

PM Reviewed:



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

### **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:

got C. Muye

Scott Unze, Project Manager (612) 607-6383

(612) 607-6444 (fax) scott.unze@pacelabs.com



**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.

January 20, 2009



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

#### **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 precsion 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 PRL0548

#### 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

			<u> </u>			
Units	Due	Expires		Comments		
		······································			108655	000
				FZ9 60	11176	
			12/12/08 11:57		14/2	
ug/l	12/31/08	06/10/09 11:57		***209 Congeners	s to Pace	
						00
Water			12/12/08 13:21	PO DE	14/6	
ug/l	12/31/08	06/10/09 13:21		***209 Congeners	s*** to Pace	
						00
Water		Sampled:	12/12/08 13:32	FO 081	1477	
ug/l	12/31/08	06/10/09 13:32		***209 Congeners	s*** to Pace	
					- 01/	00
Water		Sampled:	12/12/08 13:10	FO 08		
ug/l	12/31/08	06/10/09 13:10		***209 Congeners	*** to Pace	
· · · · · · · · · · · · · · · · · · ·						3 0
Water		Sampled:	12/12/08 11:44	FODE	314 6	
ug/l	12/31/08	06/10/09 11:44		***209 Congeners	s*** to Pace 🏅	
						A A
Water		Sampled:	12/12/08 11:20	FO 08	1480	00
ug/l	12/31/08	06/10/09 11:20		***209 Congeners	*** to Pace	
		•				
	water ug/l  Water ug/l  Water ug/l	Water         ug/l       12/31/08         Water       12/31/08         Water       12/31/08         Water       12/31/08         Water       12/31/08         Water       12/31/08         Water       12/31/08	Water         Sampled:           ug/l         12/31/08         06/10/09 11:57           Water         Sampled:           ug/l         12/31/08         06/10/09 13:21           Water         Sampled:           ug/l         12/31/08         06/10/09 13:32           Water         Sampled:           ug/l         12/31/08         06/10/09 13:10           Water         Sampled:           ug/l         12/31/08         06/10/09 11:44           Water         Sampled:           ug/l         12/31/08         06/10/09 11:44           Water         Sampled:           Sampled:         Sampled:	Water         Sampled: 12/12/08 11:57           ug/l         12/31/08         06/10/09 11:57           Water         Sampled: 12/12/08 13:21           ug/l         12/31/08         06/10/09 13:21           Water         Sampled: 12/12/08 13:32           ug/l         12/31/08         06/10/09 13:32           Water         Sampled: 12/12/08 13:10           ug/l         12/31/08         06/10/09 13:10           Water         Sampled: 12/12/08 11:44           ug/l         12/31/08         06/10/09 11:44           Water         Sampled: 12/12/08 11:20	Water         Sampled: 12/12/08 11:57         FO DE           ug/l         12/31/08 06/10/09 11:57         ***209 Congeners           Water         Sampled: 12/12/08 13:21         FO DE           ug/l         12/31/08 06/10/09 13:21         ***209 Congeners           Water         Sampled: 12/12/08 13:32         FO DE           water         Sampled: 12/12/08 13:32         ****209 Congeners           Water         Sampled: 12/12/08 13:10         ****209 Congeners           Water         Sampled: 12/12/08 13:10         ****209 Congeners           Water         Sampled: 12/12/08 11:44         FO DE           Water         Sampled: 12/12/08 11:44         ****209 Congeners           Water         Sampled: 12/12/08 11:20         FO DE           Water         Sampled: 12/12/08 11:20         FO DE	Water   Sampled: 12/12/08 11:57   FO 8 14 75

Released By Date/

Released Report No.....1086550\_1668 ime

//<u>////08\_08</u>\$5 Date/Time Repaired By

12/18/08 0437 T-1.4.

Received By

Date/Time Page 1 of 2 Page 4 of 73

### SUBCONTRACT ORDER

# TestAmerica Portland PRL0548

Analysis	Units	Due	Expires	Comments
Sample ID: PRL0548-07	Water		Sampled: 12/12/08 13:44	108655000, FO 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	FO081482 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)				

	sv. acminara amignaram abawa:	<u> </u>
Pace Analytical Client 1	Name: 195+ Au	1977 ca Project # 1086557
<i>:</i>	TO ME TO THE PARTY OF THE PARTY	100000
Courier: Ded Ex UPS USPS Tracking #: 976 57118457	Client Commercial Pace	Other Optional Proj. Due Date:
Custody Seal on Cooler/Box Present:	Nes 🗌 no Seals intact: 🛭	Ges ☐ no
Packing Material: 🔲 Bubble Wrap	Bubble Bags None Other	Temp Blank: Yes / No
Thermometer Used 80344042 179425	The same of the sa	
Cooler Temperature 1. 4"	Biological Tissue is Frozen:	2 process 1400 DCG
Temp should be above freezing to 6°C	Comments	contents:
Chain of Custody Present:	LEVES []No []N/A 1.	2(3-1)
Chain of Custody Filled Out:	Pes DNo DNA 2	THE REAL PROPERTY OF THE PROPE
Chain of Custody Relinquished:	ØKØs □No □N/A 3.	The second secon
Sampler Name & Signature on COC:	□Yes WA 4.	2865 at 1604 100 \$1004 100 to 1605 1005 1005 1005 1006 1006 1006 1006
Samples Arrived within Hold Time:	Maries ONO DINA 5.	SOUTH COMBREACH MONTH CONTINUES AND SPACED AND AND AND AND AND AND AND AND AND AN
Short Hold Time Analysis (<72hr):	Dyes Willio DN/A 6.	A SAMPLETT OF LABORITY STORES AND A SECURITY STORES AND A SECURITY STORES AND ASSOCIATION OF THE
Rush Turn Around Time Requested:	Dyes 1000 DNA 7.	SECTION OF THE PROPERTY OF THE
Sufficient Volume:	Wes DNo DNA 8.	ACCUMENTATION THE EXPLOSE GYET THE CONTRACT OF
Correct Containers Used:	Ges DNO DNA 9	AND RESIDENCE AND ADDRESS STEEL ST
-Pace Containers Used:		
Containers Intact:	Liyes (No Onia 10.	NELL-MANAGEMENT (VIIII) AND
Filtered volume received for Dissolved tests	AND THE RESIDENCE AND ADDRESS OF THE PROPERTY	
Sample Labels match COC:	Dyes DNo AMA 11.	
	LIT ONO DIMA 12.	
-Includes date/time/ID/Analysis Matrix: All containers needing acid/base preservation have been	7	在上午中,我们我们就要看到人们还是在我们的身份,一个时间,我们们的时候,他们就是这个人们的,我们就是这个人们的,我们就是一个人们的,我们们们的一个人们的,他们们
checked. Noncompliance are noted in 13.	□Yes □No DAOVA 13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	n □yes □no □AAA	•
Exceptions: VOA,Coliform, TOC, Oil and Grease, Wi-DRO (wa	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	□Yes □No □NNA 14.	
Headspace in VOA Vials ( >6mm):	□Yes □No □N/A 15.	THE RECOGNISION AND AND A THE BEALTHANDAY OF THE WORLD BEALTH AND A THE STATE OF TH
Trip Blank Present:	□Yes □No ☑N/A 16.	
Trip Blank Custody Seals Present	UYes UNO DA/A	
Pace Trip Blank Lot # (if purchased):		
Client Notification/ Resolution:		Field Data Required? Y / N
Person Contacted:	Date/Time:	•
Commantal Paralution:		THE STATE OF THE S
		p p
Project Manager Review;	( a <i>)</i>	Date: 12/19/08

Note: When experte No disort 0.86550 ind 6666 VI & WED 12/16/08

Page 6 of 73

Certification Office (Le. out of hold incorrect preservative out of targe incorrect contained)

## Appendix B

Sample Analysis Summary



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID Filename

Dry Weight Extracted

PRL0548-06;FO081480 1086550006 P90118A\_08

Injected By

**ICAL ID** 

BAL

Total Amount Extracted % Moisture

990 mL NA

NA

Matrix Water Dilution NA Collected 12/12/2008 P90118A01 Received 12/18/2008 P90118A 02 Extracted 01/05/2009

CCal Filename(s) Method Blank ID BLANK-18669

Analyzed 01/18/2009 22:04

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.121	3.14	2.0	1.58	79
13C-4-MoCB	3	10.189	3.11	2.0	1.59	80
13C-2,2'-DiCB	4	10.500	1.54	2.0	1.81	91
13C-4,4'-DiCB	15	18.444	1.54	2.0	1.74	87
13C-2,2',6-TrCB	19	14.778	1.06	2.0	1.93	96
13C-3,4,4'-TrCB	37	26.759	1.02	2.0	1.56	78
13C-2,2',6,6'-TeCB	54	18.744	0.79	2.0	1.62	81
13C-3,4,4',5-TeCB	81	34.121	0.77	2.0	1.47	73
13C-3,3',4,4'-TeCB	77	34.707	0.78	2.0	1.53	77
13C-2,2',4,6,6'-PeCB	104	25.334	1.61	2.0	1.91	96
13C-2,3,3',4,4'-PeCB	105	38.363	1.51	2.0	1.27	64
13C-2,3,4,4',5-PeCB	114	37.709	1.54	2.0	1.23	62
13C-2,3',4,4',5-PeCB	118	37.173	1.59	2.0	1.29	64
13C-2,3',4,4',5'-PeCB	123	36.820	1.57	2.0	1.27	64
13C-3,3',4,4',5-PeCB	126	41.600	1.50	2.0	1.10	55
13C-2,2',4,4',6,6'-HxCB	155	31.639	1.27	2.0	2.44	122
13C-HxCB (156/157)	156/157	44.668	1.23	4.0	2.40	60
13C-2,3',4,4',5,5'-HxĆB	167	43.511	1.26	2.0	1.28	64
13C-3,3',4,4',5,5'-HxCB	169	48.005	1.22	2.0	1.11	56
13C-2,2',3,4',5,6,6'-HpCB	188	37.676	1.03	2.0	4.69	235 P
13C-2,3,3',4,4',5,5'-HpCB	189	50.535	1.04	2.0	1.88	94
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.193	0.90	2.0	3.87	193 P
13C-2,3,3',4,4',5,5',6-OcCB	205	53.121	0.91	2.0	1.79	90
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.846	0.77	2.0	2.14	107
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.996	0.80	2.0	2.58	129
13CDeCB	209	56.419	0.69	2.0	2.07	104
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.148	1.03	2.0	1.56	78
13C-2,3,3',5,5'-PeCB	111	34.791	1.57	2.0	1.75	88
13C-2,2 <sup>'</sup> ,3,3 <sup>'</sup> ,5,5 <sup>'</sup> ,6-HpCB	178	40.845	1.07	2.0	2.10	105
Recovery Standards						
13C-2,5-DiCB	9	13.316	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.294	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.890	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.375	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	52.626	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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-06;FO081480 1086550006 P90118A\_08

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.505
2				ND		0.505
3				ND		0.505
4				ND		0.505
5				ND		0.505
6				ND		0.505
7				ND		0.505
8				ND		0.505
9				ND		0.505
10				ND		0.505
11		17.701	1.61	0.653		0.606
12	12/13		1.01	ND		0.505
13	12/13			ND ND		0.505
14	12/13			ND ND		0.505
15				ND ND		0.505
16				ND ND		0.505
						0.505
17	40/00			ND		0.505
18	18/30			ND		0.505
19	00/00			ND		0.505
20	20/28			ND		0.606
21	21/33			ND		0.505
22				ND		0.505
23				ND		0.505
24				ND		0.505
25				ND		0.505
26	26/29			ND		0.505
27				ND		0.505
28	20/28			ND		0.606
29	26/29			ND		0.505
30	18/30			ND		0.505
31				ND		0.505
32				ND		0.505
33	21/33			ND		0.505
34				ND		0.505
35				ND		0.505
36				ND		0.505
37				ND		0.505
38				ND		0.505
39				ND		0.505
40	40/41/71			ND		0.505
41	40/41/71			ND		0.505
42	10, 11,71			ND		0.505
43				ND		0.505
44	44/47/65			ND		0.606
45	45/51			ND ND		0.505
45 46	45/51			ND ND		0.505
46 47	44/47/65					
	44/47/00			ND ND		0.606
48				ND		0.505

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-06;FO081480 1086550006 P90118A\_08

	. •					
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		0.505
50	50/53			ND		0.505
51	45/51			ND		0.505
52	10/01	24.328	0.78	0.614		0.505
53	50/53			ND		0.505
54	00/00			ND		0.505
55				ND		0.505
56				ND		0.505
57				ND		0.505
58				ND		0.505
59	59/62/75			ND		0.505
60	33/02/13			ND		0.505
61	61/70/74/76	29.694	0.75	0.634		0.505
62	59/62/75	25.054		ND		0.505
63	39/02/13			ND		0.505
64				ND		0.505
65	44/47/65			ND		0.606
66	44/47/00			ND		0.505
67				ND		0.505
68				ND		0.505
69	49/69			ND		0.505
70	61/70/74/76	29.694	0.75	(0.634)		0.505
70 71	40/41/71	29.094	0.75	(0.034) ND		0.505
72	40/41/71			ND ND		0.505
73				ND ND		0.505
73 74	61/70/74/76	29.694	0.75	(0.634)		0.505
75	59/62/75	29.094	0.75	(0.034) ND		0.505
76	61/70/74/76	29.694	0.75	(0.634)		0.505
70 77	01/10/14/10	29.094	0.75	(0.034) ND		0.505
78				ND		0.505
78 79				ND ND		0.505
80				ND ND		0.505
81				ND ND		0.505
82				ND ND		0.505
83				ND ND		0.505
84				ND ND		0.505
85	85/116/117			ND ND		0.606
86	86/87/97/108/119/125			ND ND		1.01
87	86/87/97/108/119/125			ND ND		1.01
88	88/91			ND ND		0.505
89	00/91			ND ND		0.505
90	90/101/113	31.924	1.54	1.31		0.505
90 91	88/91	31.924	1.54	ND		0.505
91	00/31			ND ND		0.505
92 93	93/98/100/102			ND ND		0.505
93 94	33/30/100/102			ND ND		0.757
9 <del>4</del> 95		28.687	1.51	กม 0.971		0.505
95 96		20.007	1.51	0.971 ND		0.505
90				ND		0.505

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Loss than 10 times higher than method blank love

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-06;FO081480 1086550006 P90118A\_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		1.01
98	93/98/100/102			ND		0.757
99				ND		0.505
100	93/98/100/102			ND		0.757
101	90/101/113	31.924	1.54	(1.31)		0.505
102	93/98/100/102			` NĎ		0.757
103				ND		0.505
104				ND		0.505
105				ND		0.505
106				ND		0.505
107	107/124			ND		0.505
108	86/87/97/108/119/125			ND		1.01
109	30,01,01,100,110,120			ND		0.505
110	110/115	33.986	1.55	1.25		0.505
111	110/110			ND		0.505
112				ND		0.505
113	90/101/113	31.924	1.54	(1.31)		0.505
114	33, 13.1, 1.13			ND		0.505
115	110/115	33.986	1.55	(1.25)		0.505
116	85/116/117			ND		0.606
117	85/116/117			ND		0.606
118	03/110/117	37.189	1.54	0.761		0.505
119	86/87/97/108/119/125			ND		1.01
120	00/07/97/100/119/129			ND		0.505
121				ND		0.505
122				ND ND		0.505
123				ND ND		0.505
123	107/124			ND ND		0.505
125	86/87/97/108/119/125			ND		1.01
126	00/07/97/100/119/123			ND ND		0.505
127				ND ND		0.505
127	128/166			ND ND		1.01
129	129/138/163	40.409	1.23	2.38		0.505
130	129/136/103	40.409	1.23	2.36 ND		0.505
130				ND ND		0.505
				0.747		
132		37.240 	1.26			0.505
133	404/440			ND		0.505
134	134/143		4.00	ND		0.505
135	135/151	34.992	1.23	1.02		0.515
136				ND ND		0.505
137	100/100/100	40.400		ND (2.20)		0.505
138	129/138/163	40.409	1.23	(2.38)		0.505
139	139/140			ND		0.505
140	139/140			ND		0.505
141				ND		0.505
142	40.4/4.40			ND		0.505
143	134/143			ND		0.505
144				ND		0.505

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
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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-06;FO081480 1086550006 P90118A\_08

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
145				ND		0.505
146				ND		0.505
147	147/149	35.948	1.21	2.08		0.505
148				ND		0.505
149	147/149	35.948	1.21	(2.08)		0.505
150				` NĎ		0.505
151	135/151	34.992	1.23	(1.02)		0.515
152				` NĎ		0.505
153	153/168	39.151	1.28	2.29		0.606
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	40.409	1.23	(2.38)		0.505
164				` NĎ		0.505
165				ND		0.505
166	128/166			ND		1.01
167				ND		0.505
168	153/168	39.151	1.28	(2.29)		0.606
169				` NĎ		0.505
170		47.351	0.97	0.774		0.505
171	171/173			ND		0.505
172				ND		0.505
173	171/173			ND		0.505
174		42.656	1.04	0.719		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	46.110	1.04	1.66		0.505
181				ND		0.505
182				ND		0.505
183	183/185	42.455	1.04	0.533		0.505
184				ND		0.505
185	183/185	42.455	1.04	(0.533)		0.505
186				NĎ		0.505
187		41.818	1.07	0.946		0.505
188				ND		0.505
189				ND		0.505
190				ND		0.505
191				ND		0.505
192				ND		0.505

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
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I = Interference
ng's = Nanograms



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-06;FO081480 1086550006 P90118A\_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.110	1.04	(1.66)		0.505
194				ND		0.505
195				ND		0.505
196				ND		0.707
197	197/200			ND		2.52
198	198/199			ND		0.505
199	198/199			ND		0.505
200	197/200			ND		2.52
201				ND		0.505
202				ND		0.505
203				ND		0.505
204				ND		0.505
205				ND		0.505
206				ND		0.505
207				ND		0.505
208				ND		0.505
209				ND		0.505

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



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-06;FO081480 1086550006 P90118A\_08

Congener Group	Concentration ng/L	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	0.653	
Total Trichloro Biphenyls	ND	
Total Tetrachloro Biphenyls	1.25	
Total Pentachloro Biphenyls	4.30	
Total Hexachloro Biphenyls	8.52	
Total Heptachloro Biphenyls	4.63	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	19.3	

ND = Not Detected



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID Filename

Injected By

Total Amount Extracted % Moisture

Dry Weight Extracted ICAL ID

CCal Filename(s) Method Blank ID PRL0548-07;FO081481

1086550007

P90118A\_09

BAL 999 mL NA NA

P90118A01 P90118A\_02 BLANK-18669 Matrix Water Dilution NA

Collected 12/12/2008 Received 12/18/2008 Extracted 01/05/2009

Analyzed 01/18/2009 23:05

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.145	3.18	2.0	1.55	78
13C-4-MoCB	3	10.201	3.23	2.0	1.57	79
13C-2,2'-DiCB	4	10.524	1.56	2.0	1.80	90
13C-4,4'-DiCB	15	18.457	1.54	2.0	1.63	82
13C-2,2',6-TrCB	19	14.790	1.07	2.0	1.85	93
13C-3,4,4'-TrCB	37	26.760	1.02	2.0	1.52	76
13C-2,2',6,6'-TeCB	54	18.744	0.81	2.0	1.42	71
13C-3,4,4',5-TeCB	81	34.105	0.77	2.0	1.63	82
13C-3,3',4,4'-TeCB	77	34.692	0.77	2.0	1.79	<u>89</u>
13C-2,2',4,6,6'-PeCB	104	25.318	1.60	2.0	1.55	77
13C-2,3,3',4,4'-PeCB	105	38.331	1.57	2.0	1.47	73
13C-2,3,4,4',5-PeCB	114	37.677	1.55	2.0	1.39	70
13C-2,3',4,4',5-PeCB	118	37.140	1.57	2.0	1.46	73
13C-2,3',4,4',5'-PeCB	123	36.805	1.53	2.0	1.43	71
13C-3,3',4,4',5-PeCB	126	41.568	1.56	2.0	1.35	67
13C-2,2',4,4',6,6'-HxCB	155	31.623	1.27	2.0	1.77	89
13C-HxCB (156/157)	156/157	44.636	1.21	4.0	2.45	61
13C-2,3',4,4',5,5'-HxCB	167	43.479	1.24	2.0	1.32	66
13C-3,3',4,4',5,5'-HxCB	169	47.957	1.23	2.0	1.13	56
13C-2,2',3,4',5,6,6'-HpCB	188	37.643	1.06	2.0	3.38	169 P
13C-2,3,3',4,4',5,5'-HpCB	189	50.477	1.01	2.0	1.66	83 162 P
13C-2,2',3,3',5,5',6,6'-OcCB	202 205	43.161	0.92	2.0	3.24 1.71	162 P 86
13C-2,3,3',4,4',5,5',6-OcCB	206	53.042 54.766	0.89 0.77	2.0 2.0	1.71	90
13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.938	0.77	2.0	2.36	118
13C2,2,3,3,4,5,5,6,6-NOCB	208	56.361	0.77	2.0	1.93	96
I3CDeCB	209	30.301	0.72	2.0	1.93	90
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.148	1.06	2.0	1.41	71
13C-2,3,3',5,5'-PeCB	111	34.776	1.59	2.0	1.73	86
13C-2,2',3,3',5,5',6-HpCB	178	40.813	1.08	2.0	1.98	99
Recovery Standards						
13C-2,5-DiCB	9	13.328	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.295	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.891	1.57	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.343	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	52.567	0.96	2.0	NA	NA

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-07;FO081481 1086550007 P90118A\_09

		EML
	MPC g/L	ng/L
1 ND		0.501
2 ND		0.501
3 ND		0.501
4 ND		0.501
5 ND		0.501
6 ND		0.501
7 ND		0.501
8 ND		0.501
9 ND		0.501
10 ND		0.501
11 ND		0.601
12 12/13 ND		0.501
13 12/13 ND		0.501
14 ND		0.501
15 ND		0.501
16 ND		0.501
17 ND		0.501
40 40/00 ND		0.501
19 ND 20 20/28 ND		0.501
		0.601
21 21/33 ND		0.501
22 ND		0.501
23 ND		0.501
24 ND		0.501
25 ND		0.501
26 26/29 ND		0.501
27 ND		0.501
28 20/28 ND		0.601
29 26/29 ND		0.501
30 18/30 ND		0.501
31 ND		0.501
32 ND		0.501
33 21/33 ND		0.501
34 ND		0.501
35 ND		0.501
36 ND		0.501
37 ND		0.501
38 ND		0.501
39 ND		0.501
40 40/41/71 ND		0.501
41 40/41/71 ND		0.501
42 ND		0.501
43 ND		0.501
44 44/47/65 ND		0.601
45 45/51 ND		0.501
46 ND		0.501
47 44/47/65 ND		0.601
48 ND		0.501

Conc = Concentration

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-07;FO081481 1086550007 P90118A\_09

				Concentration	<b>EMPC</b>	EML
<b>IUPAC</b>	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
49	49/69			ND		0.501
50	50/53			ND		0.501
51	45/51			ND		0.501
52	10/01			ND		0.501
53	50/53			ND		0.501
54	30/33			ND		0.501
55				ND		0.501
56				ND		0.501
57				ND		0.501
58				ND		0.501
59	59/62/75			ND		0.501
60	39/02/13			ND ND		0.501
61	61/70/74/76			ND ND		
						0.501
62	59/62/75			ND ND		0.501
63				ND ND		0.501
64	44/47/05			ND		0.501
65	44/47/65			ND		0.601
66				ND		0.501
67				ND		0.501
68				ND		0.501
69	49/69			ND		0.501
70	61/70/74/76			ND		0.501
71	40/41/71			ND		0.501
72				ND		0.501
73				ND		0.501
74	61/70/74/76			ND		0.501
75	59/62/75			ND		0.501
76	61/70/74/76			ND		0.501
77				ND		0.501
78				ND		0.501
79				ND		0.501
80				ND		0.501
81				ND		0.501
82				ND		0.501
83				ND		0.501
84				ND		0.501
85	85/116/117			ND		0.601
86	86/87/97/108/119/125			ND		1.00
87	86/87/97/108/119/125			ND		1.00
88	88/91			ND		0.501
89	00/31			ND		0.501
90	90/101/113			ND		0.501
91	88/91			ND ND		0.501
92	00/31			ND ND		0.501
92 93	93/98/100/102			ND ND		0.501
93 94	33/30/100/10Z			ND ND		0.751
94 95						0.501
				ND ND		
96				ND		0.501

Conc = Concentration

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-07;FO081481 1086550007 P90118A\_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		1.00
98	93/98/100/102			ND		0.751
99				ND		0.501
100	93/98/100/102			ND		0.751
101	90/101/113			ND		0.501
102	93/98/100/102			ND		0.751
103				ND		0.501
104				ND		0.501
105				ND		0.501
106				ND		0.501
107	107/124			ND		0.501
108	86/87/97/108/119/125			ND		1.00
109				ND		0.501
110	110/115			ND		0.501
111				ND		0.501
112				ND		0.501
113	90/101/113			ND		0.501
114				ND		0.501
115	110/115			ND		0.501
116	85/116/117			ND		0.601
117	85/116/117			ND		0.601
118				ND		0.501
119	86/87/97/108/119/125			ND		1.00
120				ND		0.501
121				ND		0.501
122				ND		0.501
123				ND		0.501
124	107/124			ND		0.501
125	86/87/97/108/119/125			ND		1.00
126				ND		0.501
127	400/400			ND		0.501
128	128/166			ND		1.00
129	129/138/163			ND		0.501
130				ND		0.501
131				ND ND		0.501
132 133				ND ND		0.501
134	124/142			ND ND		0.501
134	134/143 135/151			ND ND		0.501 0.511
136	135/151			ND ND		
137				ND ND		0.501 0.501
138	129/138/163			ND ND		0.501
139	139/140			ND ND		0.501
140	139/140			ND ND		0.501
140	133/140			ND ND		0.501
142				ND ND		0.501
142	134/143			ND ND		0.501
143	107/170			ND ND		0.501
177				ND		0.501

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-07;FO081481 1086550007 P90118A\_09

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
145				ND		0.501
146				ND		0.501
147	147/149			ND		0.501
148				ND		0.501
149	147/149			ND		0.501
150				ND		0.501
151	135/151			ND		0.511
152				ND		0.501
153	153/168			ND		0.601
154				ND		0.501
155				ND		0.501
156	156/157			ND		1.00
157	156/157			ND		1.00
158	100/101			ND		0.501
159				ND		0.501
160				ND		0.501
161				ND		0.501
162				ND		0.501
163	129/138/163			ND		0.501
164	123/133/133			ND		0.501
165				ND		0.501
166	128/166			ND		1.00
167	120/100			ND		0.501
168	153/168			ND		0.601
169	155/166			ND ND		0.501
170				ND ND		0.501
170	171/173			ND ND		0.501
171	171/173			ND ND		0.501
172	171/173			ND ND		0.501
173	17 1/173			ND ND		0.501
174				ND ND		0.501
175				ND ND		0.501
176				ND ND		0.501
177				ND ND		0.501
178				ND ND		0.501
179	180/193			ND ND		0.501
181	160/193			ND ND		0.501
182				ND ND		0.501
102	400/405			ND ND		0.501
183	183/185					0.501
184	400/405			ND ND		0.501
185	183/185			ND ND		0.501
186				ND		0.501
187				ND ND		0.501
188				ND ND		0.501
189				ND ND		0.501
190				ND		0.501
191				ND		0.501
192				ND		0.501

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-07;FO081481 1086550007 P90118A\_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		0.501
194				ND		0.501
195				ND		0.501
196				ND		0.701
197	197/200			ND		2.50
198	198/199			ND		0.501
199	198/199			ND		0.501
200	197/200			ND		2.50
201				ND		0.501
202				ND		0.501
203				ND		0.501
204				ND		0.501
205				ND		0.501
206				ND		0.501
207				ND		0.501
208				ND		0.501
209				ND		0.501

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



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-07;FO081481 1086550007 P90118A\_09

Congener Group	Concentration	
Congener Group	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



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID Filename

Injected By BAL

Total Amount Extracted % Moisture

Dry Weight Extracted **ICAL ID** 

CCal Filename(s) Method Blank ID

PRL0548-08;FO081482

1086550008 P90118A\_07

992 mL NA NA P90118A01 P90118A 02

BLANK-18669

Matrix Water Dilution NA

Collected 12/12/2008 Received 12/18/2008 Extracted 01/05/2009 Analyzed 01/18/2009 21:03

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.145	3.17	2.0	1.43	71
13C-4-MoCB	3	10.201	2.82	2.0	1.52	76
13C-2,2'-DiCB	4	10.525	1.58	2.0	1.66	83
13C-4,4'-DiCB	15	18.457	1.55	2.0	1.63	81
13C-2,2',6-TrCB	19	14.790	1.07	2.0	1.76	88
13C-3,4,4'-TrCB	37	26.760	1.02	2.0	1.45	73
13C-2,2',6,6'-TeCB	54	18.744	0.80	2.0	1.49	75
13C-3,4,4',5-TeCB	81	34.122	0.77	2.0	1.34	67
13C-3,3',4,4'-TeCB	77	34.726	0.77	2.0	1.41	71
13C-2,2',4,6,6'-PeCB	104	25.335	1.62	2.0	1.78	89
13C-2,3,3',4,4'-PeCB	105	38.365	1.52	2.0	1.16	58
13C-2,3,4,4',5-PeCB	114	37.711	1.55	2.0	1.11	56
13C-2,3',4,4',5-PeCB	118	37.174	1.54	2.0	1.19	59
13C-2,3',4,4',5'-PeCB	123	36.822	1.53	2.0	1.18	59
13C-3,3',4,4',5-PeCB	126	41.601	1.50	2.0	1.01	51
13C-2,2',4,4',6,6'-HxCB	155	31.640	1.28	2.0	2.30	115
13C-HxCB (156/157)	156/157	44.670	1.23	4.0	2.22	56
13C-2,3',4,4 <sup>'</sup> ,5,5'-HxCB	167	43.513	1.23	2.0	1.22	61
13C-3,3',4,4',5,5'-HxCB	169	48.007	1.24	2.0	1.06	53
13C-2,2',3,4',5,6,6'-HpCB	188	37.677	1.06	2.0	4.25	213 P
13C-2,3,3',4,4',5,5'-HpCB	189	50.541	1.02	2.0	1.72	86
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.211	0.89	2.0	3.57	178 P
13C-2,3,3',4,4',5,5',6-OcCB	205	53.128	0.89	2.0	1.65	83
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.831	0.82	2.0	1.98	99
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.981	0.81	2.0	2.47	124
13CDeCB	209	56.426	0.68	2.0	1.93	97
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.165	1.04	2.0	1.58	79
13C-2,3,3',5,5'-PeCB	111	34.809	1.57	2.0	1.78	89
13C-2,2',3,3',5,5',6-HpCB	178	40.863	1.03	2.0	2.15	107
Recovery Standards						
13C-2,5-DiCB	9	13.329	1.55	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.295	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.908	1.56	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.377	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	52.632	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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-08;FO081482 1086550008 P90118A\_07

				Concentration	<b>EMPC</b>	EML
<b>IUPAC</b>	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.504
2				ND		0.504
3				ND		0.504
4				ND		0.504
5				ND		0.504
6				ND		0.504
7				ND		0.504
8				ND		0.504
9				ND		0.504
10				ND		0.504
11		17.714	1.47	0.778		0.605
12	12/13	17.7 1 <del>4</del> 	1.47	0.778 ND		0.504
13	12/13			ND ND		0.504
14	12/13			ND ND		0.504
15				ND ND		0.504
16				ND ND		0.504
						0.504
17	40/20			ND ND		0.504
18	18/30			ND		0.504
19	00/00			ND		0.504
20	20/28			ND		0.605
21	21/33			ND		0.504
22				ND		0.504
23				ND		0.504
24				ND		0.504
25				ND		0.504
26	26/29			ND		0.504
27				ND		0.504
28	20/28			ND		0.605
29	26/29			ND		0.504
30	18/30			ND		0.504
31				ND		0.504
32				ND		0.504
33	21/33			ND		0.504
34				ND		0.504
35				ND		0.504
36				ND		0.504
37				ND		0.504
38				ND		0.504
39				ND		0.504
40	40/41/71			ND		0.504
41	40/41/71			ND		0.504
42				ND		0.504
43				ND		0.504
44	44/47/65			ND		0.605
45	45/51			ND		0.504
46				ND		0.504
47	44/47/65			ND		0.605
48				ND		0.504

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-08;FO081482 1086550008 P90118A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		0.504
50	50/53			ND		0.504
51	45/51			ND		0.504
52	. 5, 5 .	24.329	0.77	0.730		0.504
53	50/53			ND		0.504
54	30/33			ND		0.504
55				ND		0.504
56				ND		0.504
57				ND		0.504
57 58				ND ND		
58	F0/00/3F					0.504
59	59/62/75			ND		0.504
60				ND		0.504
61	61/70/74/76	29.695	0.74	0.713		0.504
62	59/62/75			ND		0.504
63				ND		0.504
64				ND		0.504
65	44/47/65			ND		0.605
66				ND		0.504
67				ND		0.504
68				ND		0.504
69	49/69			ND		0.504
70	61/70/74/76	29.695	0.74	(0.713)		0.504
71	40/41/71			ND		0.504
72	10/ 11// 1			ND		0.504
73				ND		0.504
74	61/70/74/76	29.695	0.74	(0.713)		0.504
7 <del>5</del>	59/62/75	29.095		(0.713) ND		0.504
76	61/70/74/76	29.695	0.74	(0.713)		0.504
70 77	01/10/14/10			(0.713) ND		0.504
78				ND		0.504
79				ND		0.504
80				ND		0.504
81				ND		0.504
82				ND		0.504
83				ND		0.504
84				ND		0.504
85	85/116/117			ND		0.605
86	86/87/97/108/119/125			ND		1.01
87	86/87/97/108/119/125			ND		1.01
88	88/91			ND		0.504
89				ND		0.504
90	90/101/113	31.925	1.61	1.80		0.504
91	88/91			ND		0.504
92				ND		0.504
93	93/98/100/102			ND		0.756
94	33, 33, 130, 132			ND		0.504
95		28.689	1.55	1.38		0.504
95 96		20.009	1.55	ND		0.504
90				טאו		0.304

Conc = Concentration

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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



# Method 1668A Polychlorobiphenyl **Sample Analysis Results**

Client Sample ID Lab Sample ID Filename

PRL0548-08;FO081482 1086550008 P90118A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		1.01
98	93/98/100/102			ND		0.756
99				ND		0.504
100	93/98/100/102			ND		0.756
101	90/101/113	31.925	1.61	(1.80)		0.504
102	93/98/100/102			NĎ		0.756
103				ND		0.504
104				ND		0.504
105				ND		0.504
106				ND		0.504
107	107/124			ND		0.504
108	86/87/97/108/119/125			ND		1.01
109				ND		0.504
110	110/115	34.005	1.55	1.55		0.504
111				ND		0.504
112				ND		0.504
113	90/101/113	31.925	1.61	(1.80)		0.504
114				` NĎ		0.504
115	110/115	34.005	1.55	(1.55)		0.504
116	85/116/117			` NĎ		0.605
117	85/116/117			ND		0.605
118		37.208	1.53	0.900		0.504
119	86/87/97/108/119/125			ND		1.01
120				ND		0.504
121				ND		0.504
122				ND		0.504
123				ND		0.504
124	107/124			ND		0.504
125	86/87/97/108/119/125			ND		1.01
126				ND		0.504
127				ND		0.504
128	128/166			ND		1.01
129	129/138/163	40.411	1.25	3.21		0.504
130				ND		0.504
131				ND		0.504
132		37.241	1.24	1.08		0.504
133				ND		0.504
134	134/143			ND		0.504
135	135/151	34.994	1.28	1.50		0.514
136		32.378	1.23	0.545		0.504
137				ND		0.504
138	129/138/163	40.411	1.25	(3.21)		0.504
139	139/140			` NĎ		0.504
140	139/140			ND		0.504
141		39.337	1.26	0.697		0.504
142				ND		0.504
143	134/143			ND		0.504
144				ND		0.504

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

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-08;FO081482 1086550008 P90118A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.504
146				ND		0.504
147	147/149	35.950	1.23	2.97		0.504
148				ND		0.504
149	147/149	35.950	1.23	(2.97)		0.504
150				NĎ		0.504
151	135/151	34.994	1.28	(1.50)		0.514
152				NĎ		0.504
153	153/168	39.153	1.22	3.00		0.605
154				ND		0.504
155				ND		0.504
156	156/157			ND		1.01
157	156/157			ND		1.01
158				ND		0.504
159				ND		0.504
160				ND		0.504
161				ND		0.504
162				ND		0.504
163	129/138/163	40.411	1.25	(3.21)		0.504
164				` NĎ		0.504
165				ND		0.504
166	128/166			ND		1.01
167				ND		0.504
168	153/168	39.153	1.22	(3.00)		0.605
169				` NĎ		0.504
170		47.353	1.03	1.06		0.504
171	171/173			ND		0.504
172				ND		0.504
173	171/173			ND		0.504
174		42.658	1.10	0.998		0.504
175				ND		0.504
176				ND		0.504
177		43.110	1.01	0.584		0.504
178				ND		0.504
179				ND		0.504
180	180/193	46.112	1.05	2.17		0.504
181				ND		0.504
182				ND		0.504
183	183/185	42.457	0.94	0.718		0.504
184				ND		0.504
185	183/185	42.457	0.94	(0.718)		0.504
186				ND		0.504
187		41.819	1.04	1.21		0.504
188				ND		0.504
189				ND		0.504
190				ND		0.504
191				ND		0.504
192				ND		0.504

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-08;FO081482 1086550008 P90118A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.112	1.05	(2.17)		0.504
194				ND		0.504
195				ND		0.504
196				ND		0.705
197	197/200			ND		2.52
198	198/199	48.074	0.88	0.516		0.504
199	198/199	48.074	0.88	(0.516)		0.504
200	197/200			NĎ		2.52
201				ND		0.504
202				ND		0.504
203				ND		0.504
204				ND		0.504
205				ND		0.504
206				ND		0.504
207				ND		0.504
208				ND		0.504
209				ND		0.504

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PRL0548-08;FO081482 1086550008 P90118A\_07

Congener Group	Concentration ng/L	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	0.778	
Total Trichloro Biphenyls	ND	
Total Tetrachloro Biphenyls	1.44	
Total Pentachloro Biphenyls	5.63	
Total Hexachloro Biphenyls	13.0	
Total Heptachloro Biphenyls	6.74	
Total Octachloro Biphenyls	0.516	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	28.1	

ND = Not Detected

Water

01/05/2009

Matrix

Extracted



Tel: 612-607-1700 Fax: 612-607-6444

# Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID **BLANK-18669** Filename P90116C 08 Injected By BAL **Total Amount Extracted** 960 mL **ICAL ID** P90116C04

CCal Filename(s) P90116C 03 Dilution

Analyzed 01/17/2009 01:00 NA

Coal Fileriame(s)	F90110C_	03		Dilution	INA	
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'-HxĆB	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'-OcCB	202	43.121	0.93	2.0	2.05	102
13C-2,3,3',4,4',5,5',6-OcCB	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
13CDeCB	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'-OcCB	194	52.514	0.94	2.0	NA	NA

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

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RT = Retention Time I = Interference

ng's = Nanograms



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-18669 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
4 5 6 7				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	12/10			ND		0.521
15				ND		0.521
16				ND		0.521
17				ND		0.521
18	18/30			ND		0.521
19	10/00			ND		0.521
20	20/28			ND		0.625
21	21/33			ND		0.521
22	21/00			ND		0.521
23				ND		0.521
24				ND		0.521
25				ND		0.521
26	26/29			ND		0.521
27	20/20			ND		0.521
28	20/28			ND		0.625
29	26/29			ND		0.521
30	18/30			ND		0.521
31	10/00			ND		0.521
32				ND		0.521
33	21/33			ND		0.521
34	21/00			ND		0.521
34 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
						U.U

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



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-18669 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	44/4//00			ND		0.521
49	49/69			ND		0.521
50	50/53			ND		0.521
51	45/51			ND		0.521
52	45/51			ND		0.521
53	50/53			ND		0.521
54	30/33			ND		0.521
55				ND		0.521
56				ND		0.521
57				ND ND		0.521
58				ND ND		0.521
59	59/62/75			ND		0.521
60	39/02/13			ND ND		0.521
61	61/70/74/76			ND ND		0.521
62	59/62/75			ND ND		0.521
63	59/62/75			ND ND		0.521
				ND ND		0.521
64 65	44/47/CE			ND ND		0.625
65 66	44/47/65					
66				ND ND		0.521
67				ND ND		0.521
68	40/00			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	0.4/=0/=4/=0			ND		0.521
74	61/70/74/76			ND		0.521
75	59/62/75			ND		0.521
<u>76</u>	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

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# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-18669 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	00,00,100,102			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	33,33,133,132			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	00,00,100,102			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	00/01/01/100/110/120			ND		0.521
110	110/115			ND ND		0.521
111	110/119			ND ND		0.521
112				ND		0.521
113	90/101/113			ND		0.521
114	30/101/110			ND		0.521
115	110/115			ND		0.521
116	85/116/117			ND		0.625
117	85/116/117			ND		0.625
118	03/110/117			ND ND		0.521
119	86/87/97/108/119/125			ND ND		1.04
120	00/01/31/100/113/123			ND 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	00/01/01/100/110/120			ND		0.521
127				ND		0.521
128	128/166			ND		1.04
129	129/138/163			ND		0.521
130	123, 100, 100			ND ND		0.521
131				ND		0.521
132				ND ND		0.521
133				ND ND		0.521
134	134/143			ND		0.521
135	135/151			ND ND		0.532
133	100/101			IND		0.002

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I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-18669 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	100/140			ND		0.521
142				ND		0.521
143	134/143			ND		0.521
144	10 1/1 10			ND		0.521
145				ND		0.521
146				ND		0.521
147	147/149			ND		0.521
148	1 117 1 10			ND		0.521
149	147/149			ND		0.521
150	1 117 1 10			ND		0.521
151	135/151			ND		0.532
152				ND		0.521
153	153/168			ND		0.625
154	100/100			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

ND = Not Detected NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits RT = Retention Time

I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-18669 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	100/100			ND		0.521
185	183/185			ND		0.521
186	100/100			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

NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits RT = Retention Time

ND = Not Detected

I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKEB BLANK-18669 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



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

**Total Amount Extracted** 

ICAL ID

CCal Filename(s) Method Blank ID LCS-18670 P90116C\_05 903 mL

P90116C04 P90116C\_03 BLANK-18669 Matrix Water Dilution NA

Extracted 01/05/2009 Analyzed 01/16/2009 21:56

Injected By BAL

	N	lative Analy	tes	Lal	beled Analyt	es
PCB Isomer	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

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

! = See Discussion

ng = Nanograms I = Interference

Nn = Result obtained from alternate analysis



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCSD-18671 P90116C\_06 947 mL P90116C04 P90116C\_03

**BLANK-18669** 

Matrix V
Dilution N

Water NA

Extracted 01/05/2009 Analyzed 01/16/2009 22:57

Injected By BAL

	N	lative Analy	tes	Lal	beled Analyt	es
PCB Isomer	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

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

! = See Discussion ng = Nanograms

I = Interference

Nn = Result obtained from alternate analysis



# Method 1668A Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

 Spike 1 ID
 LCS-18670
 Spike 2 ID
 LCSD-18671

 Spike 1 Filename
 P90116C\_05
 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

Event 4: February 23, 2009

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: 2/33/09

- of |-

Collected By: M35, 355

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7.3	37	9.1	. •				•	•	•			•	ഗ	1455	44A_SW1 3/03/09 1455	A_SW1 3		SW-44A-ABC311-MMYY	FO095221
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7.5	2.H	4.4	•				•	•.	•	- :		. ●	ଜ୍	1358	l	43_SW4 2/23/09	Ļ	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	FO095219
7.2	60	9.8	•					•	•			•	ဖ	其中	8/33/04	43_SW3		SW-43-ABC552-MMYY N WHEELER PL & KERBY	FO095218
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and the second	h	1.0	•				•	,•	•			•	G	MHH	a/33/09	43_SW1		SW-43-ABC290-MMYY N ALBINA & RIVER	FO095216
<b>рН</b> (рН и	Conduct	Tempera	Total Me	Pb, Ni, A	Total Me		_	PAH + P	· · · · · · · · · · · · · · · · · · ·			TSS	Sample Type	Sample Time	Sample Date	Point Code		Location	WPCL Sample I.D.
	ivity (umho	ture (Deg C	rcury	•	tals (As, Co		es (CAS)	hthalates (1	igeners (Al						•	ed in PS1	me record	☐ Sample Time recorded in PST	
	s/cm)	c)			i, Cr, Cu,			(A)						N N	of-custoc	Chain-c	ter Grab	FY 2008-09 Stormwater Grab Chain-of-custody	FY 2008-
	Field		als ·	Metals		5	Organics	o Q		L	General							-	
		ses	Requested Analyses	ed A	leste	Requ							R	STORMWTR	Matrix:	×			File Number: 1020.005
			ı											U	ER SAMI	RMWAT	OR STO	AND HARBO	Project Name: PORTLAND HARBOR STORMWATER SAMP
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6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



**Analysis** 

#### LABORATORY ANALYSIS REPORT

Sample Status: COMPLETE AND Sample ID: FO095221 Sample Collected: 02/23/09 14:55

**VALIDATED** Sample Received: 02/23/09

Report Page: Page 1 of 4 Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Address/Location: SW-44A-ABC311-0209

AN02162 N LARABEE & RANDOLPH System ID: 1020.005 44A\_SW1 EID File #: Sample Point Code:

Sample Type: **GRAB** LocCode: **PORTHASW STORMWTR** Collected By: MJS/JXB Sample Matrix:

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.

FIELD	Test Parameter	Result	Units	MRL	Method	Date
PH (FIELD)   7.3   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   209   mg/L   2   SM 2540 D   02/24/09     METALS   MERCURY   0.023   µg/L   0.002   WPCLSOP M-10.02   02/24/09     METALS BY ICP-MS (TOTAL) - 8   ARSENIC   1.36   µg/L   0.1   EPA 200.8   02/26/09     CADMIUM   0.54   µg/L   0.1   EPA 200.8   02/26/09     CHROMIUM   8.68   µg/L   0.1   EPA 200.8   02/26/09     CHROMIUM   8.68   µg/L   0.1   EPA 200.8   02/26/09     COPPER   31.7   µg/L   0.2   EPA 200.8   02/26/09     LEAD   30.0   µg/L   0.1   EPA 200.8   02/26/09     NICKEL   6.05   µg/L   0.2   EPA 200.8   02/26/09     SILVER   40.10   µg/L   0.1   EPA 200.8   02/26/09     SILVER   40.10   µg/L   0.5   EPA 200.8   02/26/09     CUTSIDE ANALYSIS   PESTICIDES BY EPA 8081 - CAS     4,4-DDT   411   ng/L   11   EPA 8081   02/26/09     4,4-DDT   411   ng/L   11   EPA 8081   02/26/09     4,4-DDT   411   ng/L   11   EPA 8081   02/26/09     Alpha-Chlordane   5.0   ng/L   5.0   EPA 8081   02/26/09     Alpha-Chlordane   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   5.6   ng/L   5.0   EPA 8081   02/26/09     Delta-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     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     Endosulfan Sulfate   5.0   ng/L   5.0   EPA 8081   02/26/09     Endrin Aldehyde   5.0   ng/L   5.0	FIELD			•		
TEMPERATURE   9.1   Deg. C   0.1   SM 2550 B   02/23/09	CONDUCTIVITY (FIELD)	37	$\mu$ mhos/cm	1	SM 2510 B	
TOTAL SUSPENDED SOLIDS   209 mg/L   2 SM 2540 D   02/24/09	pH (FIELD)	7.3	pH Units	0.1	SM 4500-H B	02/23/09
METALS   MERCURY   0.023   μg/L   0.002   WPCLSOP M-10.02   02/27/09	TEMPERATURE	9.1	Deg. C	0.1	SM 2550 B	02/23/09
METALS MERCURY         0.023         μg/L         0.002         WPCLSOP M-10.02         02/27/09           METALS BY ICP-MS (TOTAL) - 8 ARSENIC         1.36         μg/L         0.1         EPA 200.8         02/26/09           CADMIUM         0.54         μg/L         0.1         EPA 200.8         02/26/09           CHROMIUM         8.68         μg/L         0.4         EPA 200.8         02/26/09           COPPER         31.7         μg/L         0.2         EPA 200.8         02/26/09           COPPER         31.7         μg/L         0.2         EPA 200.8         02/26/09           NICKEL         6.05         μg/L         0.1         EPA 200.8         02/26/09           SILVER         <0.10         μg/L         0.1         EPA 200.8         02/26/09           ZINC         205         μg/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'-DDD         €5.0         ng/L         5.0         EPA 8081         02/26/09           4,4'-DDT         <11         ng/L         5.0         EPA 8081         02/26	<del></del>					
MERCURY         0.023         μg/L         0.002         WPCLSOP M-10.02         02/27/09           METALS BY ICP-MS (TOTAL) - 8         ARSENIC         1.36         μg/L         0.1         EPA 200.8         02/26/09           CADMIUM         0.54         μg/L         0.1         EPA 200.8         02/26/09           CHROMIUM         8.68         μg/L         0.4         EPA 200.8         02/26/09           COPPER         31.7         μg/L         0.2         EPA 200.8         02/26/09           LEAD         30.0         μg/L         0.1         EPA 200.8         02/26/09           NICKEL         6.05         μg/L         0.1         EPA 200.8         02/26/09           SILVER         <0.10         μg/L         0.1         EPA 200.8         02/26/09           SILVER         <0.10         μg/L         0.1         EPA 200.8         02/26/09           OUTSIDE ANALYSIS           PESTICIDES BY EPA 8081 - CAS           4,4'-DDD         EST 16         ng/L         5.0         EPA 8081         02/26/09           4,4'-DDT         <11         ng/L         11         EPA 8081         02/26/09           Alpha-BHC         <5.0 <t< td=""><td>TOTAL SUSPENDED SOLIDS</td><td>209</td><td>mg/L</td><td>2</td><td>SM 2540 D</td><td>02/24/09</td></t<>	TOTAL SUSPENDED SOLIDS	209	mg/L	2	SM 2540 D	02/24/09
METALS BY ICP-MS (TOTAL) - 8         ARSENIC       1.36       µg/L       0.1       EPA 200.8       02/26/09         CADMIUM       0.54       µg/L       0.1       EPA 200.8       02/26/09         CHROMIUM       8.68       µg/L       0.4       EPA 200.8       02/26/09         COPPER       31.7       µg/L       0.2       EPA 200.8       02/26/09         LEAD       30.0       µg/L       0.1       EPA 200.8       02/26/09         NICKEL       6.05       µg/L       0.2       EPA 200.8       02/26/09         SILVER       <0.10						
ARSENIC CADMIUM 0.54 μg/L 0.1 EPA 200.8 02/26/09 CADMIUM 8.68 μg/L 0.4 EPA 200.8 02/26/09 COPPER 31.7 μg/L 0.2 EPA 200.8 02/26/09 LEAD 30.0 μg/L 0.1 EPA 200.8 02/26/09 LEAD NICKEL 6.05 μg/L 0.1 EPA 200.8 02/26/09 NICKEL 6.05 μg/L 0.1 EPA 200.8 02/26/09 SILVER 20.10 μg/L 0.5 EPA 200.8 02/26/09  OUTSIDE ANALYSIS  PESTICIDES BY EPA 8081 - CAS 4,4'-DDD EST 16 ng/L 5.0 EPA 8081 02/26/09 4,4'-DDE 4,4'-DDT 411 ng/L 111 EPA 8081 02/26/09 4,4'-DDT Aldrin 4.5.0 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 Alpha-Chlordane 5.0 ng/L 5.0 EPA 8081 02/26/09 Delta-BHC 5.0 ng/L 5.0 EPA 8081 02/26/09 Endosulfan I 13 ng/L 5.0 EPA 8081 02/26/09 Endosulfan Sulfate 5.0 ng/L 5.0 EPA 8081 02/26/09	MERCURY	0.023	μg/L	0.002	WPCLSOP M-10.02	02/27/09
CADMIUM  CHROMIUM  CHROMIU			_			
CHROMIUM         8.68         μg/L         0.4         EPA 200.8         02/26/09           COPPER         31.7         μg/L         0.2         EPA 200.8         02/26/09           LEAD         30.0         μg/L         0.1         EPA 200.8         02/26/09           NICKEL         6.05         μg/L         0.2         EPA 200.8         02/26/09           SILVER         <0.10			-			
COPPER         31.7         μg/L         0.2         EPA 200.8         02/26/09           LEAD         30.0         μg/L         0.1         EPA 200.8         02/26/09           NICKEL         6.05         μg/L         0.2         EPA 200.8         02/26/09           SILVER         <0.10			· -			
LEAD         30.0 μg/L         0.1 EPA 200.8         02/26/09           NICKEL         6.05 μg/L         0.2 EPA 200.8         02/26/09           SILVER         <0.10 μg/L						
NICKEL         6.05         μg/L         0.2         EPA 200.8         02/26/09           SILVER         <0.10			· -			
SILVER         <0.10         µg/L         0.1         EPA 200.8         02/26/09           COUTSIDE ANALYSIS           PESTICIDES BY EPA 8081 - CAS           4,4'-DDD         EST 16         ng/L         5.0         EPA 8081         02/26/09           4,4'-DDE         <5.0						
ZINC         205 μg/L         0.5         EPA 200.8         02/26/09           OUTSIDE ANALYSIS           PESTICIDES BY EPA 8081 - CAS           4,4'-DDD         EST 16 ng/L         5.0         EPA 8081         02/26/09           4,4'-DDD         ≤5.0 ng/L         5.0         EPA 8081         02/26/09           4,4'-DDT         <11 ng/L	NICKEL	6.05	$\mu$ g/L			
OUTSIDE ANALYSIS           PESTICIDES BY EPA 8081 - CAS           4,4'-DDD         EST 16         ng/L         5.0         EPA 8081         02/26/09           4,4'-DDE         <5.0	SILVER	<0.10	μg/L	0.1	EPA 200.8	
PESTICIDES BY EPA 8081 - CAS         4,4'-DDD       EST 16       ng/L       5.0       EPA 8081       02/26/09         4,4'-DDE       <5.0	ZINC	205	μg/L	0.5	EPA 200.8	02/26/09
4,4'-DDD       EST 16       ng/L       5.0       EPA 8081       02/26/09         4,4'-DDE       <5.0	OUTSIDE ANALYSIS					
4,4'-DDE       <5.0	PESTICIDES BY EPA 8081 - CAS					•
4,4'-DDT       <11	•	EST 16	_		•	
Aldrin       <5.0	4,4'-DDE	<5.0	ng/L	5.0	EPA 8081	
Alpha-BHC       <5.0		.<11	ng/L			
Alpha-Chlordane       <5.0	Aldrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Beta-BHC         <5.6	Alpha-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	Alpha-Chlordane	<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         13         ng/L         5.0         EPA 8081         02/26/09           Endosulfan II         <5.0	Beta-BHC	<5.6	ng/L	5.6	EPA 8081	02/26/09
Endosulfan I         13         ng/L         5.0         EPA 8081         02/26/09           Endosulfan II         <5.0	Delta-BHC	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endosulfan I       13       ng/L       5.0       EPA 8081       02/26/09         Endosulfan II       <5.0	Dieldrin	<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	Endosulfan I	13	ng/L	5.0	EPA 8081	02/26/09
Endosulfan Sulfate       <5.0 ng/L	Endosulfan II	<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	Endosulfan Sulfate	<5.0	_	5.0	EPA 8081	02/26/09
Endrin Aldehyde <5.0 ng/L 5.0 EPA 8081 02/26/09	Endrin	<5.0	-	5.0	EPA 8081	02/26/09
•	Endrin Aldehyde	<5.0	_	5.0	EPA 8081	02/26/09
		EST 6.4	ng/L	5.0	EPA 8081	02/26/09

Report Date: 04/01/09



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#### LABORATORY ANALYSIS REPORT

Sample Status: COMPLETE AND Sample ID: FO095221 Sample Collected: 02/23/09 14:55

Sample Received: 02/23/09

**VALIDATED** 

Page 2 of 4 Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page:

Address/Location: SW-44A-ABC311-0209

> AN02162 N LARABEE & RANDOLPH System ID:

EID File #: 1020.005 Sample Point Code: 44A\_SW1 Sample Type: **GRAB** LocCode: **PORTHASW** 

**STORMWTR** Collected By: MJS/JXB Sample Matrix:

#### 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)	<58	ng/L	58	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 COI	NGENERS -PACE				è
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHT	HALATES - TA				
Acenaphthene	< 0.0777	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0777	μg/L	0.0777	EPA 8270M-SIM	02/25/09
Anthracene	<0.0777	μg/L	0.0777	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	0.0553	$\mu$ g/L	0.0388	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	0.0556	$\mu$ g/L	0.0388	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	0.0790	$\mu$ g/L	0.0388	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	0.0878	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	0.0572	$\mu$ g/L	0.0388	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	4.38	$\mu$ g/L	1.94	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	<1.94	$\mu$ g/L	1.94	EPA 8270M-SIM	02/25/09
Chrysene	0.158	μg/L	0.0388	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	<0.0388	$\mu$ g/L	0.0388	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<1.94	$\mu$ g/L	1.94	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<1.94	μg/L	1.94	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<1.94	$\mu$ g/L	1.94	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<1.94	$\mu$ g/L	1.94	EPA 8270M-SIM	02/25/09
Fluoranthene	0.233	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
Fluorene	< 0.0777	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	0.0458	$\mu$ g/L	0.0388	EPA 8270M-SIM	02/25/09
Naphthalene	0.358	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
Phenanthrene	0.169	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
Pyrene	0.160	$\mu$ g/L	0.0777	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<2.1	μg/L	2.1	EPA 8270	03/02/09
1,2-Dichlorobenzene	<2.1	$\mu$ g/L	2.1	EPA 8270	03/02/09

Report Date: 04/01/09





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO095221 Sample Collected: 02/23/09 14:55 Sample Status: COMPLETE AND

Sample Received: 02/23/09 VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 3 of 4

Address/Location: SW-44A-ABC311-0209

N LARABEE & RANDOLPH
System ID: AN02162
Sample Point Code: 44A\_SW1
EID File #: 1020.005

Sample Type:GRABLocCode:PORTHASWSample Matrix:STORMWTRCollected 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	<2.1	μg/L	2.1	EPA 8270	03/02/09
1,4-Dichlorobenzene	<2.1	μg/L	2.1	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
2,4-Dichlorophenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
2,4-Dimethylphenol	<41	μg/L	41	EPA 8270	03/02/09
2,4-Dinitrophenol	<41	μg/L	41	EPA 8270	03/02/09
2,4-Dinitrotoluene	<2.1	μg/L	2.1	EPA 8270	03/02/09
2,6-Dinitrotoluene	<2.1	μg/L	2.1	EPA 8270	03/02/09
2-Chloronaphthalene	<2.1	μg/L	2.1	EPA 8270	03/02/09
2-Chlorophenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
2-Methylnaphthalene	<2.1	μg/L	2.1	EPA 8270	03/02/09
2-Methylphenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
2-Nitroaniline	<2.1	μg/L	2.1	EPA 8270	03/02/09
2-Nitrophenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<21	μg/L	21	EPA 8270	03/02/09
3-Nitroaniline	<11	μg/L	11	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<21	μg/L	21	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<2.1	μg/L	2.1	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<5.1	$\mu \mathrm{g}/\mathrm{L}$	5.1	EPA 8270	03/02/09
4-Chloroaniline	<2.1	μg/L	2.1	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<2.1	μg/L	2.1	EPA 8270	03/02/09
4-Methylphenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
4-Nitroaniline	<11	μg/L	11	EPA 8270	03/02/09
4-Nitrophenol	<21	μg/L	21	EPA 8270	03/02/09
Acenaphthene	<2.1	$\mu$ g/L	2.1	EPA 8270	03/02/09
Acenaphthylene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Anthracene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Benzo(a)anthracene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Benzo(a)pyrene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Benzo(b)fluoranthene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Benzo(k)fluoranthene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Benzoic acid	<51	μg/L	51	EPA 8270	03/02/09
Benzyl alcohol	<5.1	μg/L	5.1	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<2.1	μg/L	2.1	EPA 8270	03/02/09

Report Date: 04/01/09 Validated By:

A



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#### LABORATORY ANALYSIS REPORT

Sample ID: FO095221

Sample Collected: 02/23/09 Sample Received: 02/23/09

14:55

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 4 of 4

Address/Location:

SW-44A-ABC311-0209 N LARABEE & RANDOLPH

System ID:

AN02162

Sample Point Code:

44A\_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. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Took Downwater	Dogult	[]mida	MRL	Method	Analysis Date
Test Parameter	Result	Units			
Bis(2-chloroethyl) ether	<2.1	μg/L	2.1	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<2,1	$\mu$ g/L	2.1	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	<11	μg/L	11	EPA 8270	03/02/09
Butyl benzyl phthalate	<2.1	μg/L	2.1	EPA 8270	03/02/09
Chrysene	<2.1	$\mu$ g/L	2.1	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Dibenzofuran	<2.1	$\mu$ g/L	2.1	EPA 8270	03/02/09
Diethyl phthalate	<2.1	μg/L	2.1	EPA 8270	03/02/09
Dimethyl phthalate	<2.1	μg/L	2.1	EPA 8270	03/02/09
Di-n-butyl phthalate	<2.1	μg/L	2.1	EPA 8270	03/02/09
Di-n-octyl phthalate	<2.1	$\mu$ g/L	2.1	EPA 8270	03/02/09
Fluoranthene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Fluorene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Hexachlorobenzene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Hexachlorobutadiene	<2.1	$\mu$ g/L	2.1	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<11	μg/L	11	EPA 8270	03/02/09
Hexachloroethane	<2.1	μg/L	2.1	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Isophorone	<2.1	μg/L	2.1	EPA 8270	03/02/09
Naphthalene	<2.1	$\mu g/L$	2.1	EPA 8270	03/02/09
Nitrobenzene	<2.1	μg/L	2.1	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<2.1	μg/L	2.1	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<2.1	μg/L	2.1	EPA 8270	03/02/09
Pentachlorophenol	<11	μg/L	11	EPA 8270	03/02/09
Phenanthrene	<2.1	μg/L	2.1	EPA 8270	03/02/09
Phenol	<5.1	μg/L	5.1	EPA 8270	03/02/09
Pyrene	<2.1	μg/L	2.1	EPA 8270	03/02/09

End of Report for Sample ID: FO095221

Report Date: 04/01/09 Validated By:



6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



#### LABORATORY ANALYSIS REPORT

Sample ID: FO095222

Sample Collected: 02/23/09 Sample Received: 02/23/09 15:30

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 1 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AN02163

Sample Point Code:

**FDBLANK** 

EID File #:

1020.005

Sample Type: Sample Matrix: **GRAB STORMWTR**  LocCode: Collected By: MJS/JXB

PORTHASW

#### 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 SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	<0.0020	μg/L	0.002	WPCLSOP M-10.0	2 02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	μg/L	0.1	EPA 200.8	02/26/09
CADMIUM	< 0.10	μg/L	0.1	EPA 200.8	02/26/09
CHROMIUM	< 0.40	μg/L	0.4	EPA 200.8	02/26/09
COPPER	<0.20	μg/L	0.2	EPA 200.8	02/26/09
LEAD	<0.10	μg/L	0.1	EPA 200.8	02/26/09
NICKEL	<0.20	μg/L	0.2	EPA 200.8	02/26/09
SILVER	<0.10	μg/L	0.1	EPA 200.8	02/26/09
ZINC	0.65	μg/L	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.52	ng/L	0.52	EPA 8081	02/26/09
4,4'-DDE	< 0.52	ng/L	0.52	EPA 8081	02/26/09
4,4'-DDT	<0.52	ng/L	0.52	EPA 8081	02/26/09
Aldrin	<0.52	ng/L	0.52	EPA 8081	02/26/09
Alpha-BHC	<0.52	ng/L	0.52	EPA 8081	02/26/09
Alpha-Chlordane	<0.52	ng/L	0.52	EPA 8081	02/26/09
Beta-BHC	<0.52	ng/L	0.52	EPA 8081	02/26/09
Delta-BHC	<0.52	ng/L	0.52	EPA 8081	02/26/09
Dieldrin	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endosulfan I	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endosulfan II	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endosulfan Sulfate	< 0.52	ng/L	0.52	EPA 8081	02/26/09
Endrin	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endrin Aldehyde	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endrin Ketone	<0.52	ng/L	0.52	EPA 8081	02/26/09
Gamma-BHC(Lindane)	< 0.52	ng/L	0.52	EPA 8081	02/26/09
Gamma-Chlordane	< 0.52	ng/L	0.52	EPA 8081	02/26/09
Heptachlor	<0.52	ng/L	0.52	EPA 8081	02/26/09
Heptachlor Epoxide	<0.52	ng/L	0.52	EPA 8081	02/26/09

Report Date: 04/01/09





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#### LABORATORY ANALYSIS REPORT

Sample ID: FO095222

Sample Collected: 02/23/09 Sample Received: 02/23/09 15:30

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 2 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AN02163

Sample Point Code: Sample Type:

**FDBLANK GRAB** 

EID File #: LocCode:

1020.005 **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
Methoxychlor	<0.52	ng/L	0.52	EPA 8081	02/26/09
Toxaphene	<26	ng/L	26	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CON	GENERS -PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTH.	ALATES - TA				
Acenaphthene	< 0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Acenaphthylene	< 0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Anthracene	< 0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	< 0.00952	μg/L	0.00952	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	< 0.00952	μg/L	0.00952	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	< 0.00952	$\mu$ g/L	0.00952	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	< 0.0190	$\mu$ g/L .	0.019	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	< 0.00952	μg/L	0.00952	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	< 0.952	μg/L	0.952	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	< 0.952	μg/L	0.952	EPA 8270M-SIM	02/25/09
Chrysene	< 0.00952	μg/L	0.00952	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	< 0.00952	μg/L	0.00952	EPA 8270M-SIM	02/25/09
Diethyl phthalate	< 0.952	μg/L	0.952	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	< 0.952	μg/L	0.952	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	< 0.952	μg/L	0.952	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	< 0.952	μg/L	0.952	EPA 8270M-SIM	02/25/09
Fluoranthene	< 0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Fluorene	< 0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	< 0.00952	μg/L	0.00952	EPA 8270M-SIM	02/25/09
Naphthalene	< 0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Phenanthrene	<0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
Pyrene	<0.0190	μg/L	0.019	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					4
1,2,4-Trichlorobenzene	<0.22	μg/L	0.22	EPA 8270	03/02/09
1,2-Dichlorobenzene	<0.22	μg/L	0.22	EPA 8270	03/02/09
1,3-Dichlorobenzene	<0.22	μg/L	0.22	EPA 8270	03/02/09
1,4-Dichlorobenzene	<0.22	μg/L	0.22	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<0.54	μg/L	0.54	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<0.54	μg/L	0.54	EPA 8270	03/02/09

Report Date: 04/01/09





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#### LABORATORY ANALYSIS REPORT

Sample ID: **FO095222** 

Sample Collected: 02/23/09

15:30 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:

FIELD DECON BLANK

System ID:

AN02163

Sample Point Code:

**FDBLANK** 

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
2,4-Dichlorophenol	<0.54	μg/L	0.54	EPA 8270	03/02/09
2,4-Dimethylphenol	<4.3	μg/L	4.3	EPA 8270	03/02/09
2,4-Dinitrophenol	<4.3	μg/L	4.3	EPA 8270	03/02/09
2,4-Dinitrotoluene	<0.22	μg/L	0.22	EPA 8270	03/02/09
2,6-Dinitrotoluene	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
2-Chloronaphthalene	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
2-Chlorophenol	<0.54	$\mu \mathrm{g}/\mathrm{L}$	0.54	EPA 8270	03/02/09
2-Methylnaphthalene	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
2-Methylphenol	<0.54	μg/L	0.54	EPA 8270	03/02/09
2-Nitroaniline	<0.22	μg/L	0.22	EPA 8270	03/02/09
2-Nitrophenol	<0.54	$\mu$ g/L	0.54	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<2.2	μg/L	2.2	EPA 8270	03/02/09
3-Nitroaniline	<1.1	μ̈g/L	1.1	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<2.2	μg/L	2.2	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<0.22	μg/L	0.22	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<0.54	$\mu$ g/L	0.54	EPA 8270	03/02/09
4-Chloroaniline	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
4-Methylphenol	<0.54	$\mu$ g/L	0.54	EPA 8270	03/02/09
4-Nitroaniline	<1.1	$\mu$ g/L	1.1	EPA 8270	03/02/09
4-Nitrophenol	<2.2	μg/L	2.2	EPA 8270	03/02/09
Acenaphthene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Acenaphthylene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Anthracene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Benzo(a)anthracene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Benzo(a)pyrene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Benzo(b)fluoranthene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Benzo(k)fluoranthene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Benzoic acid	<5.4	$\mu$ g/L	5.4	EPA 8270	03/02/09
Benzyl alcohol	<0.54	μg/L	0.54	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<0.22	μg/L	0.22	EPA 8270	03/02/09
Bis(2-chloroethyl) ether	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<0.22	$\mu$ g/L	0.22	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	<1.1	μg/L	1.1	EPA 8270	03/02/09
Butyl benzyl phthalate	<0.22	μg/L	0.22	EPA 8270	03/02/09

Report Date: 04/01/09



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#### LABORATORY ANALYSIS REPORT

Sample ID: FO095222

Sample Collected: 02/23/09 Sample Received: 02/23/09 15:30

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 4 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AN02163

Sample Point Code:

**FDBLANK** 

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
Chrysene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Dibenzofuran	<0.22	μg/L	0.22	EPA 8270	03/02/09
Diethyl phthalate	<0.22	μg/L	0.22	EPA 8270	03/02/09
Dimethyl phthalate	<0.22	μg/L	0.22	EPA 8270	03/02/09
Di-n-butyl phthalate	<0.22	μg/L	0.22	EPA 8270	03/02/09
Di-n-octyl phthalate	<0.22	μg/L	0.22	EPA 8270	03/02/09
Fluoranthene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Fluorene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Hexachlorobenzene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Hexachlorobutadiene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<1.1	μg/L	1.1	EPA 8270	03/02/09
Hexachloroethane	<0.22	μg/L	0.22	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Isophorone	<0.22	μg/L	0.22	EPA 8270	03/02/09
Naphthalene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Nitrobenzene	<0.22	μg/L	0.22	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<0.22	μg/L	0.22	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<0.22	μg/L	0.22	EPA 8270	03/02/09
Pentachlorophenol	<1.1	μg/L.	1.1	EPA 8270	03/02/09
Phenanthrene	<0.22	μg/L	0.22	EPA 8270	03/02/09
Phenol	<0.54	μg/L	0.54	EPA 8270	03/02/09
Pyrene	<0.22	μg/L	0.22	EPA 8270	03/02/09

End of Report for Sample ID: FO095222

Report Date: 04/01/09



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 <u>45</u>

#### 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
- 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)	_







Client:

City of Portland

Service Request No.:

K0901535

Project:

Portland Harbor

Date Received:

02/24/2009

Sample Matrix:

Water

#### **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 samp	oles were observed.
	<b>19</b> 0	03/20/09
Approved by	17	Date

#### 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.

		02/20/09
Approved by	A	<u>Date</u>

Analytical Results

Client:

Portland, City of Portland Harbor

Project: Sample Matrix:

Water

Service Request: K0901535

Date Collected: 02/23/2009 **Date Received:** 02/24/2009

#### **Organochlorine Pesticides**

Sample Name:

F0095221

Lab Code:

K0901535-006

**Extraction Method:** 

EPA 3535

Analysis Method:

8081A

Units: ng/L

Basis: NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND U	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	totologo-grava-surgar-gravets
beta-BHC	ND Ui	5.6	5.6	10	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND Ui	58	58	10	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND Ui	5.0	4.1	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 Ui	5.0	5.0	10	02/26/09	03/04/09	KWG0901589	
Endosulfan I	<b>13</b> 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	5.0	4.2	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	16 PD	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	3.2 JPD	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND Ui	5.0	5.0	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND Ui	11	11	10	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	6.4 PD	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	119	10-121	03/04/09	Acceptable Acceptable
Decachlorobiphenyl	109	17-150	03/04/09	

#### † 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:

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SuperSet Reference: RR99390

Analytical Results

Client:

Portland, City of Portland Harbor

Project: Sample Matrix:

Water

Service Request: K0901535 Date Collected: 02/23/2009

**Date Received:** 02/24/2009

## **Organochlorine Pesticides**

Sample Name:

F0095222

Lab Code:

K0901535-007

**Extraction Method:** 

EPA 3535

**Analysis Method:** 

8081A

Units: ng/L Basis: NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND U	0.52	0.43	1	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND U	0.52	0.49	1	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND U	0.52	0.15	1	02/26/09	03/04/09	KWG0901589	
Heptachlor	ND U	0.52	0.19	1	02/26/09	03/04/09	KWG0901589	
Aldrin	ND U	0.52	0.12	1	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND U	0.52	0.32	1	02/26/09	03/04/09	KWG0901589	
Endosulfan I	ND U	0.52	0.26	1	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND U	0.52	0.28	1	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND U	0.52	0.38	1	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND Ui	0.52	0.46	1	02/26/09	03/04/09	KWG0901589	
Endrin	ND U	0.52	0.51	1	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND U	0.52	0.36	1	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	ND U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	ND U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND U	0.52	0.29	1	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND Ui	0.52	0.52	1	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	ND U	0.52	0.33	1	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND U	0.52	0.29	1	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND U	26	9.3	1	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 Acceptable
Decachlorobiphenyl	96	17-150	03/04/09	

#### † 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:

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Analytical Results

Client:

Portland, City of Portland Harbor

Project: 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

Units: ng/L Basis: NA

Level: Low

Analysis	Method:	8081A
<b>Analyte</b>	Name	

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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	<b>0.24</b> 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:

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SuperSet Reference:

RR99390

QA/QC Report

Client:

Portland, City of

Project:

Portland Harbor

Sample Matrix:

Water

Service Request: K0901535

Surrogate Recovery Summary **Organochlorine Pesticides** 

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**Extraction Method:** 

EPA 3535

Units: PERCENT

Level: Low

**Analysis Method:** 

**Duplicate Lab Control Sample** 

8081A

Sample Name Lab Code Sur1 Sur2 92 D 111 D F0095216 K0901535-001 92 D 146 D F0095217 K0901535-002 66 D 95 D F0095218 K0901535-003 F0095219 K0901535-004 98 D 129 D 81 D 111 D F0095220 K0901535-005 F0095221 K0901535-006 119 D 109 D 96 F0095222 K0901535-007 66 50 78 Method Blank KWG0901589-5 72 Lab Control Sample 44 KWG0901589-1

KWG0901589-2

#### 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.

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SuperSet Reference: RR99390 Page

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QA/QC Report

Client: Project: Portland, City of 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

Lab Control Sample KWG0901589-1

Duplicate Lab Control Sample KWG0901589-2

		Lab Control Spike			e Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

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Analytical Results

Client: Project: Portland, City of 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	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND		2.1	0.36	10	03/02/09	03/11/09	KWG0901700	sinnakasinendarangan esa
Phenol	ND		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		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		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		51	12	10	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND		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		2.1	0.26	10	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND		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		5.1	0.32	10	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND		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		2.1	0.16	10	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND		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	

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RR99678

Analytical Results

Client: Project: Portland, City of 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: Lab Code:

F0095221 K0901535-006

**Extraction Method:** Analysis Method:

EPA 3520C

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:	

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Analytical Results

Client: Project:

Portland, City of Portland Harbor

Sample Matrix:

Water

maryticai ixcsuits

**Service Request:** K0901535 **Date Collected:** 02/23/2009

**Date Received:** 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Lab Code: F0095221

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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:

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Form 1A - Organic

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SuperSet Reference: RR99678

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Analytical Results

Client: Project: Portland, City of 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: Lab Code:

F0095222

K0901535-007

**Extraction Method:** 

EPA 3520C

Units: ug/L Basis: NA

Level: Low

8270C Analysis Method:

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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:
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Analytical Results

Client: Project: Portland, City of 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: Lab Code: F0095222 K0901535-007

Extraction Method: Analysis Method:

EPA 3520C 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	Ū	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	tion is a linear to the second
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		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		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		1.1	0.14	1	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND		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		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	

RR99678

Analytical Results

Client: Project: Portland, City of 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: Lab Code: F0095222

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:

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Form 1A - Organic 37

SuperSet Reference: RR99678

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Analytical Results

Client: Portland, City of Project: Portland Harbor

8270C

Water Sample Matrix:

**Analysis Method:** 

Service Request: K0901535

Date Collected: NA Date Received: NA

#### Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank Units: ug/L Lab Code: KWG0901700-3 Basis: NA **Extraction Method:** EPA 3520C Level: Low

Dilution Date Date Extraction **Analyte Name** Result O MRL MDL Factor Extracted Analyzed Lot Note ND II KWG0901700 Bis(2-chloroethyl) Ether 0.19 0.035 page 03/02/09 03/10/09 Phenol 0.10 J 0.48 0.063 1 03/02/09 03/10/09 KWG0901700 2-Chlorophenol ND U 0.48 0.054 powers. 03/10/09 KWG0901700 03/02/09 1.3-Dichlorobenzene ND U -KWG0901700 0.19 0.021 03/02/09 03/10/09 1.4-Dichlorobenzene ND U 0.19 0.029 1 03/02/09 03/10/09 KWG0901700 1.2-Dichlorobenzene KWG0901700 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 Bis(2-chloroisopropyl) Ether ND U 0.19 0.026 03/10/09 KWG0901700 1 03/02/09 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 03/02/09 03/10/09 KWG0901700 KWG0901700 4-Methylphenol† ND U 0.480.12 -03/02/09 03/10/09 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 0.063 1 03/02/09 03/10/09 KWG0901700 ND U 0.48 2,4-Dimethylphenol ND II 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 KWG0901700 ND U 0.19 0.016 1 03/02/09 03/10/09 Naphthalene ND U 0.19 0.022 1 03/02/09 03/10/09 KWG0901700 1 4-Chloroaniline ND U 0.19 KWG0901700 0.025 03/02/09 03/10/09 Hexachlorobutadiene ND U 0.19 0.027 1 03/02/09 03/10/09 KWG0901700 4-Chloro-3-methylphenol ND U 0.480.037 1 03/02/09 03/10/09 KWG0901700 2-Methylnaphthalene KWG0901700 ND U 0.19 0.026 1 03/02/09 03/10/09 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 KWG0901700 03/02/09 03/10/09 2,4,5-Trichlorophenol ND U 0.48 0.031 1 03/02/09 KWG0901700 03/10/09 2-Chloronaphthalene ND U 0.19 KWG0901700 0.0411 03/02/09 03/10/09 2-Nitroaniline ND U 0.19 0.024 1 03/02/09 KWG0901700 03/10/09 Acenaphthylene ND U 1 KWG0901700 0.19 0.015 03/02/09 03/10/09 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:	

Analytical Results

Client: Portland, City of Portland Harbor

8270C

Sample Matrix: Water

Analysis Method:

Service Request: K0901535

Date Collected: NA
Date Received: NA

# Semi-Volatile Organic Compounds by GC/MS

Sample Name:Method BlankUnits:ug/LLab Code:KWG0901700-3Basis:NAExtraction Method:EPA 3520CLevel:Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	CONTROL CONTRO
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		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		0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
Hexachlorobenzene	ND		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		0.19	0.022	1	03/02/09	03/10/09	KWG0901700	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Anthracene	ND		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		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:	

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Analytical Results

Client:

Portland, City of Portland Harbor

Project: Sample Matrix:

Water

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Service Request: K0901535

Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Lab Code: Method Blank 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:

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Form 1A - Organic

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SuperSet Reference:

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ference: RR99678

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

Sample Name	Lab Code	Sur1	Sur2	Sur3	<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.

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Form 2A - Organic

Page 1 of 1

SuperSet Reference:

QA/QC Report

Client: Portland, City of Portland Harbor Project:

Water Sample Matrix:

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

	KW	Control Samp VG0901700-1 Control Spik		KW	Lab Control : /G0901700-2 • Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

Form 3C - Organic Printed: 03/18/2009 14:50:03 

Page SuperSet Reference: RR99678

1 of 2

QA/QC Report

Client: Project: Portland, City of 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

						EXHACHOH	LUU: IX	W G0301700	
	Lab Control Sample  KWG0901700-1  Lab Control Spike  Duplicate Lab Control Sample  KWG0901700-2  Duplicate Lab Control Spike			%Rec		RPD			
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

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Form 3C - Organic 43

Page

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RR99678

# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068 PAGE

<u></u>	edic.*
000 #	SR#: NONOIDS

	RELINQUISHED BY:	III. Data Validation Report (includes all raw data) IV. CLP Deliverable Report V. EDD		Blank, Surrogate, as required	1. Routine Report: Method			aum dy den mentere en men men men men men de	0851772	182	TO 08 5 2 2 0	5065719	000000000000000000000000000000000000000		10005716 71369	SAMPLE I.D. DATE	PHONE #  SAMPLER'S SIGNATURE	E-MAIL ADDRESS	OITVISTATEZZIP CLAW OF PO	COMPANY/ADDRESS	PROJECT NUMBER
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Firm IIII	RELINQUISHED BY:		T A A W	Or Cu Fe Pb Mg	Or Cu Fe Pb Mg N											Cyani PH, C	ist beli	al or ow)	Dissolve ex-Ci	0	51A ()
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Firm 145	UED BY:		CIRCLE ONE	Sr TI Sn V Zn Hg	Sr Tl Sn V Zn Hg											REMARKS					

Cooler Receipt and Preservation Form

PC PUD

Client / Project: City of Portlan	1	one receip	n and i ics			t K09 015	35		and the desired and the second and t	
Received: 22409 Op	ened: ~	0-24-09	Ву	: NL	)					
- •	Mail Cool NA	Fed Ex  Jer Box  Y  Y  1	Envelo,	<i>ne</i> es, how m	Other nany and	d where?ey signed and		Hand Del	livered N	
5. Temperature of cooler(s) upon recontent to the recontent of the reconte	Numbers  Baggies  out (ink,  ition (un  e analysis  with cus  ers and v	Bubble Wr signed, etc.) broken)? / s, preservatio stody papers?	? indicate in the on, etc.)? Indicate in the eived for the t	table belo he table b ests indi	ow. pelow cated?		NO.	NA Y NA Y NA Y NA Y NA Y NA Y	) N ) N ) N	
<ul> <li>13. Were the pH-preserved bottles teste</li> <li>14. Were VOA vials and 1631 Mercury</li> <li>15. Are CWA Microbiology samples</li> <li>16. Was C12/Res negative?</li> </ul>	bottles r	eceived with	out headspace	? Indica	te in the	table below.	on?	NA Y NA Y NA Y	N N N	
Sample ID on Bottle	Samp	le ID on COC		Sample	ID on B	ottle	Sample ID on COC			
Sample ID All Samples	Bottle Count	Bottle Type	Out of Head- Temp space	Broken	pH	Reagent	Volume	Reagent Lot Number	Initials	
*Does not include all pH preserved sample alique Additional Notes, Discrepancies, &	is received Resolut	. See sample re	eceiving SOP (SM	0-GĘN).	Show	helped.	125/00 18	Ź, H		



PORTLAND, OR 9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

March 17, 2009

Jennifer Shackelford City of Portland Water Pollution Laboratory 6543 N. Burlington Ave. Portland, OR 97203

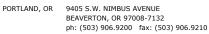
RE: Portland Harbor

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.

Work Order	<u>Project</u>	<u>ProjectNumber</u>
PSB0692	Portland Harbor	36238

TestAmerica Portland





THE LEADER IN ENVIRONMENTAL TESTING

City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. 36238 Report Created: Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 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





City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 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
PSB0692-05 (FO095220)			W	ater		Samp	led: 02/23/	09 14:28		R
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.15	1.01	1.92	ug/l	2x	9020785	02/25/09 13:00	03/14/09 02:41	
Butyl benzyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Di-n-octyl phthalate	"	1.30	1.01	1.92	"	"	"	"	"	J
Diethyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Dimethyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Acenaphthene	"	ND	0.0577	0.0577	"	3x	"	"	03/07/09 01:00	RL1
Acenaphthylene	"	ND	0.0577	0.0577	"	"	"	"	"	RL1
Anthracene	"	ND	0.0577	0.0577	"	"	"	"	"	RL1
Benzo (a) anthracene	"	0.0353	0.0288	0.0288	"	"	"	"	"	
Benzo (a) pyrene	"	0.0423	0.0288	0.0288	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0795	0.0288	0.0288	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0890	0.0577	0.0577	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0510	0.0288	0.0288	"	"	"	"	"	
Chrysene	"	0.138	0.0288	0.0288	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0288	0.0288	"	"	"	"	"	RL1
Fluoranthene	"	0.204	0.0577	0.0577	"	"	"	"	"	
Fluorene	"	ND	0.0577	0.0577	"	"	"	"	"	RL1
ndeno (1,2,3-cd) pyrene	"	0.0433	0.0288	0.0288	"	"	"	"	"	
Naphthalene	"	0.0638	0.0577	0.0577	"	"	"	"	"	
Phenanthrene	"	0.143	0.0577	0.0577	"	"	"	"	"	
Pyrene	"	0.113	0.0577	0.0577	"	"	"	"	"	
Surrogate(s): Fluorene-d10				92.2%		25 - 125 %	"			"
Pyrene-d10				60.4%		23 - 150 %	"			"
Benzo (a) pyre	ne-d12			89.8%		10 - 125 %	"			"

PSB0692-06 (FO095221)			Wa	ater		Sam	pled: 02/23/	09 14:55		RL	.3
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.38	1.02	1.94	ug/l	2x	9020785	02/25/09 13:00	03/14/09 03:18		_
Butyl benzyl phthalate	"	ND	1.02	1.94	"	"	"	"	"		
Di-n-butyl phthalate	"	ND	1.02	1.94	"	"	"	"	"		
Di-n-octyl phthalate	"	ND	1.94	1.94	"	"	"	"	"		
Diethyl phthalate	"	ND	1.02	1.94	"	"	"	"	"		
Dimethyl phthalate	"	ND	1.02	1.94	"	"	"	"	"		
Acenaphthene	"	ND	0.0777	0.0777	"	4x	"	"	03/09/09 20:17	RL1	
Acenaphthylene	"	ND	0.0777	0.0777	"	"	"	"	"	RL1	
Anthracene	"	ND	0.0777	0.0777	"	"	"	"	"	RL1	

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory

Project Name: **Portland Harbor** 

6543 N. Burlington Ave. Portland, OR 97203

Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created: 03/17/09 21:08

# Polynuclear Aromatic Compounds per EPA 8270M-SIM

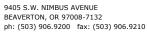
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PSB0692-06 (FO095221)			W	ater		Samp	led: 02/23/	09 14:55			RL
Benzo (a) anthracene	EPA 8270m	0.0553	0.0388	0.0388	ug/l	4x	9020785	02/25/09 13:00	03/09/09 20:17		_
Benzo (a) pyrene	"	0.0556	0.0388	0.0388	"	"	"	"	"		
Benzo (b) fluoranthene	"	0.0790	0.0388	0.0388	"	"	"	"	"		
Benzo (ghi) perylene	"	0.0878	0.0777	0.0777	"	"	"	"	"		
Benzo (k) fluoranthene	"	0.0572	0.0388	0.0388	"	"	"	"	"		
Chrysene	"	0.158	0.0388	0.0388	"	"	"	"	"		
Dibenzo (a,h) anthracene	"	ND	0.0388	0.0388	"	"	"	"	"	RL1	
Fluoranthene	"	0.233	0.0777	0.0777	"	"	"	"	"		
Fluorene	"	ND	0.0777	0.0777	"	"	"	"	"	RL1	
Indeno (1,2,3-cd) pyrene	"	0.0458	0.0388	0.0388	"	"	"	"	"		
Naphthalene	"	0.358	0.0777	0.0777	"	"	"	"	"		
Phenanthrene	"	0.169	0.0777	0.0777	"	"	"	"	"		
Pyrene	"	0.160	0.0777	0.0777	"	"	"	"	"		
Surrogate(s): Fluorene-d. Pyrene-d10 Benzo (a) p	ı			71.2% 46.3% 64.6%		25 - 125 % 23 - 150 % 10 - 125 %	"			" " "	
PSB0692-07 (FO095222)	ı		W	ater		Samp	led: 02/23/	09 15:30			
	EPA 8270m	ND	0.501	0.952	ug/l	Samp	led: 02/23/ 9020785	09 15:30	03/04/09 19:49		
PSB0692-07 (FO095222)		ND ND			ug/l				03/04/09 19:49		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate	EPA 8270m		0.501	0.952		1x	9020785	02/25/09 13:00			
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate	EPA 8270m	ND	0.501 0.501	0.952 0.952		1x	9020785	02/25/09 13:00			
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate	EPA 8270m	ND ND	0.501 0.501 0.501	0.952 0.952 0.952		1x	9020785	02/25/09 13:00			
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate	EPA 8270m	ND ND ND	0.501 0.501 0.501 0.501	0.952 0.952 0.952 0.952		1x	9020785	02/25/09 13:00			
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate	EPA 8270m	ND ND ND	0.501 0.501 0.501 0.501 0.501	0.952 0.952 0.952 0.952 0.952		1x	9020785	02/25/09 13:00	" "		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Diethyl phthalate	EPA 8270m	ND ND ND ND	0.501 0.501 0.501 0.501 0.501 0.501	0.952 0.952 0.952 0.952 0.952 0.952		1x	9020785	02/25/09 13:00			
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Dimethyl phthalate Acenaphthene	EPA 8270m	ND ND ND ND ND	0.501 0.501 0.501 0.501 0.501 0.501 0.0190	0.952 0.952 0.952 0.952 0.952 0.952 0.952		1x	9020785	02/25/09 13:00	" " " " 03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Dimethyl phthalate Dimethyl phthalate Acenaphthene Acenaphthylene	EPA 8270m	ND ND ND ND ND ND ND ND	0.501 0.501 0.501 0.501 0.501 0.501 0.0190	0.952 0.952 0.952 0.952 0.952 0.952 0.952 0.0190		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Diethyl phthalate Acenaphthene Acenaphthylene Anthracene	EPA 8270m	ND ND ND ND ND ND ND ND ND	0.501 0.501 0.501 0.501 0.501 0.501 0.0190 0.0190	0.952 0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Dimethyl phthalate Acenaphthene Acenaphthylene Anthracene Benzo (a) anthracene	EPA 8270m	ND	0.501 0.501 0.501 0.501 0.501 0.501 0.0190 0.0190 0.0190 0.00952	0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190 0.00952		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Dimethyl phthalate Acenaphthene Acenaphthylene Anthracene Benzo (a) anthracene Benzo (a) pyrene	EPA 8270m	ND	0.501 0.501 0.501 0.501 0.501 0.501 0.0190 0.0190 0.0190 0.00952 0.00952	0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190 0.0190 0.00952		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Diethyl phthalate Dimethyl phthalate Acenaphthene Acenaphthylene Anthracene Benzo (a) anthracene Benzo (a) pyrene Benzo (b) fluoranthene	EPA 8270m	ND N	0.501 0.501 0.501 0.501 0.501 0.501 0.0190 0.0190 0.0190 0.00952 0.00952	0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190 0.0190 0.00952 0.00952		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Diethyl phthalate Dimethyl phthalate Acenaphthene Acenaphthylene Anthracene Benzo (a) anthracene Benzo (b) fluoranthene Benzo (ghi) perylene	EPA 8270m	ND N	0.501 0.501 0.501 0.501 0.501 0.501 0.0190 0.0190 0.0190 0.00952 0.00952 0.00952	0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190 0.0190 0.00952 0.00952 0.00952		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Diethyl phthalate Diethyl phthalate Acenaphthene Acenaphthene Anthracene Benzo (a) anthracene Benzo (b) fluoranthene Benzo (ghi) perylene Benzo (k) fluoranthene	EPA 8270m	ND N	0.501 0.501 0.501 0.501 0.501 0.0190 0.0190 0.0190 0.00952 0.00952 0.00952 0.00952	0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190 0.0190 0.00952 0.00952 0.00952		1x	9020785	02/25/09 13:00	03/06/09 22:44		
PSB0692-07 (FO095222) Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Dimethyl phthalate Dimethyl phthalate Acenaphthene Acenaphthene Anthracene Benzo (a) anthracene Benzo (a) pyrene Benzo (b) fluoranthene Benzo (ghi) perylene Benzo (k) fluoranthene Chrysene	EPA 8270m	ND N	0.501 0.501 0.501 0.501 0.501 0.0190 0.0190 0.0190 0.00952 0.00952 0.00952 0.00952 0.00952	0.952 0.952 0.952 0.952 0.952 0.952 0.0190 0.0190 0.00952 0.00952 0.00952 0.00952 0.00952		1x	9020785	02/25/09 13:00	03/06/09 22:44		

TestAmerica Portland

Howard Holmes, Project Manager







City of Portland Water Pollution Laboratory

**Portland Harbor** Project Name:

6543 N. Burlington Ave. Portland, OR 97203

Project Number: Project Manager: Jennifer Shackelford

36238

Report Created: 03/17/09 21:08

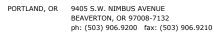
# Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	]	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-07 (	(FO095222)			W	ater		Samp	led: 02/23/	09 15:30		
Indeno (1,2,3-cd) py	rene E	EPA 8270m	ND	0.00952	0.00952	ug/l	1x	9020785	02/25/09 13:00	03/06/09 22:44	
Naphthalene		"	ND	0.0190	0.0190	"	"	"	"	"	
Phenanthrene		"	ND	0.0190	0.0190	"	"	"	"	"	
Pyrene		"	ND	0.0190	0.0190	"	"	"	"	"	
Surrogate(s):	Fluorene-d10				76.8%		25 - 125 %	"			"
	Pyrene-d10				70.9%		23 - 150 %	"			"
	Benzo (a) pyrene-d12	2			95.7%		10 - 125 %	"			"

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

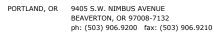
6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 03/17/09 21:08

# Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9020785	Water P	reparation	Method: 3	520B Liq-I	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	) Analyzed	Note
Blank (9020785-BLK1)								Extr	acted:	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	"	"							"	
Surrogate(s): Fluorene-d10		Recovery:	114%	Lin	nits: 25-125%	6 "							03/02/09 14:41	
Pyrene-d10			115%		23-1509	% "							"	
Benzo (a) pyrene-d12			114%		10-1259	% "							"	
LCS (9020785-BS1)								Extr	acted:	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





City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 03/17/09 21:08

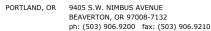
### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9020785	Water P	reparation	Method:	3520B Liq-	Liq									
Analyte	Method	Result	MDL <sup>*</sup>	* MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limit	s) Analyzed	Notes
LCS (9020785-BS1)								Ext	acted:	02/25/09 13	3:00			
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%	Lin	nits: 25-125	% "							03/02/09 15:15	
Pyrene-d10		Í	115%		23-150	0% "							"	
Benzo (a) pyrene-d12			117%		10-125	ī% "							"	
Matrix Spike (9020785-MS1)				QC Source:	PSB0693-	11		Ext	racted:	02/25/09 13	6:00			
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 Pyrene-d10		Recovery:	71.0% 38.9%	Lin	nits: 25-125					<u> </u>			03/02/09 17:52	

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 03/17/09 21:08

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results TestAmerica Portland 3520B Liq-Liq QC Batch: 9020785 Water Preparation Method: Source Spike Analyte Method Result MDL\* MRL Units Dil (Limits) Analyzed (Limits) Notes REC Matrix Spike (9020785-MS1) QC Source: PSB0693-11 Extracted: 02/25/09 13:00 Recovery: 57.2% Limits: 10-125% 03/02/09 17:52 Surrogate(s): Benzo (a) pyrene-d12 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 5x 2.77 3 92 104% (10-150)10.3% (50) 03/03/09 12:57 ug/l 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% Diethyl phthalate 4.07 2.58 4.90 ND 104% 9.17% 3.29 2.58 4.90 ND 83.9% 7.41% Dimethyl phthalate 0.0980 0.0980 ND 03/02/09 18:26 Acenaphthene 1.69 2.45 69.0% (35-120)9.60% (45) Acenaphthylene 1 71 0.0980 0.0980 ND 69 9% (34-116)9 62% 0.0980 Anthracene 1.33 0.0980 0.0318 52.8% (24-119)16.6% 0.882 0.0490 0.0490 0.0417 Benzo (a) anthracene 34.3% (22-129)18.5% 0.700 0.0490 0.0490 0.0350 27.1% (4-112)21.8% Benzo (a) pyrene 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% 1 70 0.0980 0.0980 0.0252 68 4% (27-124)11.4% Fluorene 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) Phenanthrene 1.83 0.0980 0.0980 0.237 64.9% (34-126) 13.9% 0.890 0.0980 0.0980 0 143 30.5% (14-168)22.0% Pyrene 03/02/09 18:26 Surrogate(s): Fluorene-d10 Recovery: 78.1% Limits: 25-125% 46.4% 23-150% Pyrene-d10

10-125%

TestAmerica Portland

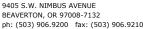
Howard Holmes, Project Manager

Benzo (a) pyrene-d12

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.

74.0%







City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

36238 Report Created: 6543 N. Burlington Ave. Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 03/17/09 21:08

#### **Notes and Definitions**

#### Report Specific Notes:

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

Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight. dry

Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet

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 -Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and Limits

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

# **TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

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425-420-9200 FAX 420-9210

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PHONE:	FAX:		P.O. NUMBER:	36238	Petroleum Hydrocarbon Analyses		
PROJECT NAME: POLY	ectname Portand Haibw 1812			PRESERVATIVE		5 4 3 2 1 <1	
		2 3	R	EQUESTED ANALYSES		OTHER Specify:	
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FO 095220	1428	XX				W 2 (*)*	
FO 095221	1455	XX				W 2	
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Received by:    Umpacked by:   Loggod-in-by:   Client:   SBOU972		Τe	estAmerica Sample I	Receipt Checklist	≹ret \$i c.t.
Date 2/24/09 Initials	Received by:	Unpacked by:	Logged-in by:	Work Order No. 15B0692	
Digi #1   Digi #2   Digi #2   Digi #2   Digi #4   Digi	Date: 2/24/09	Date: 2/24/09	100/14	Project: Portland Hand	01
Signature: Y N Dated:	***ESI Clients (see Section C	13,1,2.3,48		Digi #1 Win Digi #2Otho	ice Melted n 4 Hours
None   Received front:   Selected   None   Sel	A Custody Seals: (#				
Container Type:	_	Rece	<del>/-</del>		
None			Senvoy UPS	IDs Match COC?	none given
	None (#	Other:)	Client	Cyanide Checked? Y N	(NA)
None	Gel Ice		DHL	Adequate Volume?	
Bubble BagsOther: TB on COC? not provided Y N NA NAStyrofoam CubbiesBeanutsNone (_Other:)	<del></del>		GS/TA		
HNO3 Preserved? Y N NA NA NA NA Dissolved Metals Filtered? Y N NA N	Bubble Bag	-			)
Temperature Blank:°C not provided Digi: # 1 #2	Peanuts			HNO3 Preserved? Y N	\ /
All preserved bottles checked Y N NA (voas/soils/all unp.) FED EX Goldstreak UPS DHL Other: All preserved accordingly? Y N (see NOD) NA (voas/soils/all unp.)  Project Managers:	***ESI Clients Only:			FED EX/ UPS: Was the tracking paper keepable? YES	NO
	All preserved bottle	es checked Y N	NA (voas/soils/all unp.)		er:
Commenter	Comments:	12-23-	Project	l Managers:	

(Initial/Date)

PM Reviewed:\_



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

# **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:

got C. Muye

Scott Unze, Project Manager (612) 607-6383

(612) 607-6444 (fax) scott.unze@pacelabs.com



# **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.

March 13, 2009



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

# **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.

# Appendix A

Sample Management



#### SUBCONTRACT ORDER

# **TestAmerica Portland** PSB0692

10900g0

**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

needs Excel EDD **Analysis** Comments Units Due **Expires** Sample ID: PSB0692-01 Water Sampled: 02/23/09 14:42 08/22/09 14:42 \*\*\*209 Congeners\*\*\* to Pace 1668 Coplanar PCBs - SUB ug/l 03/17/09 Containers Supplied: 095216 FO 1L Amber - Unpres. (A) Sample ID: PSB0692-02 Water Sampled: 02/23/09 14:10 \*\*\*209 Congeners\*\*\* to Pace 03/17/09 08/22/09 14:10 1668 Coplanar PCBs - SUB ug/l Containers Supplied: FO 095217 1L Amber - Unpres. (A) Sample ID: PSB0692-03 Water Sampled: 02/23/09 15:18 \*\*\*209 Congeners\*\*\* to Pace 03/17/09 1668 Coplanar PCBs - SUB 08/22/09 15:18 Containers Supplied: 095218 FO

1L Amber - Unpres. (A)			****	,
Sample ID: PSB0692-04	Water		Sampl <u>ed: <b>02/23/0</b></u>	9 13:58
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 13:58	***209 Congeners*** to Pace
Containers Supplied:				To 00 5210

1L Amber - Unpres. (A)

Water Sampled: 02/23/09 14:28

03/17/09 08/22/09 14:28 \*\*\*209 Congeners\*\*\* to Pace 1668 Coplanar PCBs - SUB ug/l

Containers Supplied:

Sample ID: PSB0692-05

1L Amber - Unpres. (A)

095220 Fo

Fo

Sample ID: PSB0692-06 Water Sampled: 02/23/09 14:55 03/17/09 08/22/09 14:55

1668 Coplanar PCBs - SUB ug/l

\*\*\*209 Congeners\*\*\* to Pace

095219

Containers Supplied: 095221 FO 1L Amber - Unpres. (A)

Received By

Date/Time

PACÉ Referenced By

Date/TimePage 4Pof973 of 2

Released Report No.....1090080\_1668 Aime

# SUBCONTRACT ORDER

# TestAmerica Portland PSB0692

080090

Analysis	Units	Due	Expires	Comments
Sample ID: PSB0692-07	Water		Sampled: <b>02/23/09 15:30</b>	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 15:30	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				Fo 095222
Sample ID: PSB0692-08	Water		Sampled: <b>02/23/09 00:00</b>	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 00:00	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				Fo 095223

# Pace Analytical

# ran Semple Condition Upon Receipt

Client Na	ame: [EST	A-nekich	_ Project # _	1090080
Courier: SEed Ex UPS USPS Tracking #: 9796 8712 136	Client Comme	rcial Pace Other	©ptic	inal. Bue Date:
	· · · · · · · · · · · · · · · · · · ·	Seals intact:		Name:
Packing Material: Bubble Wrap 🗡 Bu	ibble Bags 🔲 Noi		- Characteristic Char	A.
Thermometer Used 80344048, 179425		Wet Blue None	Temp Blank: Yo	
Cooler Temperature 4.2°C Temp should be above freezing to 6°C		Saue is Frozen: Yes No Comments:	Date and Initia	poling process has begun
Chain of Gustody Present:	¥ Yes □No □			
Chain of Custody Filled Out:	KSYes □No □	The state of the s	Bibboursey-African Control of the Co	Hadden Brown to the State of th
Chain of Custody Relinquished:	Àyes □No □	AND DESCRIPTION OF THE PROPERTY OF THE PROPERT	The State of the S	THE REAL PROPERTY OF THE PROPE
Sampler Name & Signature on COC:	□Yes 🔼No 🗀		nder der der der der gestände gefügte auf der er er er de habit der	al-december of the second of t
Samples Arrived within Hold Time:	Øyes □No □I	CONTRACTOR OF THE PARTY OF THE	WWW. Color of the	THE STATE STATE STATES AND ASSESSED STATES AND ASSESSED ASSESSED ASSESSED.
Short Hold Time Analysis (<72hr):	□Yes □No 🕰		COOPERS TO A PROPERTY OF A STREET AND A STREET AND A STREET AND A STREET AND ASSESSMENT ASSESSMENT AND ASSESSMENT ASSESSMENT AND ASSESSMENT ASSESSME	AND THE PARTY SECTION
Rush Turn Around Time Requested:	□Yes MNo □N	**************************************	(Filedonal aspect, a popular in process to open a second place of the second	HER MAN NOTICE ELEMENTS THE PROPERTY OF MELLINE AND ADMINISTRATION OF THE PAPER POST ADM
Sufficient Volume:	^_	WA 8.	Wikiterscheidigen til de köpten i von (All ppeninsvanskaliden alternasiaan)	talliga ya geresinin di Papusa sakir sesiantiga di padakan kamada sejinga kapasa sakiri da semakan ya gamada
Correct Containers Used:		/A 9.	Antoniosista (1998) albinio de 193 prima per esta de 1940 par en 1	Colleged to the Topic Age Berke to 3 to Tilly specific magney have provided by Age (1980) and the Age (1980)
-Pace Containers Used:	□Yes <b>(DK</b> io □N	[		
Containers Intact:	Yes DNo DNA	A 10.	PTV-2003年1964年1月1日第二日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	FECTION OF THE BUILDING PARTY OF THE PARTY O
Filtered volume received for Dissolved tests		A 11.	***************************************	
Sample Labels match COC:	Yes DNo DNA	4 12.	TARTISE CONTRACTOR CALLEGY ON THE CONTRACTOR OF AT ANALYSIS OF THE CONTRACTOR OF THE	k stadional stadion state (state of the state of the stat
-Includes date/time/ID/Analysis Matrix:	4			
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	□Yes □No AIN/A	113.	PM-772500000000000000000000000000000000000	يستري شدوي يا جريا يا من المنافق الله المنافق
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes □No ANA			
Exceptions: VOA, Coliform, TOC, Oil and Grease, Wi-DRO (water)	□Yes (ANo	Initial when completed	Lot # of added preservative	الله و النامة عند الاستراع <u>المحمد المحاولة المحاولة المحاولة المحاولة المحاولة المحاولة المحاولة المحاولة المح</u>
Samples checked for dechlorination:	□Yes □No KIN/A	The state of the s	Paradalemana administration described in the administration of the second described in the second desc	
Headspace in VOA Vials ( >6mm):	□Yes □No <b>Æ</b> IN/A	THE RESIDENCE OF THE PARTY OF T	ALT THE PARTY OF T	manyappyer manjapunkapanka an primanana maha (pumun a sumberiumbhy
Trip Blank Present:	□Yes □No ÆN/A	CANADAM TO STREET OF THE STREET OF THE STREET OF PRINCIPAL STREET, NAME AND ADDRESS OF THE STR	And the second s	A Control of the State of the S
Trip Blank Custody Seals Present	□Yes □No MANA			
Pace Trip Blank Lot # (if purchased):				
Client Notification/ Resolution:				
Person Contacted:	Date/Tir		Field Data Required?	Υ / Ν
Comments/ Resolution:		TITO,	are a consequent	
		1		<del></del>
Project Manager Review:	(W		Date: 02/	27/09

# Appendix B

Sample Analysis Summary



Tel: 612-607-1700 Fax: 612- 607-6444

# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Matrix

Dilution

Water

NA

Client's Sample ID PSB0692-06;FO 095221 Lab Sample ID 1090080006

Filename P90312B\_10 Injected By BAL

Total Amount Extracted 1000 mL 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 09:28

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.635	2.83	2.0	0.685	34
13C-4-MoCB	3	9.522	3.07	2.0	1.14	57
13C-2,2'-DiCB	4	9.834	1.63	2.0	1.24	62
13C-4,4'-DiCB	15	17.658	1.49	2.0	1.40	70
13C-2,2',6-TrCB	19	14.039	1.08	2.0	1.67	84
13C-3,4,4'-TrCB	37	25.957	1.01	2.0	1.61	80
13C-2,2',6,6'-TeCB	54	17.958	0.80	2.0	1.56	78
13C-3,4,4',5-TeCB	81	33.336	0.74	2.0	1.67	84
13C-3,3',4,4'-TeCB	77	33.939	0.80	2.0	1.76	88
13C-2,2',4,6,6'-PeCB	104	24.515	1.60	2.0	1.80	90
13C-2,3,3',4,4'-PeCB	105	37.595	1.51	2.0	1.53	76
13C-2,3,4,4',5-PeCB	114	36.941	1.55	2.0	1.51	75
13C-2,3',4,4',5-PeCB	118	36.405	1.51	2.0	1.56	78
13C-2,3',4,4',5'-PeCB	123	36.069	1.56	2.0	1.60	80
13C-3,3',4,4',5-PeCB	126	40.849	1.52	2.0	1.40	70
13C-2,2',4,4',6,6'-HxCB	155	30.854	1.29	2.0	2.16	108
13C-HxCB (156/157)	156/157	43.935	1.22	4.0	3.22	81
13C-2,3',4,4',5,5'-HxCB	167	42.777	1.18	2.0	1.66	83
13C-3,3',4,4',5,5'-HxCB	169	47.305	1.23	2.0	1.51	75
13C-2,2',3,4',5,6,6'-HpCB	188	36.908	1.05	2.0	2.62	131
13C-2,3,3',4,4',5,5'-HpCB	189	49.849	1.05	2.0	2.00	100
13C-2,2',3,3',5,5',6,6'-OcCB	202	42.459	0.86	2.0	2.32	116
13C-2,3,3',4,4',5,5',6-OcCB	205	52.436	0.90	2.0	1.58	79
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.160	0.80	2.0	1.66	83
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.267	0.80	2.0	1.81	91 78
13CDeCB	209	55.734	0.72	2.0	1.55	78
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.362	0.99	2.0	1.78	89
13C-2,3,3',5,5'-PeCB	111	34.040	1.67	2.0	1.68	84
13C-2,2',3,3',5,5',6-HpCB	178	40.111	1.04	2.0	1.84	92
Recovery Standards						
13C-2,5-DiCB	9	12.589	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.492	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.122	1.56	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.625	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.940	0.88	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



Tel: 612-607-1700 Fax: 612- 607-6444

# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-06;FO 095221 1090080006 P90312B\_10

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
5 6				ND		0.249
7				ND		0.249
8		13.716	1.56	0.364		0.249
9				ND		0.249
10				ND		0.249
11		16.927	1.45	2.93		1.49
12	12/13	10.527		ND		0.498
13	12/13			ND		0.498
14	12/13			ND		0.249
15				ND		0.249
16		17.575	0.97	0.250		0.249
17		17.035	0.96	0.269		0.249
18	18/30	16.520	1.08	0.530		0.498
19	10/30	10.520	1.00	0.550 ND		0.498
20	20/28	21.379	0.97	0.916		0.498
21	21/33					
22	21/33	21.647 22.100	1.00 1.02	0.522 0.399		0.498 0.249
23				ND ND		0.249
24				ND		0.249
25	00/00			ND		0.249
26	26/29			ND		0.498
27	00/00			ND (0.040)		0.249
28	20/28	21.379	0.97	(0.916)		0.498
29	26/29	40.500		NĎ		0.498
30	18/30	16.520	1.08	(0.530)		0.498
31		21.044	0.96	0.775		0.249
32	0.1/0.0			ND		0.249
33	21/33	21.647	1.00	(0.522)		0.498
34				ND		0.249
35				ND		0.249
36				ND		0.249
37		25.974	1.01	0.284		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		0.997
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

Page 44 of 73



Tel: 612-607-1700 Fax: 612- 607-6444

# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-06;FO 095221 1090080006 P90312B\_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		0.997
50	50/53			ND		0.997
51	45/51			ND		0.997
52		23.525	0.80	1.22		0.498
53	50/53			ND		0.997
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	00,02,10			ND		0.498
64				ND		0.498
65	44/47/65			ND		1.49
66		29.244	0.75	0.862		0.498
67				ND		0.498
68				ND		0.498
69	49/69			ND		0.997
70	61/70/74/76			ND		1.99
71	40/41/71			ND		1.49
72	10/11//1			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	01/10/11/10			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		29.043	1.62	0.516		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		0.997
89	33/31			ND		0.498
90	90/101/113	31.156	1.61	2.08		1.49
91	88/91			ND		0.997
92	- 5, 0 .			ND		0.498
93	93/98/100/102			ND		1.99
94	23,00,.00,102			ND		0.498
95		27.886	1.54	1.66		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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-06;FO 095221 1090080006

1090080006 P90312B\_10

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
97	86/87/97/108/119/125			ND		2.99
98	93/98/100/102			ND		1.99
99		31.759	1.60	0.646		0.498
100	93/98/100/102			ND		1.99
101	90/101/113	31.156	1.61	(2.08)		1.49
102	93/98/100/102			` NĎ		1.99
103				ND		0.498
104				ND		0.498
105		37.629	1.54	0.765		0.498
106				ND		0.498
107	107/124			ND		0.997
107	86/87/97/108/119/125			ND		2.99
100	00/07/97/100/119/125			ND		0.498
110	110/115	33.218	1.56	2.26		0.498
111	110/115	33.210	1.56	2.26 ND		0.498
112				ND ND		0.498
	90/101/113					
113	90/101/113	31.156	1.61	(2.08)		1.49
114	440/445		4.50	NĎ		0.498
115	110/115	33.218	1.56	(2.26)		0.997
116	85/116/117			ND		1.49
117	85/116/117			ND		1.49
118		36.438	1.52	1.67		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		0.997
125	86/87/97/108/119/125			ND		2.99
126				ND		0.498
127				ND		0.498
128	128/166			ND		0.997
129	129/138/163	39.658	1.23	3.19		1.49
130				ND		0.498
131				ND		0.498
132		36.455	1.29	1.09		0.498
133				ND		0.498
134	134/143			ND		0.997
135	135/151			ND		0.997
136	100/101			ND		0.498
137				ND		0.498
138	129/138/163	39.658	1.23	(3.19)		1.49
139	139/140	39.036	1.23	(3.19) ND		0.997
140	139/140			ND ND		0.997
140	139/140	38.568	1.38	0.521		0.498
		30.300				
142	404/440			ND		0.498
143	134/143			ND		0.997
144				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 NA = Not Applicable NC = Not Calculated \*= See Discussion ! = Outside QC Limits RT = Retention Time

ND = Not Detected

I = Interference ng's = Nanograms



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-06;FO 095221 1090080006 P90312B\_10

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	35.181	1.23	2.34		0.997
148				ND		0.498
149	147/149	35.181	1.23	(2.34)		0.997
150				NĎ		0.498
151	135/151			ND		0.997
152	/ /			ND		0.498
153	153/168	38.400	1.23	2.57		0.997
154				ND		0.498
155	450/457			ND		0.498
156	156/157			ND		0.997
157	156/157			ND		0.997
158				ND		0.498
159				ND ND		0.498
160 161				ND ND		0.498 0.498
162				ND ND		0.498
162	129/138/163	39.658	1.23	(3.19)		1.49
164	129/130/103	39.030	1.23	(3.19) ND		0.498
165				ND ND		0.498
166	128/166			ND ND		0.498
167	120/100			ND		0.498
168	153/168	38.400	1.23	(2.57)		0.997
169	199/100			ND		0.498
170		46.635	1.04	0.859		0.498
171	171/173			ND		0.997
172				ND		0.498
173	171/173			ND		0.997
174		41.905	1.02	1.02		0.498
175				ND		0.498
176				ND		0.498
177		42.358	1.17	0.535		0.498
178				ND		0.498
179				ND		0.498
180	180/193	45.394	0.99	1.96		0.997
181				ND		0.498
182				ND		0.498
183	183/185			ND		0.997
184				ND		0.498
185	183/185			ND		0.997
186		44.007		ND		0.498
187		41.067	0.99	1.04		0.498
188				ND ND		0.498
189				ND ND		0.498
190				ND ND		0.498
191				ND ND		0.498
192				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

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Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
\*= See Discussion
! = Outside QC Limits
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ng's = Nanograms



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-06;FO 095221 1090080006 P90312B\_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.394	0.99	(1.96)		0.997
194				` NĎ		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

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 Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-06;FO 095221 1090080006 P90312B\_10

Congoner Croun	Concentration	
Congener Group	ng/L	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	3.29	
Total Trichloro Biphenyls	3.94	
Total Tetrachloro Biphenyls	2.08	
Total Pentachloro Biphenyls	9.60	
Total Hexachloro Biphenyls	9.71	
Total Heptachloro Biphenyls	5.42	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	34.1	
	Total Dichloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Hexachloro Biphenyls Total Heptachloro Biphenyls Total Octachloro Biphenyls Total Nonachloro Biphenyls Decachloro Biphenyls	Congener Groupng/LTotal Monochloro BiphenylsNDTotal Dichloro Biphenyls3.29Total Trichloro Biphenyls3.94Total Tetrachloro Biphenyls2.08Total Pentachloro Biphenyls9.60Total Hexachloro Biphenyls9.71Total Heptachloro Biphenyls5.42Total Octachloro BiphenylsNDTotal Nonachloro BiphenylsNDDecachloro BiphenylsNDDecachloro BiphenylsND

ND = Not Detected



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID PSB0692-07;FO 095222

Lab Sample ID 1090080007 Filename P90312B\_11

Injected By BAL 987 mL Total Amount Extracted

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 10:29

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.647	2.83	2.0	1.24	62
13C-4-MoCB	3	9.534	2.69	2.0	1.25	63
13C-2,2'-DiCB	4	9.846	1.64	2.0	1.47	74
13C-4,4'-DiCB	15	17.669	1.53	2.0	0.945	47
13C-2,2',6-TrCB	19	14.051	1.04	2.0	1.42	71
13C-3,4,4'-TrCB	37	25.954	1.04	2.0	1.30	65
13C-2,2',6,6'-TeCB	54	17.957	0.76	2.0	1.10	55
13C-3,4,4',5-TeCB	81	33.298	0.78	2.0	1.39	70
13C-3,3',4,4'-TeCB	77	33.885	0.74	2.0	1.54	77
13C-2,2',4,6,6'-PeCB	104	24.512	1.57	2.0	1.27	64
13C-2,3,3',4,4'-PeCB	105	37.524	1.56	2.0	1.36	68
13C-2,3,4,4',5-PeCB	114	36.870	1.49	2.0	1.24	62
13C-2,3',4,4',5-PeCB	118	36.333	1.55	2.0	1.35	67
13C-2,3',4,4',5'-PeCB	123	35.998	1.52	2.0	1.35	67
13C-3,3',4,4',5-PeCB	126	40.743	1.50	2.0	1.28	64
13C-2,2',4,4',6,6'-HxCB	155	30.817	1.30	2.0	1.74	87
13C-HxCB (156/157)	156/157	43.811	1.25	4.0	2.92	73
13C-2,3',4,4',5,5'-HxCB	167	42.671	1.20	2.0	1.51	75
13C-3,3',4,4',5,5'-HxCB	169	47.148	1.27	2.0	1.43	71
13C-2,2',3,4',5,6,6'-HpCB	188	36.836	1.06	2.0	2.27	114
13C-2,3,3',4,4',5,5'-HpCB	189	49.670	1.04	2.0	1.75	87
13C-2,2',3,3',5,5',6,6'-OcCB	202	42.352	0.91	2.0	2.04	102
13C-2,3,3',4,4',5,5',6-OcCB	205	52.256	0.89	2.0	1.54	77
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.980	0.81	2.0	1.49	74
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.131	0.80	2.0	1.68	84
13CDeCB	209	55.554	0.73	2.0	1.47	74
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.360	0.97	2.0	1.33	66
13C-2,3,3',5,5'-PeCB	111	33.986	1.63	2.0	1.54	77
13C-2,2',3,3',5,5',6-HpCB	178	40.022	1.06	2.0	1.86	93
Recovery Standards						
13C-2,5-DiCB	9	12.601	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.490	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.085	1.64	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.536	1.22	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.782	0.88	2.0	NA	NA

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-07;FO 095222 1090080007 P90312B\_11

NPAC   Co-elutions					Concentration	<b>EMPC</b>	EML
2	IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
2	1				ND		0.253
3	2				ND		0.253
4	3						0.253
5							
6					ND		
8	6						0.253
8	7						0.253
9							
10	a						0.253
11	10						0.253
12							1.52
13		12/12					
14	12	12/13					0.507
15		12/13					
16							0.253
17	15						0.253
18       18/30	16						0.253
19		10/00					0.253
20       20/28	18	18/30					0.507
21       21/33        ND        0.507         22         ND        0.253         23         ND        0.253         24         ND        0.253         25         ND        0.507         26       26/29        ND        0.507         27         ND        0.507         28       20/28         ND        0.507         29       26/29         ND        0.507         29       26/29         ND        0.507         30       18/30         ND        0.507         31         ND        0.507         31         ND        0.253         32         ND        0.253         33       21/33        ND							
22	20	20/28					
23 24		21/33					
24         ND        0.253         25         ND        0.253         26       26/29         ND        0.507         27         ND        0.507         28       20/28         ND        0.507         29       26/29         ND        0.507         30       18/30        ND        0.507         31         ND        0.507         31         ND        0.253         32         ND        0.253         33       21/33         ND        0.253         34         ND        0.253         36         ND        0.253         37         ND        0.253         38         ND	22						
25							0.253
26       26/29         ND        0.507         27         ND        0.253         28       20/28         ND        0.507         29       26/29         ND        0.507         30       18/30         ND        0.507         31         ND        0.253         32         ND        0.253         32         ND        0.253         34         ND        0.253         35         ND        0.253         36         ND        0.253         37         ND        0.253         39         ND        0.253         40       40/41/71         ND        1.52         41       40/41/71      <	24						
27	25						0.253
27	26	26/29			ND		0.507
28       20/28         ND        0.507         29       26/29         ND        0.507         30       18/30         ND        0.507         31         ND        0.253         32         ND        0.253         33       21/33         ND        0.507         34         ND        0.253         35         ND        0.253         36         ND        0.253         38         ND        0.253         39         ND        0.253         39         ND        0.253         40       40/41/71         ND        1.52         41       40/41/71         ND        0.507         43      <	27				ND		0.253
29       26/29         ND        0.507         30       18/30         ND        0.507         31         ND        0.253         32         ND        0.253         33       21/33        ND        0.507         34         ND        0.253         35         ND        0.253         36         ND        0.253         37         ND        0.253         38         ND        0.253         39         ND        0.253         40       40/41/71         ND        0.253         41       40/41/71         ND        0.507         43         ND        0.507         44       44/47/65	28	20/28			ND		0.507
30       18/30         ND        0.507         31         ND        0.253         32         ND        0.253         33       21/33         ND        0.507         34         ND        0.253         35         ND        0.253         36         ND        0.253         37         ND        0.253         38         ND        0.253         39         ND        0.253         40       40/41/71         ND        0.253         41       40/41/71         ND        1.52         42         ND        0.507         43         ND        0.507         44       44/47/65	29				ND		
31         ND        0.253         32         ND        0.253         33       21/33         ND        0.507         34         ND        0.253         35         ND        0.253         36         ND        0.253         37         ND        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        0.507         43         ND        1.52         45       45/51         ND        1.52         45       45/51	30	18/30					0.507
32	31				ND		0.253
33       21/33         ND        0.507         34         ND        0.253         35         ND        0.253         36         ND        0.253         37         ND        0.253         38         ND        0.253         39         ND        0.253         40       40/41/71         ND        0.253         41       40/41/71         ND        0.507         42         ND        0.507         43         ND        0.507         44       44/47/65         ND        1.52         45       45/51         ND        0.507         47       44/47/65         ND        0.507         47 <t< td=""><td>32</td><td></td><td></td><td></td><td></td><td></td><td>0.253</td></t<>	32						0.253
34         ND        0.253         35         ND        0.253         36         ND        0.253         37         ND        0.253         38         ND        0.253         39         ND        0.253         40       40/41/71         ND        0.253         41       40/41/71         ND        1.52         41       40/41/71         ND        1.52         42         ND        0.507         43         ND        0.507         44       44/47/65         ND        1.52         45       45/51         ND        0.507         47       44/47/65         ND        0.507         47       <		21/33					
35         ND        0.253         36         ND        0.253         37         ND        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        0.507         43         ND        0.507         44       44/47/65        ND        1.52         45       45/51         ND        1.01         46         ND        0.507         47       44/47/65         ND        1.52	34	21/00					
36         ND        0.253         37         ND        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        0.507         43         ND        0.507         44       44/47/65        ND        1.52         45       45/51         ND        1.01         46         ND        0.507         47       44/47/65         ND        1.52	35						
37         ND        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        0.507         43         ND        0.507         44       44/47/65        ND        1.52         45       45/51         ND        1.01         46         ND        0.507         47       44/47/65         ND        1.52	36						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        0.507         43         ND        0.507         44       44/47/65         ND        1.52         45       45/51         ND        1.01         46         ND        0.507         47       44/47/65         ND        1.52	37						
39 ND 0.253 40 40/41/71 ND 1.52 41 40/41/71 ND 1.52 42 ND 0.507 43 ND 0.507 44 44/47/65 ND 1.52 45 45/51 ND 1.01 46 ND 1.52 47 44/47/65 ND 1.52	20						0.233
40       40/41/71         ND        1.52         41       40/41/71         ND        1.52         42         ND        0.507         43         ND        0.507         44       44/47/65         ND        1.52         45       45/51         ND        1.01         46         ND        0.507         47       44/47/65         ND        1.52	30						0.255
41       40/41/71         ND        1.52         42         ND        0.507         43         ND        0.507         44       44/47/65         ND        1.52         45       45/51         ND        1.01         46         ND        0.507         47       44/47/65         ND        1.52	39	40/44/74					
42       ND      0.507       43       ND      0.507       44     44/47/65       ND      1.52       45     45/51       ND      1.01       46       ND      0.507       47     44/47/65       ND      1.52							1.52
43 ND 0.507 44 44/47/65 ND 1.52 45 45/51 ND 1.01 46 ND 0.507 47 44/47/65 ND 1.52		40/41/71					
44     44/47/65       ND      1.52       45     45/51       ND      1.01       46       ND      0.507       47     44/47/65       ND      1.52							
45 45/51 ND 1.01 46 ND 0.507 47 44/47/65 ND 1.52		4.4/47/05					0.507
46 ND 0.507 47 44/47/65 ND 1.52							
47 44/47/65 ND 1.52		45/51			ND		1.01
47 44/47/65 ND 1.52 48 ND 0.507							0.507
48 ND 0.507		44/47/65					1.52
	48				ND		0.507

Conc = Concentration

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ND = Not Detected NA = Not Applicable NC = Not Calculated \*= See Discussion ! = Outside QC Limits RT = Retention Time I = Interference ng's = Nanograms



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-07;FO 095222 1090080007 P90312B\_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
			Ratio			
49	49/69			ND		1.01
50	50/53			ND		1.01
51	45/51			ND		1.01
52				ND		0.507
53	50/53			ND		1.01
54				ND		0.507
55				ND		0.507
56				ND		0.507
57				ND		0.507
58				ND		0.507
59	59/62/75			ND		1.52
60				ND		0.507
61	61/70/74/76			ND		2.03
62	59/62/75			ND		1.52
63				ND		0.507
64				ND		0.507
65	44/47/65			ND		1.52
66	, , 55			ND		0.507
67				ND		0.507
68				ND		0.507
69	49/69			ND		1.01
70	61/70/74/76			ND		2.03
71	40/41/71			ND		1.52
72	40/41/11			ND		0.507
73				ND		0.507
73 74	61/70/74/76			ND		2.03
7 <del>4</del> 75	59/62/75			ND		1.52
75 76	61/70/74/76			ND ND		2.03
70 77	01/10/14/10			ND ND		0.507
77 78				ND ND		0.507
76 79				ND ND		0.507
79 80						
				ND		0.507
81				ND ND		0.507
82				ND		0.507
83				ND		0.507
84	05/440/447			ND		0.507
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	00/104/140			ND		0.507
90	90/101/113			ND		1.52
91	88/91			ND		1.01
92				ND		0.507
93	93/98/100/102			ND		2.03
94				ND		0.507
95				ND		0.507
96				ND		0.507

Conc = Concentration

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-07;FO 095222 1090080007

P90312B 11

riiename	F90-	3120_11				
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
			- Ttatio	9,=	1.9/ =	
97	86/87/97/108/119/125			ND		3.04
98	93/98/100/102			ND		2.03
99				ND		0.507
100	93/98/100/102			ND		2.03
101	90/101/113			ND		1.52
102	93/98/100/102			ND		2.03
103				ND		0.507
104				ND		0.507
105				ND		0.507
106				ND		0.507
107	107/124			ND		1.01
108	86/87/97/108/119/125			ND		3.04
109	440/445			ND		0.507
110	110/115			ND		1.01
111				ND		0.507
112	00/404/440			ND		0.507
113	90/101/113			ND		1.52
114	440/445			ND		0.507
115	110/115			ND		1.01
116	85/116/117			ND		1.52
117	85/116/117			ND		1.52
118 119	86/87/97/108/119/125			ND ND		0.507
119	86/87/97/108/119/125			ND ND		3.04
120						0.507
121				ND ND		0.507 0.507
122				ND ND		0.507
123	107/124			ND ND		1.01
125	86/87/97/108/119/125			ND ND		3.04
126	80/87/97/108/119/123			ND ND		0.507
127				ND		0.507
128	128/166			ND		1.01
129	129/138/163			ND		1.52
130	120/100/100			ND		0.507
131				ND		0.507
132				ND		0.507
133				ND		0.507
134	134/143			ND		1.01
135	135/151			ND		1.01
136				ND		0.507
137				ND		0.507
138	129/138/163			ND		1.52
139	139/140			ND		1.01
140	139/140			ND		1.01
141				ND		0.507
142				ND		0.507
1/12	121/112			ND		1 01

Conc = Concentration

134/143

143

144

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

ND

ND

1.01

0.507



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename

PSB0692-07;FO 095222 1090080007 P90312B\_11

		<del>-</del>				
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.507
146				ND		0.507
147	147/149			ND		1.01
148	1477149			ND		0.507
149	147/149			ND		1.01
150	1477149			ND		0.507
150	135/151			ND		1.01
152	133/131			ND		0.507
153	153/168			ND		1.01
154	133/100			ND		0.507
155				ND ND		0.507
156	156/157			ND ND		1.01
157	156/157			ND ND		1.01
157	156/157			ND ND		0.507
150				ND ND		0.507
160				ND ND		0.507
161				ND ND		0.507
162				ND ND		0.507
163	120/120/162			ND ND		0.507
	129/138/163					1.52
164				ND ND		0.507
165	100/100			ND ND		0.507
166	128/166					1.01
167	450/400			ND		0.507
168	153/168			ND		1.01
169				ND		0.507
170	474/470			ND		0.507
171	171/173			ND		1.01
172	474/470			ND		0.507
173	171/173			ND		1.01
174				ND		0.507
175				ND		0.507
176				ND		0.507
177				ND		0.507
178				ND		0.507
179	100/100			ND		0.507
180	180/193			ND		1.01
181				ND		0.507
182	100/105			ND		0.507
183	183/185			ND		1.01
184	100/105			ND		0.507
185	183/185			ND		1.01
186				ND		0.507
187				ND		0.507
188				ND		0.507
189				ND		0.507
190				ND		0.507
191				ND		0.507
192				ND		0.507

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-07;FO 095222 1090080007 P90312B\_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.01
194				ND		0.760
195				ND		0.760
196				ND		0.760
197	197/200			ND		1.52
198	198/199			ND		1.52
199	198/199			ND		1.52
200	197/200			ND		1.52
201				ND		0.760
202				ND		0.760
203				ND		0.760
204				ND		0.760
205				ND		0.760
206				ND		0.760
207				ND		0.760
208				ND		0.760
209				ND		0.760

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSB0692-07;FO 095222 1090080007 P90312B\_11

Congener Group	Concentration ng/L	
otal Manachlora Riphenyls	ND	
• •		
otal Trichloro Biphenyls	ND	
otal Tetrachloro Biphenyls	ND	
otal Pentachloro Biphenyls	ND	
otal Hexachloro Biphenyls	ND	
otal Heptachloro Biphenyls	ND	
otal Octachloro Biphenyls	ND	
otal Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
otal PCBs	ND	
	Total Monochloro Biphenyls Total Dichloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Hexachloro Biphenyls Total Heptachloro Biphenyls Total Octachloro Biphenyls Total Octachloro Biphenyls Total Nonachloro Biphenyls Total Nonachloro Biphenyls Total Nonachloro Biphenyls	Total Monochloro Biphenyls Total Dichloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Hexachloro Biphenyls Total Heptachloro Biphenyls Total Heptachloro Biphenyls Total Octachloro Biphenyls Total Octachloro Biphenyls Total Octachloro Biphenyls Total Nonachloro Biphenyls Decachloro Biphenyls ND Total Nonachloro Biphenyls ND

ND = Not Detected

Water

02/27/2009



Tel: 612-607-1700 Fax: 612-607-6444

# Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID BLANK-19082 P90312A\_07 Filename Injected By SMT **Total Amount Extracted** 1900 mL **ICAL ID** P90312A03

Analyzed 03/12/2009 17:05 P90312A 02 Dilution NA

Matrix

Extracted

CCal Filename(s)

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	105 114	37.371 36.701	1.51 1.48	2.0 2.0	1.29 1.27	64 64
13C-2,3,4,4',5-PeCB	114	36.181	1.46	2.0	1.27 1.24	62
13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5'-PeCB	123	35.846	1.60	2.0	1.24	57
13C-3,3',4,4',5-PeCB	123	40.590	1.52	2.0	1.14	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'-OcCB	202	42.217	0.90	2.0	1.39	70
13C-2,3,3',4,4',5,5',6-OcCB	205	52.081	0.89	2.0	1.40	70
13C-2,2',3,3',4,4',5,5',6-NoCB		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
13CDeCB	209	55.400	0.71	2.0	1.43	72
Cleanup Standards		04.00=				
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'-OcCB	194	51.607	0.87	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



# 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
4 5 6 7				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	12 10			ND		0.132
15				ND		0.132
16				ND		0.132
17				ND		0.132
18	18/30			ND		0.263
19	10/00			ND		0.132
20	20/28			ND		0.263
21	21/33			ND		0.263
22	2.700			ND		0.132
23				ND		0.132
24				ND		0.132
25				ND		0.132
26	26/29			ND		0.263
27	_0,_0			ND		0.132
28	20/28			ND		0.263
29	26/29			ND		0.263
30	18/30			ND		0.263
31	10/00			ND		0.132
32				ND		0.132
33	21/33			ND		0.263
34	, 00			ND		0.132
34 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	10/ 11// 1			ND		0.263
43				ND		0.263
44	44/47/65			ND		0.790
45	45/51			ND		0.730
<del></del>	TJ/J I			IND		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



# 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
46				ND		0.263
47	44/47/65			ND		0.790
48	,, 66			ND		0.263
49	49/69			ND		0.527
50	50/53			ND		0.527
51	45/51			ND		0.527
52	16,61			ND		0.263
53	50/53			ND		0.527
54	33,33			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	00/02/10			ND		0.263
61	61/70/74/76			ND		1.05
62	59/62/75			ND		0.790
63	33/02/13			ND		0.263
64				ND		0.263
65	44/47/65			ND		0.790
66	44/47/03			ND ND		0.790
67		<b></b>	<b></b>	ND ND		0.263
68				ND ND		0.263
69	49/69			ND ND	<b></b>	0.527
70	49/09 61/70/74/76			ND ND		1.05
70 71	40/41/71			ND ND		0.790
71 72	40/41/71			ND ND		0.790
73	C4/70/74/7C			ND ND		0.263
74 75	61/70/74/76			ND		1.05
75 70	59/62/75			ND		0.790
<u>76</u>	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 NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits RT = Retention Time

I = Interference



# 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
			Ratio	<del>_</del>		
91	88/91			ND		0.527
92	00/00/400/400			ND		0.263
93	93/98/100/102			ND		1.05
94				ND		0.263
95				ND		0.263
96	00/07/07/400/440/407			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
100	.50/101			ND		0.021

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

NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits

ND = Not Detected

RT = Retention Time I = Interference



# 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	100/140			ND		0.263
142				ND		0.263
143	134/143			ND		0.527
144	10 1/1 10			ND		0.263
145				ND		0.263
146				ND		0.263
147	147/149			ND		0.527
148	1477140			ND		0.263
149	147/149			ND		0.527
150	1477140			ND		0.263
151	135/151			ND		0.527
152	199/191			ND		0.263
153	153/168			ND		0.527
154	199/100			ND		0.263
155				ND ND		0.263
156	156/157			ND ND		0.527
157	156/157	<b></b>		ND ND		0.527
158	130/137			ND ND		0.263
159				ND ND		0.263
160				ND ND		0.263
161				ND ND		0.263
162				ND ND		0.263
163	129/138/163			ND ND		0.790
164	129/130/103			ND ND		0.790
165				ND ND		0.263
166	128/166	<b></b>	<b></b>	ND ND		0.527
167	120/100			ND ND		0.263
168	153/168			ND ND		0.527
169	155/100			ND ND		0.263
170				ND ND		0.263
170	171/173			ND ND		0.527
171	17 1/173			ND ND		0.263
172	171/173			ND ND		0.203
173	171/173			ND ND		0.263
174				ND ND		0.263
175				ND ND		0.203 0.262
				ND ND		0.263
177 170						0.263
178				ND		0.263
179	100/102			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

ND = Not Detected NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits RT = Retention Time

I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-19082 P90312A\_07

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	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

NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits

ND = Not Detected

RT = Retention Time I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename

BLANK-19082 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



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

ICAL ID CCal Filename(s) Method Blank ID LCS-19083 P90312A\_04 1920 mL P90312A03

1920 mL P90312A03 P90312A\_02 BLANK-19082 Matrix Water Dilution NA

Extracted 02/27/2009 Analyzed 03/12/2009 14:01

Injected By SMT

	N	Native Analyt	tes	Lal	peled Analyt	es
PCB Isomer	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

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

! = See Discussion

ng = Nanograms I = Interference

Nn = Result obtained from alternate analysis



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

ICAL ID
CCal Filename(s)

Method Blank ID

LCSD-19084 P90312A\_05 1920 mL P90312A03

P90312A03 P90312A\_02 BLANK-19082 Matrix Water Dilution NA

Extracted 02/27/2009 Analyzed 03/12/2009 15:02

Injected By SMT

	N	Native Analyt	tes	Lal	beled Analyt	es
PCB Isomer	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

<sup>! =</sup> See Discussion

ng = Nanograms

I = Interference



# Method 1668A Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

 Spike 1 ID
 LCS-19083
 Spike 2 ID
 LCSD-19084

 Spike 1 Filename
 P90312A\_04
 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

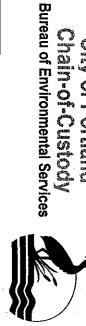
RPD = The difference between the two values divided by the mean value

Event 5: March 23, 2009

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



# Chair-of-Custody CTY of Portland



Date: 3/23/04

Collected By: MJS, JXB

#### signature: File Number: Project Name: PORTLAND HARBOR STORMWATER SAMP WPCL Sample I.D. FO095378 FO095377 FO095373 F0095372 FO095371 FO095376 F0095374 FO095375 すること S:\EID\1000\1020.005 - Portland Harbor Stormwater Samp\Sampdoc\Portland Harbor Stormwater OF Grab COC FY08-09.xls FY 2008-09 Stormwater Grab Chain-of-custody 1020.005 \ \ \ \ \ \ thollowing A N N LARABEE & RANDOLPH FIELD DECON BLANK N KERBY & TILLAMOOK SW-43-ABC552-MMYY N WHEELER PL & KERBY N KERBY & WHEELER Sample Time recorded in PST SW-44-ABC352-MMYY SW-43-ABC499-MMYY SW-43-ABC539-MMYY SW-43-ABC290-MMY N HARDING & RIVER N ALBINA & RIVER DUPLICATE Location 3 73/09 Time: \647 3/23/09 Received By: Relinquished By: 44A\_SW1 44\_SW1 rinted Name: 43\_SW4 43\_SW3 43\_SW1 43\_SW2 FDB Code Point 3/23/04 Matrix: Sample 3 H & 28.11 <u>=</u> 1330 1322 1389 Sample STORMWTR 1402 Time Sample Type മ G മ മ G G G മ Time Date Time: • • • TSS • • • • General Printed Name: Received By: Signature: rinted Name: ignature: Relinguished By: • • • • • PCB Congeners (Ali 209) • • • • • PAH + Phthalates (TA) • • Organics • • • • SVOC's (CAS) • • • • Pesticides (CAS) Requested Analyses Time: and me Date: Total Metals (As, Cd, Cr, Cu, ĕ • Wetals Pb, Ni, Ag, Zn) • • • Total Mercury Signature: Received By: Signature: Relinquished By: rinted Name: toted Name: 10.0 هنس Ô ្យ ت نې Ç. Temperature (Deg C) 4 <u>ء</u> اب 122 JT JT ت ھ <u>د</u>. دو دو Conductivity (umhos/cm) Field نك ime: Date: Time: 7.5 4 Ų €.. ~1 œ Q. ھ pH (pH units)



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### LABORATORY ANALYSIS REPORT

Sample ID: FO095376

Sample Collected: 03/23/09 Sample Received: 03/23/09 14:14

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Address/Location:

SW-44A-ABC311-0309

N LARABEE & RANDOLPH

Sample Point Code:

44A\_SW1

Sample Type:

GRAB

Sample Matrix:

**STORMWTR** 

Page 1 of 5 Report Page:

System ID:

AN03343

EID File #:

1020.005 **PORTHASW** 

LocCode: 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. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL.	Method	Analysis Date
FIELD				-	
CONDUCTIVITY (FIELD)	97	$\mu$ mhos/cm	1	SM 2510 B	03/23/09
pH (FIELD)	7.5	pH Units	0.1	SM 4500-H B	03/23/09
TEMPERATURE	10.0	Deg. C	0.1	SM 2550 B	03/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	140	mg/L	2	SM 2540 D	03/25/09
METALS					00/00/00
MERCURY	0.019	μg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					00/04/00
ARSENIC	1.19	μg/L	0.1	EPA 200.8	03/24/09
CADMIUM	0.61	μg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	6.96	μg/L	0.4	EPA 200.8	03/24/09
COPPER	44.8	μg/L	0.2	EPA 200.8	03/24/09
LEAD	11.6	μg/L	0.1	EPA 200.8	03/24/09
NICKEL	11.8	μg/L	0.2	EPA 200.8	03/24/09
SILVER	0.67	$\mu$ g/L	0.1	EPA 200.8	03/24/09
ZINC	365	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	<38	ng/L	38	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 <i>.</i> 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

Report Date: 04/30/09





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### LABORATORY ANALYSIS REPORT

Sample Status: COMPLETE AND Sample ID: FO095376 14:14 Sample Collected: 03/23/09

Sample Received: 03/23/09

**VALIDATED** 

Page 2 of 5 Report Page: Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Address/Location: SW-44A-ABC311-0309

> System ID: AN03343 N LARABEE & RANDOLPH EID File #:

1020.005 44A\_SW1 Sample Point Code: **PORTHASW** LocCode: Sample Type: GRAB

Collected By: MJS/JXB **STORMWTR** Sample Matrix:

### 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. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

					Analysis Date
Test Parameter	Result	Units	MRL	Method	Date
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
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 CON	GENERS -PACE				
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTH.	ALATES - TA	•			
Acenaphthene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0194	$\mu$ g/L	0.0194	EPA 8270M-SIM	03/26/09
Anthracene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	1.34	μg/L	0.971	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	03/26/09
Chrysene	0.0288	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Diethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/26/09
Fluoranthene	0.0536	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Fluorene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	03/26/09
Naphthalene	EST 0.0488	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Phenanthrene	0.0533	μg/L	0.0194	EPA 8270M-SIM	03/26/09
Pyrene	0.0843	μg/L	0.0194	EPA 8270M-SIM	03/26/09

Report Date: 04/30/09 Validated By:



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### LABORATORY ANALYSIS REPORT

Sample Status: COMPLETE AND 14:14 **Sample ID: FO095376** Sample Collected: 03/23/09 **VALIDATED** 

Sample Received: 03/23/09

Report Page: Page 3 of 5 PORTLAND HARBOR STORMWATER SAMP

Proj./Company Name: Address/Location: SW-44A-ABC311-0309

System ID: AN03343 N LARABEE & RANDOLPH

Sample Point Code: 44A SW1 EID File #: 1020.005 LocCode: **PORTHASW GRAB** Sample Type:

Collected By: MJS/JXB Sample Matrix: STORMWTR

### 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, One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL.	Method	Analysis Date
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
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

Report Date: 04/30/09 Validated By:





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### LABORATORY ANALYSIS REPORT

Sample ID: FO095376

Sample Collected: 03/23/09

14:14 Sample Received: 03/23/09

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Page 4 of 5

Address/Location:

SW-44A-ABC311-0309

System ID:

Report Page:

AN03343

Sample Point Code:

N LARABEE & RANDOLPH 44A\_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. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
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	<5.0	μg/L	5.0	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	1.1	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	0.76	μg/L	0.50	EPA 8270	03/30/09
Pyrene	<0.20	μg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09





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### LABORATORY ANALYSIS REPORT

Sample ID: FO095376

Sample Collected: 03/23/09 Sample Received: 03/23/09

14:14

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 5 of 5

Address/Location:

SW-44A-ABC311-0309 N LARABEE & RANDOLPH

System ID:

AN03343

Sample Point Code:

44A\_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. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

•				•	Analysis
Test Parameter	Result	Units	MRL	Method	Date

End of Report for Sample ID: FO095376

Validated By:

Report Date: 04/30/09



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### LABORATORY ANALYSIS REPORT

Sample ID: FO095377

Sample Collected: 03/23/09 Sample Received: 03/23/09 14:32

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 1 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AN03344

Sample Point Code:

**FDBLANK** 

EID File #:

1020.005 **PORTHASW** 

Sample Type: Sample Matrix: **GRAB STORMWTR**  LocCode: 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
GENERAL					
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	03/25/09
METALS		ø		and the second second	
MERCURY	<0.0020	μg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	μg/L	0.1	EPA 200.8	03/24/09
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	< 0.40	μg/L	0.4	EPA 200.8	03/24/09
COPPER	0.42	μg/L	0.2	EPA 200.8	03/24/09
LEAD	<0.10	μg/L	0.1	EPA 200.8	03/24/09
NICKEL	<0.20	μg/L	0.2	EPA 200.8	03/24/09
SILVER	<0.10	μg/L	0.1	EPA 200.8	03/24/09
ZINC	0.58	μg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS		•			
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.50	ng/L	0.50	EPA 8081	03/25/09
4,4'-DDE	1.4	ng/L	0.50	EPA 8081	03/25/09
4,4'-DDT	<0.50	ng/L	0.50 <sup>1</sup>	EPA 8081	03/25/09
Aldrin	<0.50	ng/L	0.50	EPA 8081	03/25/09
Alpha-BHC	<0.50	ng/L	0.50	EPA 8081	03/25/09
Alpha-Chlordane	<0.50	ng/L	0.50	EPA 8081	03/25/09
Beta-BHC	<0.50	ng/L	0.50	EPA 8081	03/25/09
Delta-BHC	<0.50	ng/L	0.50	EPA 8081	03/25/09
Dieldrin	< 0.50	ng/L	0.50	EPA 8081	03/25/09
Endosulfan I	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endosulfan II	< 0.50	ng/L	0.50	EPA 8081	03/25/09
Endosulfan Sulfate	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endrin	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endrin Aldehyde	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endrin Ketone	<0.50	ng/L	0.50	EPA 8081	03/25/09
Gamma-BHC(Lindane)	<0.50	ng/L	0.50	EPA 8081	03/25/09
Gamma-Chlordane	<0.50	ng/L	0.50	EPA 8081	03/25/09
Heptachlor	<0.50	ng/L	0.50	EPA 8081	03/25/09
Heptachlor Epoxide	<0.50	ng/L	0.50	EPA 8081	03/25/09

Report Date: 04/30/09





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### LABORATORY ANALYSIS REPORT

Sample ID: FO095377

Sample Collected: 03/23/09 Sample Received: 03/23/09 14:32

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Page 2 of 4

Address/Location:

FIELD DECON BLANK

System ID:

Report Page:

AN03344

Sample Point Code:

**FDBLANK** 

EID File #:

1020.005

Sample Type: Sample Matrix: **GRAB STORMWTR**  LocCode: Collected By: MJS/JXB

**PORTHASW** 

### 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
Methoxychlor	<0.50	ng/L	0.50	EPA 8081	03/25/09
Toxaphene	<25	ng/L	25	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CO	NGENERS -PACE				
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHI	HALATES - 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	< 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	< 0.00962	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	<0.0192	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	< 0.00962	μg/L	0.00962	EPA 8270M-SIM	03/26/09
Naphthalene	<0.0192	μg/L	0.0192	EPA 8270M-SIM	03/26/09
Phenanthrene	<0.0192	μg/L	0.0192	EPA 8270M-SIM	03/26/09
Pyrene	<0.0192	μg/L	0.0192	EPA 8270M-SIM	03/26/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.21	μg/L	0.21	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.21	μg/L	0.21	EPA 8270	03/30/09
1,3-Dichlorobenzene	<0.21	μg/L	0.21	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.21	μg/L	0.21	EPA 8270	03/30/09
2,4,5-Trichlorophenol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.53	μg/L	0.53	EPA 8270	03/30/09

Report Date: 04/30/09





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### LABORATORY ANALYSIS REPORT

Sample ID: FO095377

Sample Collected: 03/23/09 Sample Received: 03/23/09 14:32

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 3 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AN03344

Sample Point Code:

**FDBLANK** 

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.

		-	,		Analysis
Test Parameter	Result	Units	MRL	Method	Date
2,4-Dichlorophenol	<0.53	μg/L	0.53	EPA 8270	03/30/09
2,4-Dimethylphenol	<4.2	μg/L	4.2	EPA 8270	03/30/09
2,4-Dinitrophenol	<4.2	$\mu g/L$	4.2	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.21	μg/L	0.21	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.21	μg/L	0.21	EPA 8270	03/30/09
2-Chloronaphthalene	<0.21	μg/L	0.21	EPA 8270	03/30/09
2-Chlorophenol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
2-Methylnaphthalene	<0.21	μg/L	0.21	EPA 8270	03/30/09
2-Methylphenol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
2-Nitroaniline	<0.21	μg/L	0.21	EPA 8270	03/30/09
2-Nitrophenol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.1	μg/L	2.1	EPA 8270	03/30/09
3-Nitroaniline	<1.1	μg/L	1.1	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.1	μg/L	2.1	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.21	μg/L	0.21	EPA 8270	03/30/09
4-Chloro-3-methylphenol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
4-Chloroaniline	<0.21	μg/L	0.21	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.21	μg/L	0.21	EPA 8270	03/30/09
4-Methylphenol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
4-Nitroaniline	<1.1	μg/L	1.1	EPA 8270	03/30/09
4-Nitrophenol	<2.1	μg/L	2.1	EPA 8270	03/30/09
Acenaphthene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Acenaphthylene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Anthracene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Benzo(a)anthracene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Benzo(a)pyrene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Benzo(g,h,i)perylene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Benzoic acid	<5.3	μg/L	5.3	EPA 8270	03/30/09
Benzyl alcohol	< 0.53	μg/L	0.53	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.21	μg/L	0.21	EPA 8270	03/30/09
Bis(2-chloroethyl) ether	<0.21	μg/L	0.21	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.21	μg/L	0.21	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	<1.1	μg/L	1.1	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.21	μg/L	0.21	EPA 8270	03/30/09

Report Date: 04/30/09





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### LABORATORY ANALYSIS REPORT

Sample ID: FO095377

Sample Collected: 03/23/09 Sample Received: 03/23/09 14:32

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 4 of 4

Address/Location:

FIELD DECON BLANK

System ID:

AN03344

Sample Point Code:

**FDBLANK** 

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.

				5 M = 41 = -1	Analysis Date
Test Parameter	Result	Units	MRL	Method	Date
Chrysene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Dibenzofuran	<0.21	μg/L	0.21	EPA 8270	03/30/09
Diethyl phthalate	<0.21	μg/L	0.21	EPA 8270	03/30/09
Dimethyl phthalate	<0.21	μg/L	0.21	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.21	μg/L	0.21	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.21	μg/L	0.21	EPA 8270	03/30/09
Fluoranthene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Fluorene	` <0.21	μg/L	0.21	EPA 8270	03/30/09
Hexachlorobenzene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Hexachlorobutadiene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<1.1	μg/L	1.1	EPA 8270	03/30/09
Hexachloroethane	<0.21	μg/L	0.21	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Isophorone	<0.21	μg/L	0.21	EPA 8270	03/30/09
Naphthalene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Nitrobenzene	<0.21	μg/L	0.21	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.21	μg/L	0.21	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.21	μg/L	0.21	EPA 8270	03/30/09
Pentachlorophenol	<1.1	μg/L	1.1	EPA 8270	03/30/09
Phenanthrene	<0.21	μg/L	0.21	EPA 8270	03/30/09
Phenol	<0.53	μg/L	0.53	EPA 8270	03/30/09
Pyrene	<0.21	μg/L	0.21	EPA 8270	03/30/09

End of Report for Sample ID: FO095377

Report Date: 04/30/09



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 aidol-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)	-







Client:

Portland, City of

Project:

Portland Harbor Stormwater

Sample Matrix:

Water

Service Request No.:

Date Received:

K0902522

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.

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

#### 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.

	PL-	04/13/09
Approved by		Date

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: Lab Code: FO 095376 K0902522-006

**Extraction Method:** 

EPA 3535

Analysis Method:

8081A

Units: ng/L Basis: NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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 Ui	38	38	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	<b>2.5</b> JD	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	<b>1.2</b> JPD	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	1.9 JPD	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	44	10-121	04/02/09	Acceptable	
Decachlorobiphenyl	45	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:

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Form 1A - Organic

SuperSet Reference:

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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 095377

Lab Code:

K0902522-007

**Extraction Method:** EPA 3535

Units: ng/L Basis: NA

Level: Low

Analysis	Method:	1	8081A

			Dilution	Date	Date	Extraction	
Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
ND U	0.50	0.21	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.41	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.47	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.14	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.18	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.11	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.21	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.31	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.25	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.27	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.37	1	03/25/09	04/02/09	KWG0902494	
1.4	0.50	0.19	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.49	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.35	1	03/25/09	04/02/09	KWG0902494	
ND Ui	0.50	0.50	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.21	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.28	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.17	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.32	1	03/25/09	04/02/09	KWG0902494	
ND U	0.50	0.28	1	03/25/09	04/02/09	KWG0902494	
ND U	25	9.0	1	03/25/09	04/02/09	KWG0902494	
	ND U	ND U 0.50	ND U 0.50 0.21 ND U 0.50 0.41 ND U 0.50 0.47 ND U 0.50 0.14 ND U 0.50 0.14 ND U 0.50 0.18 ND U 0.50 0.11 ND U 0.50 0.21 ND U 0.50 0.21 ND U 0.50 0.25 ND U 0.50 0.25 ND U 0.50 0.37 1.4 0.50 0.19 ND U 0.50 0.35 ND U 0.50 0.50 ND U 0.50 0.21 ND U 0.50 0.35 ND U 0.50 0.35 ND U 0.50 0.21 ND U 0.50 0.21 ND U 0.50 0.21 ND U 0.50 0.28 ND U 0.50 0.28 ND U 0.50 0.28 ND U 0.50 0.32 ND U 0.50 0.32 ND U 0.50 0.28	Result Q         MRL         MDL         Factor           ND U         0.50         0.21         1           ND U         0.50         0.41         1           ND U         0.50         0.47         1           ND U         0.50         0.14         1           ND U         0.50         0.18         1           ND U         0.50         0.21         1           ND U         0.50         0.21         1           ND U         0.50         0.21         1           ND U         0.50         0.25         1           ND U         0.50         0.27         1           ND U         0.50         0.37         1           1.4         0.50         0.19         1           ND U         0.50         0.35         1           ND U         0.50         0.35         1           ND U         0.50         0.21         1           ND U         0.50         0.28         1           ND U         0.50         0.28         1           ND U         0.50         0.32         1           ND U         0.50         <	Result Q         MRL         MDL         Factor         Extracted           ND U         0.50         0.21         1         03/25/09           ND U         0.50         0.41         1         03/25/09           ND U         0.50         0.47         1         03/25/09           ND U         0.50         0.14         1         03/25/09           ND U         0.50         0.18         1         03/25/09           ND U         0.50         0.11         1         03/25/09           ND U         0.50         0.21         1         03/25/09           ND U         0.50         0.21         1         03/25/09           ND U         0.50         0.25         1         03/25/09           ND U         0.50         0.27         1         03/25/09           ND U         0.50         0.37         1         03/25/09           ND U         0.50         0.49         1         03/25/09           ND U         0.50         0.35         1         03/25/09           ND U         0.50         0.35         1         03/25/09           ND U         0.50         0.21 <td< td=""><td>Result Q         MRL         MDL         Factor         Extracted         Analyzed           ND U         0.50         0.21         1         03/25/09         04/02/09           ND U         0.50         0.41         1         03/25/09         04/02/09           ND U         0.50         0.47         1         03/25/09         04/02/09           ND U         0.50         0.14         1         03/25/09         04/02/09           ND U         0.50         0.18         1         03/25/09         04/02/09           ND U         0.50         0.11         1         03/25/09         04/02/09           ND U         0.50         0.21         1         03/25/09         04/02/09           ND U         0.50         0.31         1         03/25/09         04/02/09           ND U         0.50         0.25         1         03/25/09         04/02/09           ND U         0.50         0.27         1         03/25/09         04/02/09           ND U         0.50         0.37         1         03/25/09         04/02/09           ND U         0.50         0.35         1         03/25/09         04/02/09</td><td>  ND U</td></td<>	Result Q         MRL         MDL         Factor         Extracted         Analyzed           ND U         0.50         0.21         1         03/25/09         04/02/09           ND U         0.50         0.41         1         03/25/09         04/02/09           ND U         0.50         0.47         1         03/25/09         04/02/09           ND U         0.50         0.14         1         03/25/09         04/02/09           ND U         0.50         0.18         1         03/25/09         04/02/09           ND U         0.50         0.11         1         03/25/09         04/02/09           ND U         0.50         0.21         1         03/25/09         04/02/09           ND U         0.50         0.31         1         03/25/09         04/02/09           ND U         0.50         0.25         1         03/25/09         04/02/09           ND U         0.50         0.27         1         03/25/09         04/02/09           ND U         0.50         0.37         1         03/25/09         04/02/09           ND U         0.50         0.35         1         03/25/09         04/02/09	ND U

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	59	10-121	04/02/09	Acceptable	
Decachlorobiphenyl	77	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:

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SuperSet Reference:

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RR100412

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: Lab Code:

Method Blank

**Extraction Method:** 

KWG0902494-3

**Analysis Method:** 

EPA 3535 8081A

Units: ng/L Basis: NA

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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 Decachlorobiphenyl	51 76	10-121 17-150	04/02/09 04/02/09	Acceptable 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:

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Form 1A - Organic

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SuperSet Reference:

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QA/QC Report

Client:

Portland, City of

Project:

Portland Harbor Stormwater

Sample Matrix:

Water

**Surrogate Recovery Summary Organochlorine Pesticides** 

**Extraction Method:** 

EPA 3535

**Analysis Method:** 

8081A

Service Request: K0902522

Units: PERCENT

Level: Low

Sample Name	Lab Code	Sur1	Sur2
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 (%)

Surl = 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.

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Form 2A - Organic 15

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SuperSet Reference:

RR100412

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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

Lab Control Sample KWG0902494-1

**Duplicate Lab Control Sample** KWG0902494-2

		Control Spik		Duplicate Lab Control Spike			%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

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RR100412 SuperSet Reference:

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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
Bis(2-chloroethyl) Ether	ND U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	JOHEOWECH CHICAGORIUS
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	<b>2.7</b> 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	<b>0.097</b> 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:

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	<b>0.86</b> 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	Ĩ	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:	
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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:

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SuperSet Reference: RR100571

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

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.037	1	03/30/09	04/08/09	KWG0902636	MOONING TO SHARE
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		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		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		0.21	0.030	1	03/30/09	04/08/09	KWG0902636	
Isophorone	ND		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		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		5.3	1.2	1	03/30/09	04/08/09	KWG0902636	
1,2,4-Trichlorobenzene	ND		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		0.21	0.027	1	03/30/09	04/08/09	KWG0902636	
Hexachlorobutadiene		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		0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
Hexachlorocyclopentadiene	ND		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		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		U	0.21	0.016	1	03/30/09	04/08/09	KWG0902636	
Dimethyl Phthalate		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	

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Comments:

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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:
Analysis Method:

EPA 3520C 8270C Units: ug/L Basis: NA

1171

Level: Low

				<b>Dilution</b>	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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	<b>0.041</b> 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	<b>0.034</b> 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	l	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:
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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:

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Form 1A - Organic 37

SuperSet Reference: RR100571

Analytical Results

Client:

Portland, City of

Project:

Portland Harbor Stormwater

Sample Matrix:

Water

Service Request: K0902522

Date Collected: NA Date Received: NA

Units: ug/L

Extraction

Basis: NA

#### Semi-Volatile Organic Compounds by GC/MS

Sample Name:

Method Blank

Lab Code:

KWG0902636-3

**Extraction Method:** 

Analysis Method: 8270C

EPA 3520C Level: Low

Dilution

Date

Date

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Bis(2-chloroethyl) Ether	ND U	0.20	0.035	1	03/30/09	04/02/09	KWG0902636	***************************************
Phenol	<b>0.27</b> 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	

Comment	**

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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

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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	<b>0.025</b> 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	l	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	

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RR100571

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: Lab Code:

Method Blank

KWG0902636-3

Basis: NA

Units: ug/L

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:

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Merged

Form 1A - Organic 40

Page 3 of 3

SuperSet Reference: RR100571

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

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
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	1	
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.

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QA/QC Report

Client: Portland, City of

Project: Portland Harbor Stormwater

8270C

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:

Units: ug/L Basis: NA

Level: Low

Extraction Lot: KWG0902636

Lab Control Sample KWG0902636-1

Duplicate Lab Control Sample KWG0902636-2

		Control Spik	e		Lab Control	Spike	%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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
Sophorone	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.

Form 3C - Organic Printed: 04/09/2009 14:30:23 Page 1 of 2  $u:\Stealth\Crystal.rpt\Form3DLC.rpt$ RR100571 42 SuperSet Reference:

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

Lab Control Sample KWG0902636-1

Duplicate Lab Control Sample KWG0902636-2

		Control Spik	e		Lab Control	Spike	%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

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An Employee - Owned Company	Columbia Analytical Services **c	CON 100
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# CHAIN OF CUSTODY

1 OF 1 COC#

An Employee - Owned Company 131	17 South 13th Ave. • Kelso, WA 98626	1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (	FAX (360) 636-1068 PAGEOF	COC #
PROJECT NAME Y DY HOLD A H	tarborstormater			
PROJECT MANAGER JONNIG ST	rechellend	BTE	No.	TOC, 506
COMPANYADDRESS	Portland	1664	ers O 100 110 110 100 100 100 100 10	650
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SAMPLER'S SIGNATURE		emive 625 [ Dlatile Vdrocas [] Fuel NW-1 166 28's	AHS Petals, Co.	
SAMPLE I.D. DATE	TIME LAB I.D. MATRIX / 2	0 /V8/HG/C/O /PA	60 CTrl P. MS. C) P. I N.	/ / REMARKS
FO 095371 31369	248 W 248			
F0 095372	1330 W D			
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F009S375	1402 W 20			
FO 095376	£ £	+		
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REPORT REQUIREMENTS	P.O. #	Circle which metals are to be analyzed:		
I. Routine Report: Method Blank, Surrogate, as	Bill To:	≥ ≥	Pb Mg Mn Mo N K	Na Se Sr TI Sn V Zn
		TE HYDROCABBON	HRE AK CA WI NORTHWEST	
II. Report Dup., MS, MSD as required	TURNAROUND REQUIREMENTS	SPECIAL INSTRUC	7	>
III. Data Validation Report (includes all raw data)	5 Day Standard (10-15 working days)	Please him land	- level 1940 + 2081	walyso.
IV. CLP Deliverable Report	Provide FAX Results			7830
V. EDD	Requested Report Date	. #		
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Signature Date/Time	Signature	Date/June Gignature	Date Time Signature	Bate/Time
ame	TO Kund			
	2000	2 State and a stat		WILLIAM MILLI

Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form

PC	P	J.

Client / Project: City of	Mand	1		_Service	Reque	est <i>K09</i> ( )	2520		
Received: 3-24-09	Opened:_	3240	<u> </u>	y: <b></b>		and the particular property and the second			
<ol> <li>Samples were received via?</li> <li>Samples were received in: (circle</li> <li>Were <u>custody seals</u> on coolers?</li> </ol>	US Mail		Envel	оре	GH Other_	GS PDX		er Hand De NA	rlivered
If present, were custody seals int	-	Y	·		•	hey signed an		Y	N
4. Is shipper's air-bill filed? If not,								NA Y	N
5. Temperature of cooler(s) upon Temperature Blank (°C): Thermometer ID:	receipt (°C	S):	8.0						
6. If applicable, list Chain of Custo	dy Number:	s:							Annual Contraction of the Contra
7. Packing material used. <i>Inserts</i>	Baggies	Bubble Wra	ıp_(Gel Pac	ks) Wet	Ice S	leeves Othe	<i>I</i> *		
8. Were custody papers properly fil	led out (ink	, signed, etc.)?	)					NA CY	$\supset$ N
9. Did all bottles arrive in good co	ondition (u	nbroken)? <i>In</i>	idicate in the	table bei	low.			NA Y	N
10. Were all sample labels complete		-						NA Y	) N
11. Did all sample labels and tags ag								NA Y	N
12. Were appropriate bottles/conta								NA Y	) N
13. Were the pH-preserved bottles to		• •						(NA) Y	Ν
14. Were VOA vials and 1631 Merc	-		•					NA Y	N
15. Are CWA Microbiology sampl	es received	1  with  > 1/2  the	24hr. hold	time ren	iaining	from collecti	on?	NA	N
16. Was C12/Res negative?	~							NA Y	/ N.
Sample ID on Bottle	Samp	le ID on COC		'Sample	ID on B	ottle	Sa	mple ID on COC	
Sample ID	Bottle Count	1 1	Out of Head- Temp space	Broken	рН	Reagent	Volume added	Reagent Lot Number	Initials
- MI Samps					7				<del>  W.V.</del>
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*Does not include all pH preserved sample alia Additional Notes, Discrepancies, a	juois received.	. See sample rece	ivino SOP (SM	CLC24 All					
rudinomii Potes, Discrepunctes, t					Lent	reg ten	P) (P9)	30Am 03/2	109
					žent	reg ten	p, @ 9!	30Am 03/2	rlog



PORTLAND, OR 9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

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.

Work Order	Project	<u>ProjectNumber</u>
PSC0751	Portland Harbor	36238

TestAmerica Portland

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.



9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210



City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 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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PORTLAND, OR

9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford04/17/09 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 accidentally double spiked. There was no additional sample to re-extract. The data was flagged and reported.

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 **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 04/17/09 16:45

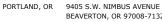
#### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
		W	ater		Sampl	led: 03/23/	09 14:02		
EPA 8270m	1.41	0.506	0.962	ug/l	1x	9030837	03/26/09 11:55	03/31/09 03:39	
"	ND	0.506	0.962	"	"	"	"	"	
"	ND	0.506	0.962	"	"	"	"	"	
"	1.78	0.506	0.962	"	"	"	"	"	
"	ND	0.506	0.962	"	"	"	"	"	
"	ND	0.506	0.962	"	"	"	"	"	
"	ND	0.0192	0.0192	"	"	"	"	04/04/09 07:47	
"	ND	0.0192	0.0192	"	"	"	"	"	
"	ND	0.0192	0.0192	"	"	"	"	"	
"	0.0120	0.00962	0.00962	"	"	"	"	"	
"	0.0121	0.00962	0.00962	"	"	"	"	"	
"	0.0212	0.00962	0.00962	"	"	"	"	"	
"	0.0309	0.0192	0.0192	"	"	"	"	"	
"	0.0135	0.00962	0.00962	"	"	"	"	"	
"	0.0474	0.00962	0.00962	"	"	"	"	"	
"	ND	0.00962	0.00962	"	"	"	"	"	
"	0.0759	0.0192	0.0192	"	"	"	"	"	
"	ND	0.0192	0.0192	"	"	"	"	"	
"	0.0135	0.00962	0.00962	"	"	"	"	"	
"	0.0309	0.0192	0.0192	"	"	"	"	"	B, N1
"	0.0781	0.0192	0.0192	"	"	"	"	"	
"	0.0945	0.0192	0.0192	"	"	"	"	"	
			82.7%		25 - 125 %	"			"
			72.4%		23 - 150 %	"			"
ne-d12			68.7%		10 - 125 %	"			"
		w	ater		Sampl	led: 03/23/	09 14:14		
EPA 8270m	1.34	0.511	0.971	ug/l	1x	9030837	03/26/09 11:55	03/31/09 04:16	
"	ND	0.511	0.971	"	"	"	"	"	
"	ND	0.511	0.971	"	"	"	"	"	
"	ND	0.511	0.971	"	"	"	"	"	
"	ND	0.511	0.971	"	"	"	"	"	
"	ND	0.511	0.971	"	"	"	"	"	
"	ND	0.0194	0.0194	"	"	"	"	04/04/09 10:13	
"	ND	0.0194	0.0194	"	"	"	"	"	
	ND	0.0194	0.0194	_				,,	
	EPA 8270m "" "" "" "" "" "" "" "" "" "" "" "" ""	EPA 8270m	EPA 8270m  1.41        .	EPA 8270m  1.41  0.506  0.962  ND  0.0192  0.0192  ND  0.0192  0.0192  ND  0.0192  0.0192  ND  0.0120  0.00962	No	EPA 8270m	Nampled: 03/23/	PAR 8270m	PA 8270m

TestAmerica Portland

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Prepared



Method

Analyte

BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

Analyzed

Notes

City of Portland Water Pollution Laboratory Project Name: Portland Harbor

Result MDL\*

6543 N. Burlington Ave.

Project Number: 36238

Report Created:
Portland, OR 97203

Project Manager: Jennifer Shackelford

04/17/09 16:45

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Units

Batch

MRL

Allalyte	Method									
PSC0751-06 (FO09	95376)		W	ater		Samp	led: 03/23/	09 14:14		
Benzo (a) anthracene	EPA 8270m	ND	0.00971	0.00971	ug/l	1x	9030837	03/26/09 11:55	04/04/09 10:13	
Benzo (a) pyrene	n	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	n	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0288	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0536	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.0488	0.0194	0.0194	"	"	"	"	"	B, N1
Phenanthrene	"	0.0533	0.0194	0.0194	"	"	"	"	"	
Pyrene	u	0.0843	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluo	orene-d10			77.5%		25 - 125 %	"			"
Pvre	ene-d10			80.1%		23 - 150 %	"			"
•				7.4.00%						
•	zo (a) pyrene-d12			74.0%		10 - 125 %				
Benz			w	74.0% ater			led: 03/23/	09 14:32		
Benz PSC0751-07 (FO09	zo (a) pyrene-d12	0.549	0.506		ug/l		led: 03/23/ 9030837	09 14:32	03/30/09 22:12	J
Benz PSC0751-07 (FO09 Bis(2-ethylhexyl)phthala	zo (a) pyrene-d12	<b>0.549</b> ND		ater		Samp			03/30/09 22:12	J
Benz	95377) te EPA 8270m		0.506	0.962	ug/l	Samp	9030837	03/26/09 11:55		J
PSC0751-07 (FO09 Bis(2-ethylhexyl)phthala Butyl benzyl phthalate Di-n-butyl phthalate	95377) te EPA 8270m	ND	0.506 0.506	0.962 0.962	ug/l	Samp	9030837	03/26/09 11:55	"	1
PSC0751-07 (FO09 Bis(2-ethylhexyl)phthala Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate	95377) te EPA 8270m	ND ND	0.506 0.506 0.506	0.962 0.962 0.962	ug/l	Samp	9030837	03/26/09 11:55	"	J
PSC0751-07 (FO09 Bis(2-ethylhexyl)phthala Butyl benzyl phthalate	95377) te EPA 8270m	ND ND ND	0.506 0.506 0.506 0.506	0.962 0.962 0.962 0.962	ug/l	Samp	9030837	03/26/09 11:55	"	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Dimethyl phthalate	95377) te EPA 8270m	ND ND ND	0.506 0.506 0.506 0.506 0.506	0.962 0.962 0.962 0.962 0.962	ug/l	Samp	9030837	03/26/09 11:55	"	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthala  Butyl benzyl phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene	95377) te EPA 8270m	ND ND ND ND	0.506 0.506 0.506 0.506 0.506 0.506	0.962 0.962 0.962 0.962 0.962 0.962	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	1
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene	95377) te EPA 8270m	ND ND ND ND ND	0.506 0.506 0.506 0.506 0.506 0.506 0.0192	0.962 0.962 0.962 0.962 0.962 0.962 0.962	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09 Bis(2-ethylhexyl)phthala Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate	95377) te EPA 8270m	ND ND ND ND ND ND ND ND	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192	0.962 0.962 0.962 0.962 0.962 0.962 0.0192	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene  Anthracene	95377) te EPA 8270m	ND ND ND ND ND ND ND ND ND	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192	0.962 0.962 0.962 0.962 0.962 0.962 0.0192 0.0192	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthala  Butyl benzyl phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene  Anthracene  Benzo (a) anthracene	95377) te EPA 8270m	ND	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192 0.0192 0.00962	0.962 0.962 0.962 0.962 0.962 0.962 0.0192 0.0192 0.0192 0.00962	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene  Anthracene  Benzo (a) anthracene  Benzo (b) fluoranthene	95377) te EPA 8270m	ND	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192 0.0192 0.00962	0.962 0.962 0.962 0.962 0.962 0.962 0.0192 0.0192 0.0192 0.00962	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene  Anthracene  Benzo (a) anthracene  Benzo (a) pyrene	95377) te EPA 8270m	ND N	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192 0.0192 0.00962 0.00962	0.962 0.962 0.962 0.962 0.962 0.962 0.0192 0.0192 0.0192 0.00962 0.00962	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene  Anthracene  Benzo (a) anthracene  Benzo (b) fluoranthene  Benzo (ghi) perylene	95377) te EPA 8270m	ND N	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192 0.0192 0.00962 0.00962 0.00962 0.0192	0.962 0.962 0.962 0.962 0.962 0.962 0.0192 0.0192 0.0192 0.00962 0.00962 0.00962	ug/l	Samp	9030837	03/26/09 11:55	" " " " " " " " " " " " " " " " " " " "	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthala  Butyl benzyl phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Diethyl phthalate  Diethyl phthalate  Diethyl phthalate  Acenaphthene  Acenaphthylene  Anthracene  Benzo (a) anthracene  Benzo (a) pyrene  Benzo (b) fluoranthene  Benzo (ghi) perylene  Benzo (k) fluoranthene	95377) te EPA 8270m	ND N	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192 0.0192 0.00962 0.00962 0.00962 0.00962	0.962 0.962 0.962 0.962 0.962 0.0192 0.0192 0.0192 0.00962 0.00962 0.00962 0.00962	ng/l	Samp	9030837	03/26/09 11:55	03/28/09 21:49	J
PSC0751-07 (FO09)  Bis(2-ethylhexyl)phthalate  Di-n-butyl phthalate  Di-n-octyl phthalate  Di-thyl phthalate  Diethyl phthalate	95377) te EPA 8270m	ND N	0.506 0.506 0.506 0.506 0.506 0.506 0.0192 0.0192 0.0192 0.00962 0.00962 0.00962 0.00962 0.00962	0.962 0.962 0.962 0.962 0.962 0.962 0.0192 0.0192 0.00962 0.00962 0.00962 0.00962	ng/l	Samp	9030837	03/26/09 11:55	03/28/09 21:49	1

TestAmerica Portland

Howard Holmes, Project Manager

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9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210



City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 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
PSC0751-07 (FO	095377)		Water Sampled: 03/23/09 14:32							
Indeno (1,2,3-cd) pyreno	e EPA 8270m	ND	0.00962	0.00962	ug/l	1x	9030837	03/26/09 11:55	03/28/09 21:49	
Naphthalene	"	ND	0.0192	0.0192	"	"	"	"	"	
Phenanthrene	"	ND	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	ND	0.0192	0.0192	"	"	"	"	"	
Surrogate(s): Fl	uorene-d10			89.7%		25 - 125 %	"			"
Py	vrene-d10			111%		23 - 150 %	"			"
Ве	enzo (a) pyrene-d12			99.3%		10 - 125 %	"			"

TestAmerica Portland

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City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.

Project Number: 36238

Report Created:
Portland, OR 97203

Project Manager: Jennifer Shackelford

04/17/09 16:45

#### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

									٥:						
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes	
Blank (9030837-BLK1)								Extr	acted:	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	"									ľ	
Phenanthrene	,,	ND	0.0200	0.0200	"	,,									
Pyrene	"	ND	0.0200	0.0200	"	"							"		
Surrogate(s): Fluorene-d10		Recovery:	86.0%		nits: 25-1259	% "							03/28/09 20:50	<del></del>	
Pyrene-d10			98.3%		23-150								"		
Benzo (a) pyrene-d12			97.8%		10-125	% "							"		
LCS (9030837-BS1)								Evtr	acted:	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%	,			,,		
Diethyl phthalate	,,	3.23	0.526	1.00	,,	,,		,,	81.8%	,			"		
	,,	2.54	0.0200	0.0200	,,	,,		2.50	102%				03/28/09 21:20		
Acenaphthene	,,		0.0200	0.0200	,,	,		2.50		(35-120)		(	U3/28/U7 21.2U		
Acenaphthylene		2.53			,,			,,	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)			"		

TestAmerica Portland

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 04/17/09 16:45

#### ${\bf Polynuclear\ Aromatic\ Compounds\ per\ EPA\ 8270M-SIM\ -\ Laboratory\ Quality\ Control\ Results}$

TestAmerica Portland

QC Batch: 9030837	Water F	reparation	n Method:	3520B Liq-	Liq									
Analyte	Method	Result	MDL <sup>3</sup>	MRL	Units	Dil	Source Result	Spike Amt	e % REC	(Limits)	% RPD	(Limits)	) Analyzed	Notes
LCS (9030837-BS1)								Ext	racted:	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)			"	В1
Phenanthrene	"	2.45	0.0200	0.0200	"	"		"	98.1%	(34-126)			"	
Pyrene	"	2.68	0.0200	0.0200	"	"		"	107%	(21-141)			"	
Surrogate(s): Fluorene-d10		Recovery:	92.6%	Lii	nits: 25-125	% "							03/28/09 21:20	
Pyrene-d10		,	109%		23-150	0% "							"	
Benzo (a) pyrene-	·d12		105%		10-125	5% "							"	
Matrix Spike (9030837-MS1	)			OC Source	PSC0752-	03		Ext	racted:	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)			"	В1
Phenanthrene	"	2.24	0.0962	0.0962	"		ND	"	93.2%	(34-126)			"	
Pyrene	"	2.80	0.0962	0.0962	"		0.0242	"	115%	(14-168)			"	
Surrogate(s): Fluorene-d10 Pyrene-d10		Recovery:	87.2% 119%	Lin	nits: 25-125 23-150								04/04/09 04:47	

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

Project Name: Portland Harbor

6543 N. Burlington Ave. Portland, OR 97203

Project Number: 36238 Report Created:
Project Manager: Jennifer Shackelford 04/17/09 16:45

Pol	lynuclear Ar	omatic Co		r EPA 82′ ΓestAmerica		- La	aboratory	<b>Qual</b> i	ity Co	ntrol Re	esults			
QC Batch: 9030837	Water	Preparation	Method: 3	520B Liq-I	_iq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	s) Analyzed	Notes
Matrix Spike (9030837-MS1)				QC Source:	PSC0752-03			Exti	racted:	03/26/09 11	:55			
Surrogate(s): Benzo (a) pyrene-d12		Recovery:	84.9%	Lim	its: 10-125%	5x							04/04/09 04:47	
Matrix Spike Dup (9030837-MSI	D1)			QC Source:	PSC0752-03			Exti	racted:	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%	"		
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%	, "	"	
Dimethyl phthalate	"	3.12	2.53	4.81	"	"	ND	"	81.0%	"	0.02629	6 "	"	
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)	0.08499	6 "	"	
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%	"	"	В
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%	Lim	its: 25-125%	"							04/04/09 05:16	
Pyrene-d10			108%		23-150%	"							"	

10-125% "

TestAmerica Portland

Howard Holmes, Project Manager

Benzo (a) pyrene-d12

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.

82.8%



9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210



City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

36238 Report Created: 6543 N. Burlington Ave. Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 04/17/09 16:45

#### **Notes and Definitions**

#### Report Specific Notes:

В Analyte was detected in the associated Method Blank.

В1 Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.

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.

N1See case narrative.

RL1 Reporting limit raised due to sample matrix effects.

#### <u>Laboratory Reporting Conventions:</u>

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.

Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet

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 -Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and Limits

percent solids, where applicable.

- Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Electronic Signature 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 #: PSC0751
CLIENT City of Political	INVOICE TO:	TURNAROUND REQUEST
ADDRESS: 10.000 (1.000)		in Business Days *
ADDRESS: Jennifer Shackelford	Chairs Lytte	Organic & Inorganic Analyses
PHONE: FAX:	P.O. NUMBER: 30238	Petroleum Hydrocarbon Analyses
PROJECT NAME: POSHALA HUSBA TOUR	PRESERVATIVE	5 4 3 2 1 <1
PROJECT NAME: PO: Hard Hubo! 50 110 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		STD.
SAMPLED BY: STOCKWARTER SAMPLED BY:	REQUESTED ANALYSES	OTHER Specify:
CLIENT SAMPLE SAMPLING DATE/TIME SAMPLING		* Turnuround Requests less than standard may incur Rush Charges.  MATRIX # OF LOCATION/ IA
2020		(W, S, O) CONT. COMMENTS WO ID
1+009537 \ 3/23/09 1348 X X		W
2F0095372 1330 X X		W 2
3F0095373 1459 X X		IW a
4FO 095374 1322 X X		N) 9
5F0095375 1402 X X		W 2 (*) (*)
F0095376 1414 X X		W2
F0095377 1432 X X		WZ
*F0 095378 V - X		WIX
9		
10		
RELEASED BY: Morel Chil	DATE: 3/24/09 RECEIVED BY: 1521	DATE: 3/24/0 <sup>1</sup>
PRINT NAME: RONG Kluch FIRM City Of Port	and TIME: 1/24/2 PRINT NAME: Bub	FIRM: TAP TIME: 11:40
PRINT NAME: 13/15 FIRM: 140	DATE: 3/24/G RECEIVED BY:  TIME: (3/3/2) PRINT NAME: //// A ///	FIRM: TAP TIME: 233
ADDITIONAL REMARKS:		TEMP:
(x) rub-wi conquers to Pace	Analytical. Trailes.	2-3 PAGE OF
PCB-209 Conginers to Pace PPPlease the not custom NIC of Pece Record NIC of Please the bottle marked	Malyte list w/ low MRLS.	O-7 TAL-1000(0408)
Extense we bother marked	"PCB" for PCB analysis. Than	les. 28
	U	n 9

### TestAmerica Portland Sample Receiving Checklist

		der #: \( \frac{15075}{1200} \) Date/Time Received: \( \frac{3}{24} \) \( \frac{1230}{1230} \) ame and Project \( \frac{174}{1200} \) \( \frac{127}{1200} \) \( \frac{1230}{1200} \) \( \frac{1230}{12
Res Que	idual C ote #:	mplete This Section: Yes No Yes No Chlorine Check Required: Quarantined: Check Required: Check
errore.	e Zone DT/ES	
C	ooler # peratu	res: 13 C 1 L S O 1
N/A	Yes	No Initials:
X		1. If ESI client, were temp blanks received? If no, document on NOD.
X X		2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	$\supset$	3. Chain of Custody present? If no, document on NOD.
	风	4. Bottles received intact? If no, document on NOD.
	X	5. Sample is not multiphasic? If no, document on NOD.
	X	6. Proper Container and preservatives used? If no, document on NOD.
X		7. pH of all samples checked and meet requirements? If no, document on NOD.
X		8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
X		9. HF Dilution required <sup>9</sup>
	×	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	$\triangleright$	Did chain of custody agree with samples received? If no, document on NOD.
×		12. Were VOA/Oil Syringe samples without headspace?
$\bigvee$		13. Were VOA vials preserved? HCL Sodium Thiosulfate Ascorbic Acid
		14. Did samples require preservation with sodium thiosulfate?
X		15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
X		16. Are dissolved/field filtered metals bottles sediment-free? If no. document on NOD.
X X X		17. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no. document on NOD and contact PM before proceeding.
≺	$\mathbf{X}$	<ul><li>□ 18. Are analyses with short holding times received in hold?</li><li>□ 19. Was Standard Turn Around (TAT) requested?</li></ul>
	$\boxtimes$	20. Receipt date(s) < 48 hours past the collection date(s)? If no. notify PM
	4-4	= - · · · · · · · · · · · · · · · · · ·

#### TestAmerica Portland

#### Sample Receiving Checklist

Work Order #: \( \begin{aligned} \frac{1}{50751} \end{aligned}

Log	gin C	Checks:	Initials:
N/A	Yes	s No	
X	X	21. Sufficient volume provided for all analysis? If no, do	cument on NOD & contact PM
7—	_	22. Sufficient volume provided for client requested MS/N no, document on NOD and contact PM.	MSD or matrix duplicates? If
	X	23. Did the chain of custody include "received by" and "r	
	• •	dates and times?	elinquished by" signatures,
	X	24. Were special log in instructions read and followed?	
	X	25. Were tests logged checked against the COC?	
X		26. Were rush notices printed and delivered?	
X		27. Were short hold notices printed and delivered?	
	X	28. Were subcontract COCs printed?	
X		29. Was HF dilution logged?	
		and Storage Checks:	Initials:
N/A	Yes	No	
	<b>X</b>	30. Were the subcontracted samples/containers put in Sx fr	idge?
		31. Were sample bottles and COC double checked for disso	olved/filtered metals?
V i		☐ 32. Did the sample ID, Date, and Time from label match w	hat was looged?
		33. Were Foreign sample stickers affixed to each container foreign fridge?	and containers stored in
<b>Z</b> - [		34. Were HF stickers affixed to each container, and contain	
Oocum form (N	ent an NOD).	ny problems or discrepancies and the actions taken to resolve then	on a Notice of Discrepancy



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

#### **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:

got C. Muye

Scott Unze, Project Manager (612) 607-6383

(612) 607-6444 (fax) scott.unze@pacelabs.com



#### **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.

April 15, 2009



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

#### 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 **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

<b>:</b> :	/Ŷ	)/	N
	·		

Project Manager. Howard	Holines		Receipt Temperatu	$\frac{\text{OR-OREGON}}{\text{Ire:}} \frac{1}{\sqrt{Y}} \text{ C} \qquad \text{Ice:} \frac{1}{\sqrt{Y}} \text{ N}$
needs Excel EDD				
Analysis	Units	Due	Expires	Comments
Sample ID: PSC0751-01	Water		Sampled: 03/23/09 13:	109180800
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:48	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)	<del></del>			FO 095371
Sample ID: PSC0751-02	Water		Sampled: 03/23/09 13:	30
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:30	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)		······································		FO 095372
Sample ID: PSC0751-03	Water		Sampled: <b>03/23/09 14</b> :5	9 003
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:59	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				Fo 095373
Sample ID: PSC0751-04	Water		Sampled: 03/23/09 13:2	00°/
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:22	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				Fo 095374
Sample ID: PSC0751-05	Water		Sampled: 03/23/09 14:0	, 005
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:02	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				Fo 095375
Sample ID: PSC0751-06	Water		Sampled: 03/23/09 14:1	4 006
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:14	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				FO 095376

Received By

# SUBCONTRACT ORDER

# TestAmerica Portland PSC0751

Analysis	Units	Due	Expires	Comme	en <b>ts</b>	
Sample ID: PSC0751-07	Water		Sampled: 03/23/09 14:32		109180	8007
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:32	***209	Congeners*** to Pace	
Containers Supplied: 1L Amber - Unpres. (A)				Fo	095377	
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: 1L Amber - Unpres. (A)				FO	095378	

# Semple Condition Upon Receipt

and the second s		200000000 A
fall and A and a fi	lame: <u>Test However</u>	Project # /09/8/09
Courier: [] Fed Ex [] UPS [] USPS [ Tracking#: 4796 87/2 2655	Client Commercial Pace	Other Optional Proj. Que Date:
Carolando Gordon	∃yes ☐ no Seals intact: ☐	Proj Name
Packing Material: Bubble Wrap	3ubble Bags	The state of the s
Thermometer Used 86344042 179425	Type of Ice: (Wet ) Blue Nor	Temp Blank: Yes No
Cooler Temperature 1,4% Temp should be above freezing to 6°C	Biological Tissue is Frozen: You	The state of the s
Chain of Custody Present:	DYes DNo DNA 1.	
Chain of Custody Filled Out:	ØYes □No □N/A 2.	THE RESIDENCE OF THE PROPERTY
Chain of Custody Relinquished:	□Yes □No □NA 3.	等着这些时候,我们就会不是一个人,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的,我们就是我们的
Sampler Name & Signature on COC:	DYes DNO DNA 4.	and the second s
Samples Arrived within Hold Time:	Wes ONO ON/A 5.	- And species and developed the second species and the second species and species are species and species and species are species and species and species are species are species and species are species are species and species are spec
Short Hold Time Analysis (<72hr):	Dyes Dilo Dilo 6.	amengan Haramada Pipopolisha kalam sigan rasida mada indika kalam 1969 kalam kalambada kalambada indika
Rush Turn Around Time Requested:	DYes DKo DNA 7.	
Sufficient Volume:	DVes DNo DNA 8,	
Correct Containers Used:	Dyes □No □N/A 9.	
-Pace Containers Used:	DYes DNO DNA	
Containers Intact:	ØYes □No □N/A 10.	化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基
Filtered volume received for Dissolved tests	DYes DINO DINA 11.	
Sample Labels match COC:	OKes ONO ONA 12.	的是是这种人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们也没有一个人,我们也没有一个人,也不是我们的人,我们
Includes date/time/ID/Analysis Matrix:  All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	UYes ONO BRIA 13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	Dyes DNO BN/A	
Exceptions: VOA, Collform, TOC, Oil and Grease, WI-DRO (water)	☐Yes ☑No Initial when completed	Lot # of added   preservative
Samples checked for dechlorination:	□Yes □No □N/A 14.	
Headspace in VOA Vials ( >6mm):	□Yes □No □N/A 15.	\$P\$ (18 ) 在小沙山下海,中国市场的大河,中国的城市,中国市场的大河,中国市场的大河,市场的大河,市场的大河,市场的大河,市场的大河,市场的大河,市场的
Trip Blank Present:	CIYOS CINO ZINA 16.	
Trip Blank Custody Seals Present	□Yes □No ☑N/A	
Pace Trip Blank Lot # (if purchased):		
Client Notification/ Resolution:		Field Date D
Person Contacted:	Date/Time:	Field Data Required? Y / N
Comments/ Resolution:	And a state of the	The state of the s
	1	
Project Manager Review:	(a)	Date: 03/26/09

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina 
# Appendix B

Sample Analysis Summary

ng's Found % Recovery



Tel: 612-607-1700 Fax: 612- 607-6444

# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Ratio

Client's Sample ID Lab Sample ID

Filename

Injected By

**Total Amount Extracted** % Moisture

Dry Weight Extracted **ICAL ID** 

CCal Filename(s) Method Blank ID

**PCB** Isomer

PSC0751-06:FO 095376

RT

1091808006 U90405B 09

**BAL** 996 mL NA

**IUPAC** 

NA U90405B02 U90405B 01 **BLANK-19530**  Matrix Water Dilution NA

ng's Added

2.0

2.0

2.0

2.0

Collected 03/23/2009 Received 03/26/2009 04/03/2009 Extracted 04/06/2009 12:05 Analyzed

Labeled Analytes 13C-2-MoCB 13C-4-MoCB 3.44 2.0 0.952 48 6.576 3 9.451 3.31 2.0 1.12 56 13C-2,2'-DiCB 13C-4,4'-DiCB 4 9.762 1.62 2.0 1.01 51 15 2.0 17.705 1.58 1.59 79 13C-2,2',6-TrCB 13C-3,4,4'-TrCB 13C-2,2',6,6'-TeCB 19 14.015 1.00 2.0 1.16 58 2.0 37 106 26.225 1.08 2.12 54 17.993 0.82 2.0 1.24 62 13C-3,4,4',5-TeCB 13C-3,3',4,4'-TeCB 13C-2,2',4,6,6'-PeCB 81 33.887 91 0.78 2.0 1.83 1.83 77 34.490 0.83 2.0 91 104 24.749 2.0 73 1.61 1.46 13C-2,3,3',4,4'-PeCB 105 38.296 1.60 2.0 1.76 88 13C-2,3,4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5'-PeCB 114 37.609 1.59 2.0 1.76 88 2.0 89 118 37.055 1.61 1.77 123 36.703 1.57 2.0 1.85 93 13C-3,3',4,4',5-PeCB 126 82 41.700 1.53 2.0 1.65 13C-2,2',4,4',6,6'-HxCB 31.305 2.0 88 155 1.26 1.76 13C-HxCB (156/157) 156/157 44.902 4.0 85 1 24 3.41 13C-2,3',4,4',5,5'-HxCB 167 43.712 1.25 2.0 1.77 89 13C-3,3',4,4',5,5'-HxCB 13C-2,2',3,4',5,6,6'-HpCB 169 48.423 1.23 2.0 1.61 80 2.0 2.18 109 188 37.592 1.04 13C-2,3,3',4,4',5,5'-HpCB 13C-2,2',3,3',5,5',6,6'-OcCB 189 51.072 1.02 2.0 2.22 111 202 43.359 0.92 2.0 105 2.09 13C-2,3,3',4,4',5,5',6-OcCB 205 53.765 0.92 2.0 1.72 86 13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,5,5',6,6'-NoCB 206 55.576 0.75 2.0 1.68 84 208 50.468 0.79 2.0 1.84 92 13C--DeCB 79 209 57.214 0.70 2.0 1.57 Cleanup Standards 13C-2,4,4'-TrCB 13C-2,3,3',5,5'-PeCB 28 2.0 2.15 108 21.480 1.03 34.608 2.0 111 1.56 1.77 89 13C-2,2',3,3',5,5',6-HpCB 178 40.912 1.04 2.0 1.79 90 Recovery Standards 13C-2,5-DiCB 9 12.542 1.58 2.0 NA NA

0.79

1.62

1.35

0.90

Conc = Concentration

13C-2,2',5,5'-TeCB 13C-2,2',4,5,5'-PeCB

13C-2,2',3,4,4',5'-HxCB

13C-2,2',3,3',4,4',5,5'-OcCB

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

NA

NA

NA

NA

NA

NA

NA

NA = Not Applicable

NC = Not Calculated

\* = See Discussion ! = Outside QC Limits

RT = Retention Time

I = Interference

ng's = Nanograms

# REPORT OF LABORATORY ANALYSIS

52

101

138

194

23.693

31.573

40.409

53.270



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-06;FO 095376 1091808006 U90405B\_09

		000.002_00				
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.251
2				ND		0.251
3				ND		0.251
4				ND		0.251
				ND		0.251
5 6				ND ND		0.251
7				ND ND		0.251
8				ND ND		
0						0.251
9				ND		0.251
10				ND		0.251
11	10/10			ND		1.51
12	12/13			ND		0.502
13	12/13			ND		0.502
14				ND		0.251
15				ND		0.251
16				ND		0.251
17				ND		0.251
18	18/30			ND		0.502
19				ND		0.251
20	20/28			ND		0.502
21	21/33			ND		0.502
22	_,,,,			ND		0.251
23				ND		0.251
24				ND		0.251
25				ND		0.251
26	26/29			ND		0.502
27	20/29			ND		0.251
28	20/28			ND ND		0.502
20 29	26/29			ND ND		0.502
29	20/29			ND		0.502
30	18/30			ND		0.502
31				ND		0.251
32	0.1/0.0			ND		0.251
33	21/33			ND		0.502
34				ND		0.251
35				ND		0.251
36				ND		0.251
37				ND		0.251
38				ND		0.251
39				ND		0.251
40	40/41/71			ND		1.51
41	40/41/71			ND		1.51
42				ND		0.502
43				ND		0.502
44	44/47/65			ND		1.51
45	45/51			ND		1.00
46	10,01			ND		0.502
47	44/47/65			ND		1.51
48	<del>/</del> //			ND ND		0.502
40				ND		0.502

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
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ng's = Nanograms



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-06;FO 095376 1091808006 U90405B\_09

	•••					
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.00
50	50/53			ND		1.00
51	45/51			ND		1.00
52	40/01			ND		0.502
53	50/53			ND		1.00
54	30/33			ND		0.502
5 <del>5</del>				ND		0.502
56				ND		0.502
57				ND		0.502
58				ND		0.502
59	59/62/75			ND		1.51
60	39/02/13			ND		0.502
61	61/70/74/76			ND ND		2.01
62	59/62/75			ND ND		1.51
63	59/62/75			ND ND		0.502
64				ND ND		0.502
65	44/47/65			ND ND		1.51
66	44/47/03			ND ND		0.502
67				ND ND		0.502
68				ND ND		0.502
69	49/69			ND ND		1.00
70	49/69 61/70/74/76			ND ND		2.01
70 71						
71 72	40/41/71			ND ND		1.51
72 73				ND		0.502
	C4 /70 /74 /70			ND		0.502
74 75	61/70/74/76			ND		2.01
75 76	59/62/75 64/70/74/76			ND		1.51
<b>76</b>	61/70/74/76			ND		2.01
77 70				ND		0.502
78				ND		0.502
79				ND		0.502
80				ND		0.502
81				ND		0.502
82				ND		0.502
83				ND		0.502
84	05/440/447			ND		0.502
85	85/116/117			ND		1.51
86	86/87/97/108/119/125			ND		3.01
87	86/87/97/108/119/125			ND		3.01
88	88/91			ND		1.00
89	00/404/440			ND		0.502
90	90/101/113			ND		1.51
91	88/91			ND		1.00
92	00/00/400/400			ND		0.502
93	93/98/100/102			ND		2.01
94				ND		0.502
95				ND		0.502
96				ND		0.502

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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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\*= See Discussion
! = Outside QC Limits
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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-06;FO 095376 1091808006 U90405B\_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.01
98	93/98/100/102			ND		2.01
99				ND		0.502
100	93/98/100/102			ND		2.01
101	90/101/113			ND		1.51
102	93/98/100/102			ND		2.01
103				ND		0.502
104				ND		0.502
105				ND		0.502
106				ND		0.502
107	107/124			ND		1.00
108	86/87/97/108/119/125			ND		3.01
109	00/01/01/100/110/120			ND		0.502
110	110/115			ND		1.00
111	1.10/1.10			ND		0.502
112				ND		0.502
113	90/101/113			ND		1.51
114	00/101/110			ND		0.502
115	110/115			ND		1.00
116	85/116/117			ND		1.51
117	85/116/117			ND		1.51
118	03/110/117			ND		0.502
119	86/87/97/108/119/125			ND		3.01
120	80/07/97/100/119/123			ND		0.502
121				ND		0.502
122				ND		0.502
123				ND		0.502
123	107/124			ND		1.00
125	86/87/97/108/119/125			ND ND		3.01
126	00/07/97/100/119/125			ND ND		0.502
120				ND ND		0.502
127	128/166			ND ND		
120	129/138/163			ND ND		1.00 1.51
130	129/130/103			ND ND		0.502
131				ND ND		0.502
132						0.502
133	10.4/4.40			ND		0.502
134	134/143			ND		1.00
135	135/151			ND		1.00
136				ND		0.502
137	400/400/400			ND		0.502
138	129/138/163			ND ND		1.51
139	139/140			ND		1.00
140	139/140			ND		1.00
141				ND		0.502
142	40.4/4.40			ND		0.502
143	134/143			ND		1.00
144				ND		0.502

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\*= See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-06;FO 095376 1091808006 U90405B\_09

		000.002_00				
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.502
146				ND		0.502
147	147/149			ND		1.00
148	147/143			ND		0.502
149	147/149			ND		1.00
150	147/149			ND ND		0.502
	105/151			ND ND		
151	135/151					1.00
152	150/100			ND		0.502
153	153/168			ND		1.00
154				ND		0.502
155				ND		0.502
156	156/157			ND		1.00
157	156/157			ND		1.00
158				ND		0.502
159				ND		0.502
160				ND		0.502
161				ND		0.502
162				ND		0.502
163	129/138/163			ND		1.51
164				ND		0.502
165				ND		0.502
166	128/166			ND		1.00
167	120/100			ND		0.502
168	153/168			ND		1.00
169	155/166			ND ND		0.502
				ND ND		
170	474/470					0.502
171	171/173			ND		1.00
172	474/470			ND		0.502
173	171/173			ND		1.00
174				ND		0.502
175				ND		0.502
176				ND		0.502
177				ND		0.502
178				ND		0.502
179				ND		0.502
180	180/193			ND		1.00
181				ND		0.502
182				ND		0.502
183	183/185			ND		1.00
184				ND		0.502
185	183/185			ND		1.00
186				ND		0.502
187				ND		0.502
188				ND		0.502
189				ND		0.502
190				ND		0.502
190				ND ND		0.502
192				ND ND		0.502
192				טוו		0.302

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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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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-06;FO 095376 1091808006 U90405B\_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.00
194				ND		0.753
195				ND		0.753
196				ND		0.753
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		0.753
202				ND		0.753
203				ND		0.753
204				ND		0.753
205				ND		0.753
206				ND		0.753
207				ND		0.753
208				ND		0.753
209				ND		0.753

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-06;FO 095376 1091808006 U90405B\_09

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID

Filename Injected By

Total Amount Extracted % Moisture

Dry Weight Extracted ICAL ID

CCal Filename(s) Method Blank ID PSC0751-07;FO 095377

1091808007

U90405B\_10 BAL

1030 mL NA NA U90405B02 U90405B\_01 BLANK-19530 Matrix Water Dilution NA

Collected 03/23/2009
Received 03/26/2009
Extracted 04/03/2009
Analyzed 04/06/2009 13:09

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.576	3.39	2.0	0.860	43
13C-4-MoCB	3	9.451	3.15	2.0	0.971	49
13C-2,2'-DiCB	4	9.762	1.61	2.0	0.885	44
13C-4,4'-DiCB	15	17.693	1.56	2.0	1.33	67
13C-2,2',6-TrCB	19	13.991	1.01	2.0	1.04	52
13C-3,4,4'-TrCB	37	26.191	1.13	2.0	1.83	91
13C-2,2',6,6'-TeCB	54	17.992	0.80	2.0	1.04	52
13C-3,4,4',5-TeCB	81	33.820	0.80	2.0	1.89	95
13C-3,3',4,4'-TeCB	77	34.440	0.85	2.0	1.87	94
13C-2,2',4,6,6'-PeCB	104	24.716	1.59	2.0	1.20	60
13C-2,3,3',4,4'-PeCB	105	38.212	1.59	2.0	1.97	99
13C-2,3,4,4',5-PeCB	114	37.525	1.57	2.0	1.99	99
13C-2,3',4,4',5-PeCB	118	36.972	1.56	2.0	2.01	100
13C-2,3',4,4',5'-PeCB	123	36.620	1.61	2.0	2.00	100
13C-3,3',4,4',5-PeCB	126	41.582	1.60	2.0	1.96	98
13C-2,2',4,4',6,6'-HxCB	155	31.254	1.27	2.0	1.42	71
13C-HxCB (156/157)	156/157	44.768	1.25	4.0	3.90	97
13C-2,3',4,4',5,5'-HxĆB	167	43.578	1.30	2.0	2.02	101
13C-3,3',4,4',5,5'-HxCB	169	48.238	1.29	2.0	1.87	94
13C-2,2',3,4',5,6,6'-HpCB	188	37.508	1.04	2.0	1.79	89
13C-2,3,3',4,4',5,5'-HpCB	189	50.878	1.04	2.0	2.35	118
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.242	0.89	2.0	1.86	93
13C-2,3,3',4,4',5,5',6-OcCB	205	53.571	0.90	2.0	1.66	83 78
13C-2,2',3,3',4,4',5,5',6-NoCB	206 208	55.382 50.317	0.83 0.79	2.0 2.0	1.56 1.80	7 8 90
13C-2,2',3,3',4,5,5',6,6'-NoCB 13CDeCB	208	57.019	0.79	2.0	1.44	90 72
13CDeCB	209	37.019	0.72	2.0	1.44	12
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.463	1.02	2.0	1.72	86
13C-2,3,3',5,5'-PeCB	111	34.524	1.58	2.0	1.58	79
13C-2,2',3,3',5,5',6-HpCB	178	40.811	1.06	2.0	1.65	82
Recovery Standards						
13C-2,5-DiCB	9	12.529	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.659	0.80	2.0	ŇA	NA
13C-2,2',4,5,5'-PeCB	101	31.523	1.57	2.0	ŇA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.308	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.076	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

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-07;FO 095377 1091808007 U90405B\_10

				Concentration	<b>EMPC</b>	EML
<b>IUPAC</b>	Co-elutions	RT	Ratio	ng/L	ng/L	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		0.483
13	12/13			ND		0.483
14	12/13			ND		0.242
15				ND ND		0.242
16				ND ND		0.242
17				ND ND		0.242
18	18/30			ND ND		0.483
19	10/30			ND ND		0.242
20	20/28			ND ND		0.483
21	21/33			ND ND		0.483
22	21/33			ND ND		
				ND ND		0.242
23 24				ND ND		0.242 0.242
25	20/20			ND		0.242
26	26/29			ND		0.483
27	20/20			ND		0.242
28	20/28			ND ND		0.483
29	26/29			ND		0.483
30	18/30			ND		0.483
31				ND		0.242
32	04/00			ND		0.242
33	21/33			ND		0.483
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		0.483
43	4.4.47.105			ND		0.483
44	44/47/65			ND		1.45
45	45/51			ND		0.967
46				ND		0.483
47	44/47/65			ND		1.45
48				ND		0.483

Conc = Concentration

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# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-07;FO 095377 1091808007 U90405B\_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		0.967
50	50/53			ND		0.967
51	45/51			ND		0.967
52				ND		0.483
53	50/53			ND		0.967
54				ND		0.483
55				ND		0.483
56				ND		0.483
57				ND		0.483
58				ND		0.483
59	59/62/75			ND		1.45
60				ND		0.483
61	61/70/74/76			ND		1.93
62	59/62/75			ND		1.45
63				ND		0.483
64				ND		0.483
65	44/47/65			ND		1.45
66				ND		0.483
67				ND		0.483
68				ND		0.483
69	49/69			ND		0.967
70	61/70/74/76			ND		1.93
71	40/41/71			ND		1.45
72				ND		0.483
73				ND		0.483
74	61/70/74/76			ND		1.93
75	59/62/75			ND		1.45
76	61/70/74/76			ND		1.93
77				ND		0.483
78				ND		0.483
79				ND		0.483
80				ND		0.483
81				ND		0.483
82				ND		0.483
83				ND		0.483
84				ND		0.483
85	85/116/117			ND		1.45
86	86/87/97/108/119/125			ND		2.90
87	86/87/97/108/119/125			ND		2.90
88	88/91			ND		0.967
89				ND		0.483
90	90/101/113			ND		1.45
91	88/91			ND		0.967
92				ND		0.483
93	93/98/100/102			ND		1.93
94				ND		0.483
95				ND		0.483
96				ND		0.483

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



# Method 1668A Polychlorobiphenyl **Sample Analysis Results**

Client Sample ID Lab Sample ID Filename

PSC0751-07;FO 095377 1091808007 U90405B\_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		2.90
98	93/98/100/102			ND		1.93
99				ND		0.483
100	93/98/100/102			ND		1.93
101	90/101/113			ND		1.45
102	93/98/100/102			ND		1.93
103				ND		0.483
104				ND		0.483
105				ND		0.483
106				ND		0.483
107	107/124			ND		0.967
108	86/87/97/108/119/125			ND		2.90
109	00/07/07/100/110/120			ND		0.483
110	110/115			ND		0.967
111	110/110			ND		0.483
112				ND		0.483
113	90/101/113			ND		1.45
114	30/101/119			ND		0.483
115	110/115			ND		0.967
116	85/116/117			ND		1.45
117	85/116/117			ND		1.45
118	03/110/117			ND ND		0.483
119	86/87/97/108/119/125			ND ND		2.90
120	00/07/97/100/119/125			ND ND		0.483
120				ND ND		0.483
121				ND ND		0.483
123				ND ND		0.483
123	107/124			ND ND		0.463
125	86/87/97/108/119/125			ND ND		2.90
126	00/07/97/100/119/125			ND ND		0.483
120				ND ND		0.483
127	128/166			ND ND		0.463
120	129/138/163			ND ND		1.45
130	129/136/163					
				ND ND		0.483
131				ND		0.483
132				ND		0.483
133	404/440			ND		0.483
134	134/143			ND		0.967
135	135/151			ND		0.967
136				ND		0.483
137	400/400/400			ND		0.483
138	129/138/163			ND		1.45
139	139/140			ND		0.967
140	139/140			ND		0.967
141				ND		0.483
142	10.1/1.10			ND		0.483
143	134/143			ND		0.967
144				ND		0.483

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-07;FO 095377 1091808007 U90405B\_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.483
146				ND		0.483
147	147/149			ND		0.967
148				ND		0.483
149	147/149			ND		0.967
150				ND		0.483
151	135/151			ND		0.967
152				ND		0.483
153	153/168			ND		0.967
154				ND		0.483
155				ND		0.483
156	156/157			ND		0.967
157	156/157			ND		0.967
158				ND		0.483
159				ND		0.483
160				ND		0.483
161				ND		0.483
162				ND		0.483
163	129/138/163			ND		1.45
164				ND		0.483
165				ND		0.483
166	128/166			ND		0.967
167				ND		0.483
168	153/168			ND		0.967
169				ND		0.483
170				ND		0.483
171	171/173			ND		0.967
172				ND		0.483
173	171/173			ND		0.967
174				ND		0.483
175				ND		0.483
176				ND		0.483
177				ND		0.483
178				ND		0.483
179				ND		0.483
180	180/193			ND		0.967
181				ND		0.483
182				ND		0.483
183	183/185			ND		0.967
184				ND		0.483
185	183/185			ND		0.967
186				ND		0.483
187				ND		0.483
188				ND		0.483
189				ND		0.483
190				ND		0.483
191				ND		0.483
192				ND		0.483

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-07;FO 095377 1091808007 U90405B\_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		0.967
194				ND		0.725
195				ND		0.725
196				ND		0.725
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		0.725
202				ND		0.725
203				ND		0.725
204				ND		0.725
205				ND		0.725
206				ND		0.725
207				ND		0.725
208				ND		0.725
209				ND		0.725

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSC0751-07;FO 095377 1091808007 U90405B\_10

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



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID BLANK-19530
Filename U90405A\_06
Injected By BAL
Total Amount Extracted I040 mL
ICAL ID U90405A02

 AL
 Matrix
 Water

 040 mL
 Extracted
 04/03/2009

 90405A02
 Analyzed
 04/05/2009
 19:00

 90405A 01
 Dilution
 NA

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 4	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'-OcCB	202	43.225	0.93	2.0	1.76	88
13C-2,3,3',4,4',5,5',6-OcCB	205	53.550	0.93	2.0	1.61	81
13C-2,2',3,3',4,4',5,5',6-NoCB		55.360	0.79	2.0	1.47	73
13C-2,2',3,3',4,5,5',6,6'-NoCB		50.295	0.80	2.0	1.67	84
13CDeCB	209	57.019	0.68	2.0	1.30	65
	203	37.013	0.00	2.0	1.50	00
Cleanup Standards		04.440	4.00			0=
13C-2,4,4'-TrCB	28	21.446	1.02	2.0	1.70	<u>85</u>
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	ŇA
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'-OcCB	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



# 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
1				ND		0.240
2				ND		0.240
3				ND		0.240
4				ND		0.240
4 5 6 7				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	12/10			ND		0.240
15				ND		0.240
16				ND		0.240
17				ND		0.240
18	18/30			ND		0.481
19	10/00			ND		0.240
20	20/28			ND		0.481
21	21/33			ND		0.481
22	21/00			ND		0.240
23				ND		0.240
24				ND		0.240
25				ND		0.240
26	26/29			ND		0.481
27	_0,_0			ND		0.240
28	20/28			ND		0.481
29	26/29			ND		0.481
30	18/30			ND		0.481
31	10/00			ND		0.240
32				ND		0.240
33	21/33			ND		0.481
34	, 00			ND		0.240
34 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



# 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
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

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EMPC = Estimated Maximum Possible Concentration

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ng/L = Nanograms per liter

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I = Interference



# 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
		• • • • • • • • • • • • • • • • • • • •	itatio			
91	88/91			ND		0.961
92	00/00/400/400			ND		0.481
93	93/98/100/102			ND		1.92
94				ND		0.481
95				ND		0.481
96	00/07/07/400/440/405			ND		0.481
97	86/87/97/108/119/125			ND		2.88
98	93/98/100/102			ND		1.92
99	00/00/400/400			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

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ND = Not Detected NA = Not Applicable NC = Not Calculated \*! = See Discussion ! = Outside QC Limits RT = Retention Time

I = Interference



# 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	100/110			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	.00, .00			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

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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



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-19530 U90405A\_06

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	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

! = Outside QC Limits RT = Retention Time

I = Interference



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKNE BLANK-19530 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



# Method 1668A Polychlorobiphenyls **Laboratory Control Spike Analysis Results**

Lab Sample ID Filename

**Total Amount Extracted** 

ICAL ID

CCal Filename(s) Method Blank ID

LCS-19531 U90406A\_03 1030 mL

U90406A02 U90406A\_01 BLANK-19530 Matrix Water Dilution NA

Extracted 04/03/2009 Analyzed 04/07/2009 12:38

Injected By SMT

	N	Native Analyt	tes	Lal	beled Analyt	es
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.23	123	2.0	0.517	26 F
3	1.0	1.29	129	2.0	0.560	28 F
4	1.0	1.21	121	2.0	0.477	24 F
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

<sup>! =</sup> See Discussion

ng = Nanograms

I = Interference



# Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

ICAL ID CCal Filename(s)

Method Blank ID

LCSD-19532 U90406A\_04 1040 mL

U90406A02 U90406A\_01 BLANK-19530 Matrix Water Dilution NA

Extracted 04/03/2009 Analyzed 04/07/2009 13:42

Injected By SMT

	ı	Native Analy	tes	Lai	beled Analyt	es
PCB Isomer	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



# Method 1668A Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

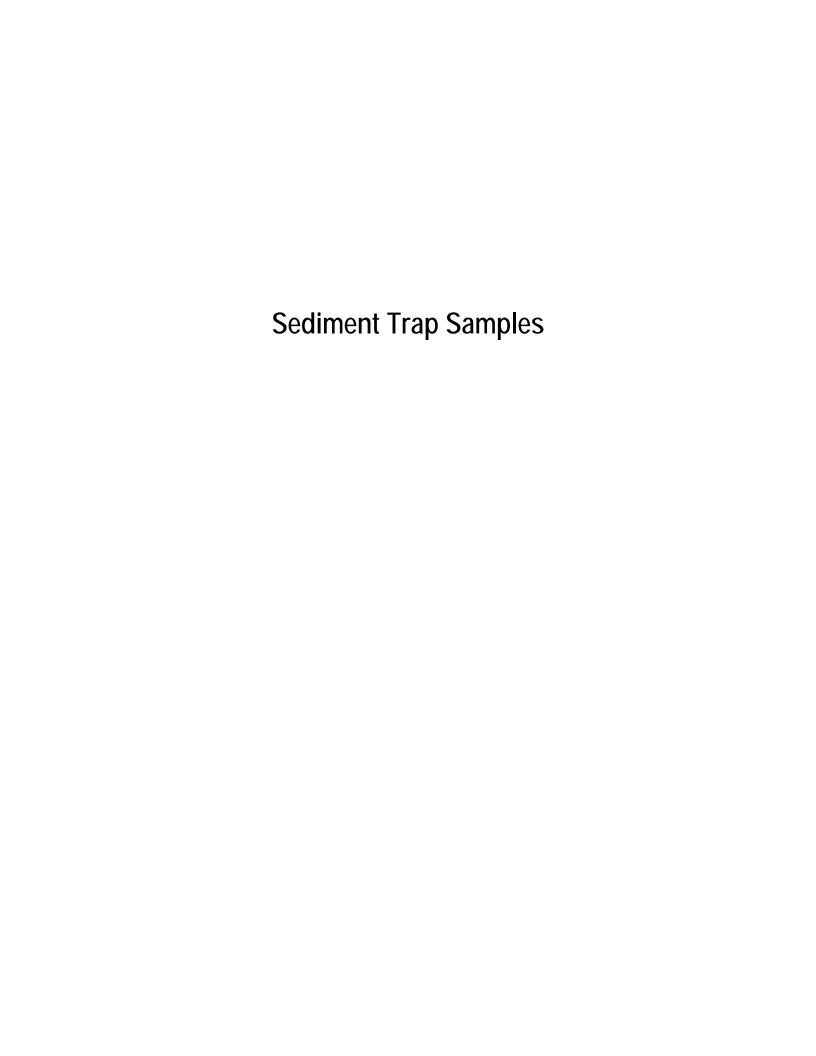
 Spike 1 ID
 LCS-19531
 Spike 2 ID
 LCSD-19532

 Spike 1 Filename
 U90406A\_03
 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



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

Project Name: PORTLAND HARBOR STORMWATER SAMP



# 



Date: 6/2/09

Page: | 유 |-

Collected By: TXB/MJS

<b>Bureau of Environmental Services</b>	Chair of Custody	Water of the second second

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Printed Name: Date:	Date:				Printed Name:	Printec			Date:			Printed Name:	6/2/07	Texmiah Bawden
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	×		× •	-		+^-	×	×	0	11151	6/2/09	DUP	Doplicate	FO095677
\S=\$3% 611.9 g Total Wet Weight	Υ T		•	×		×	×	×	С	1151	6/2/09	44A_ST1	ST-44A-ABC311-0609 N LARABEE & RANDOLPH	FO095662
			TOC TS*	Grain Siz	57 . 1				Sample Type	Sample Time	Sample Date	Point Code	Location	WPCL Sample I.D.
	ials ( As, C i, Ag, Zn) +			e	: دنيلوح	hthalates ( CAS - Low	ciors (Low	ngeners (A	etain sample	ossible to re	lest aliquot po es.	red: 5/27/09 use the small w-up analys	Sediment traps removed: 5/27/09 L, care should be taken to use the smalles volume for additional follow-up analyses	Sediment traps removed: 5/27/09 * 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.
Analyses and Dupliente added per	Hg				(CKS)			II 209)	~	of sed traps	condary set	allation of se	Easin 44A Section in the Cham-or-custody  Sediment traps installed: 10/17/08; 10/30/08 (installation of secondary set of sed traps)	Sediment traps instal
Comments	Wetals	=	General	٦,	L	organics	ļģ.	T				2	in AAA O Li	
	Requested Analyses								T	SEDIMENT	Matrix:			File Number: 1020.005
								-		!				



6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



### LABORATORY ANALYSIS REPORT

Sample ID: FO095662

Sample Collected: 06/02/09

11:51

Sample Status: COMPLETE AND

Sample Received: 06/02/09

**VALIDATED** 

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 1 of 3

Address/Location:

ST-44A-ABC311-0609

N LARABEE & RANDOLPH

System ID:

AN05761

Sample Point Code:

44A\_ST1

EID File #:

1020.005

Sample Type:

COMPOSITE

LocCode:

PORTHASW

Sample Matrix:

**SEDIMENT** 

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.

Tot December	D14	11-14-	MOI	Method	Analysis Date
Test Parameter	Result	Units	MRL	wethou	Date
GENERAL				01105:00	00/00/0-
TOTAL SOLIDS	51.3	% W/W	0.01	SM 2540 G	06/03/09
METALS					r
ARSENIC	2.47	mg/Kg dry wt	0.50	EPA 6020	06/10/09
CADMIUM	1.41	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	34.4	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	103	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	71.3	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.108	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	28.1	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	0.65	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	574	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS			•		÷
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	$\mu$ g/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	$\mu$ g/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1254	11	μg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1260	20	$\mu$ g/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1262	<10	$\mu$ g/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	68000	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
GRAIN SIZE BY ASTM - ARI			*.		
Clay (<3.2 µm)	5.4	Fract %	0.1	ASTM D421/422	06/10/09
Coarse Sand (4750-2000 μm)	3.5	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (150-75 $\mu$ m)	10.1	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (250-150 μm)	10.0	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (425-250 $\mu$ m)	14.8	Fract %	0.1	ASTM D421/422	06/10/09
Gravel (>4750 μm)	1.1	Fract %	0.1	ASTM D421/422	06/10/09
Medium Sand (2000-850 μm)	9.4	Fract %	0.1	ASTM D421/422	06/10/09
Medium Sand (850-425 μm)	16.1	Fract %	0.1	ASTM D421/422	06/10/09

Report Date: 07/08/09



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### LABORATORY ANALYSIS REPORT

Sample ID: FO095662 Sample Collected: 06/02/09 11:51 Sample Status: COMPLETE AND

Sample Received: 06/02/09 VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP Report Page: Page 2 of 3

Address/Location: ST-44A-ABC311-0609

N LARABEE & RANDOLPH
Sample Point Code: 44A\_ST1
System ID: AN05761
EID File #: 1020.005

Sample Type:COMPOSITELocCode:PORTHASWSample Matrix:SEDIMENTCollected 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
Silt (13-9 μm)	2.7	Fract %	0.1	ASTM D421/422	06/10/09
Silt (22-13 µm)	4.3	Fract %	0.1	ASTM D421/422	06/10/09
Silt (32-22 µm)	4.9	Fract %	0.1	ASTM D421/422	06/10/09
Silt (7-3.2 μm)	2.7	Fract %	0.1	ASTM D421/422	06/10/09
Silt (75-32 µm)	13.5	Fract %	0.1	ASTM D421/422	06/10/09
Silt (9-7 μm)	1.6	Fract %	0.1	ASTM D421/422	06/10/09
PESTICIDES BY EPA 8081 - CAS					·
4,4'-DDD	<2.2	$\mu$ g/Kg dry wt	2.2	EPA 8081A	06/09/09
4,4'-DDE	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
4,4'-DDT	<8.1	$\mu$ g/Kg dry wt	8.1	EPA 8081A	06/09/09
Aldrin	<1.7	$\mu$ g/Kg dry wt	1.7	EPA 8081A	06/09/09
Alpha-BHC	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Alpha-Chlordane	<1.4	$\mu$ g/Kg dry wt	1.4	EPA 8081A	06/09/09
Beta-BHC	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Delta-BHC	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Dieldrin	<1.0	$\mu$ g/Kg dry wt	1:0	EPA 8081A	06/09/09
Endosulfan I	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endosulfan II	<2.9	$\mu$ g/Kg dry wt	2.9	EPA 8081A	06/09/09
Endosulfan Sulfate	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin Aldehyde	<1.0	$\mu$ g/Kg dry wt	. 1.0	EPA 8081A	06/09/09
Endrin Ketone	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	EST 9.7	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Gamma-Chlordane	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/09/09
Heptachlor	14	μg/Kg dry wt	1.0	EPA 8081A	06/09/09
Heptachlor Epoxide	2.6	μg/Kg dry wt	1.0	EPA 8081A	06/09/09
Methoxychlor	12	μg/Kg dry wt	1.0	EPA 8081A	06/09/09
Toxaphene	<190	$\mu$ g/Kg dry wt	190	EPA 8081A	06/09/09
POLYCHLORINATED BIPHENYL CON- Refer to Contract Report	GENERS -PACE Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTH					
Acenaphthene	<103	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Acenaphthylene	<103	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
· ·					

Report Date: 07/08/09





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### LABORATORY ANALYSIS REPORT

Sample ID: F0095662

Sample Collected: 06/02/09 Sample Received: 06/02/09 11:51

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name:

PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 3 of 3

Address/Location:

ST-44A-ABC311-0609

AN05761

N LARABEE & RANDOLPH

System ID:

1020.005

Sample Point Code:

44A\_ST1

EID File #: LocCode:

**PORTHASW** 

Sample Type: Sample Matrix: COMPOSITE **SEDIMENT** 

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
Anthracene	<103	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	159	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	175	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	254	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	283	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	165	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	26600	μg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<5160	$\mu$ g/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Chrysene	355	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<103	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Diethyl phthalate	<5160	$\mu$ g/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<5160	$\mu$ g/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<5160	$\mu$ g/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<7740	$\mu$ g/Kg dry wt	7740	EPA8270M-SIM	06/09/09
Fluoranthene	532	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Fluorene	<103	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	161	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Naphthalene	8240	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Phenanthrene	285	$\mu$ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Pyrene	400	μg/Kg dry wt	103	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095662

Report Date: 07/08/09



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### LABORATORY ANALYSIS REPORT

Sample ID: FO095677

Sample Collected: 06/02/09 Sample Received: 06/02/09 11:51

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 1 of 2

Address/Location:

FIELD DUPLICATE

System ID:

AN05869

Sample Point Code:

DUP

EID File #:

1020.005 **PORTHASW** 

Sample Type: Sample Matrix: COMPOSITE **SEDIMENT** 

LocCode:

Collected By: JXB/MJS/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. LAB: In addition to Aroclor 1260, trace level of 1254 was evident at concentration below the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL TOTAL SOLIDS	51.3	% W/W	0.01	SM 2540 G	06/03/09
	31.0	70 11711	V.V.		
METALS	0.70		0.50	EDA 6000	06/10/09
ARSENIC	2.73	mg/Kg dry wt	0.50	EPA 6020 EPA 6020	06/10/09
CADMIUM	1.65	mg/Kg dry wt	0.10	•	06/10/09
CHROMIUM	37.5	mg/Kg dry wt	0.50	EPA 6020	
COPPER	104	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	113	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.546	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	25.2	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	0.30	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	488	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS		•		·	
POLYCHLORINATED BIPHENYLS (PCB)		•			
Aroclor 1016/1242	<10	$\mu$ g/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	$\mu$ g/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1254	<10	μg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1260	15	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	74000	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
POLYCHLORINATED BIPHENYL CONGE	NERS -DACE				
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTHAL	ATES - TA				
Acenaphthene	<104	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Acenaphthylene	<104	$\mu$ g/Kg dry wt	104	EPA8270M-SIM	06/09/09
Anthracene	<104	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	159	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	194	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	254	$\mu$ g/Kg dry wt	104	EPA8270M-SIM	06/09/09
	•	. 0 0			-

Report Date: 07/08/09





6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



### LABORATORY ANALYSIS REPORT

Sample ID: FO095677

Sample Collected: 06/02/09

11:51

Sample Status: COMPLETE AND

Sample Received: 06/02/09

VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page:

Page 2 of 2

Address/Location:

AN05869

FIELD DUPLICATE

System ID:

1020.005

Sample Point Code: Sample Type:

DUP

EID File #: LocCode:

**PORTHASW** 

Sample Matrix:

COMPOSITE SEDIMENT

Collected By: JXB/MJS/AJA/LAP

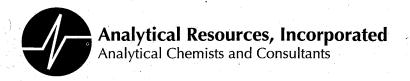
### Comments:

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. LAB: In addition to Aroclor 1260, trace level of 1254 was evident at concentration below the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzo(ghi)perylene	290	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	175	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	19700	μg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<5200	μg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Chrysene	351	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<104	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Diethyl phthalate	<5200	μg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<5200	μg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<5200	μg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<5200	μg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Fluoranthene	497	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Fluorene	<104	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	166	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Naphthalene	3750	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Phenanthrene	328	μg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Pyrene	383	$\mu$ g/Kg dry wt	104	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095677

Report Date: 07/08/09



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:

Ice: Y N

needs Excel EDD

Analysis

Units

ug/l

Due

06/22/09

**Expires** 

11/25/09 14:28

Comments

Sample ID: PSF0274-03

Grain Size (ASTM) - SUB

Other dry

Sampled: 05/29/09 14:28

sub to Analytical Resources Inc (ARI)

Containers Supplied:

8 oz. jar (A)

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)

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

Released By
Released By

<u>U9109 1400</u> Date/Time

e/Time Receive

Received By

Date/Time

Mulumba 6/10/04

Page 1 of 1

Date/Time

Date/Time

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:

ead Technician

Date: 6/19/09

Test America, Inc. PSF0274

Percent Finer (Passing) Than the Indicated Size

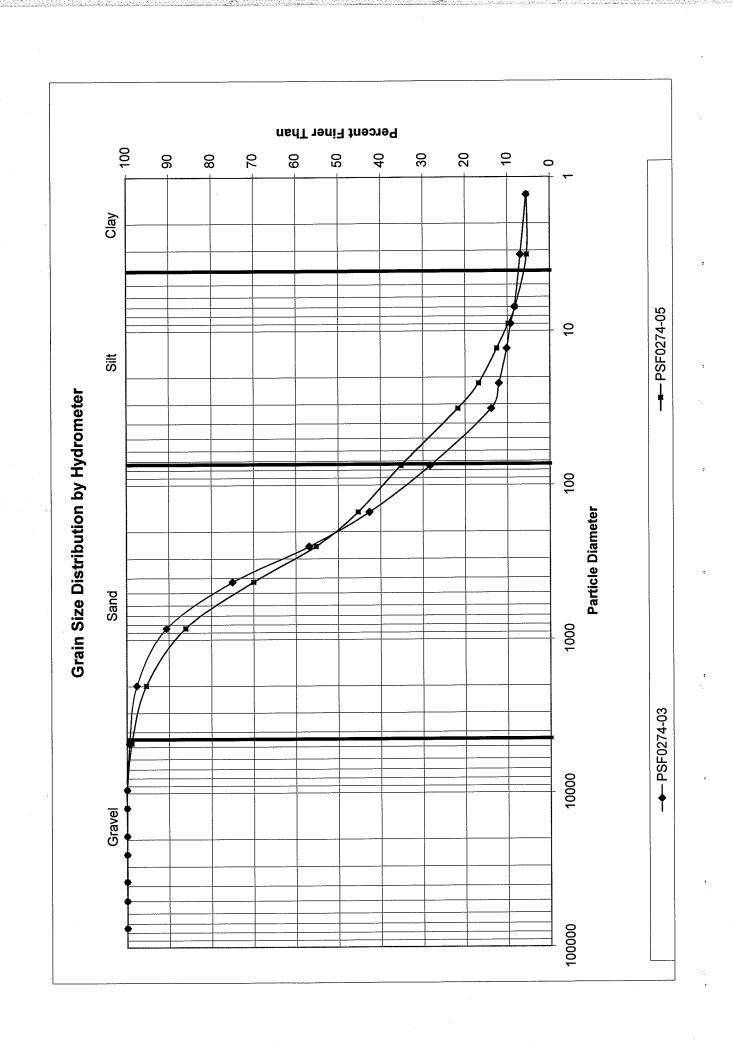
	 г		_
1.3	r.	,	r.
3.2	9	9	5.4
7	8 3	2.5	8.1
6	60	4.0	8 6
13	101		12.5
22	12.0	2	16.8
32	13.8	2	21.7
#200	28.3		35.2
#100	42.6		45.3
#60 (250)	56.8		55.2
#40 (425)	75.0		70.0
#20 (850)	90.6		86.1
#10 (2000)	97.6		95.4
#4 (4750)	99.4		98.9
3/8"	100.0		100.0
1/2"	100.0		100.0
3/4"	100.0		100.0
<b>-</b>	100.0		100.0
1 1/2"	100.0		100.0
2	100.0 100.0		100.0 100.0 100.0 100.0 100.0
3"	100.0		100.0
Sieve Size (microns)	PSF0274-03		PSF0274-05

Testing performed according to ASTM D421/D422

Test America, Inc. PSF0274

Percent Retained in Each Size Fraction

Description		%Coars	%Coarse Gravel			% Gravel	0,	% Coarse Sand	% Medium Sand	n Sand	%	% Fine Sand	рі	% Very 6	% Coarse N	% ledium Silt	% Fine Silt	% Fine Silt	% Very Fine Silt	% Clay
Particle Size (microns)	3-2"	2-1 1/2"	2-1 1/2"   1 1/2"-1"   1-3/4"   3/4-1/2"   1/2-3/8"   3/8"-4750	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4750	4750- 2000	2000-850 850-425 425-250 250-150 150-75	850-425	425-250	250-150	150-75	75-32	32-22	22-13	13-9	2-6	7-3.2	<3.2
PSF0274-03	0.0	0.0	0.0	0.0	0.0	0.0	9.0	1.8	7.0	15.6	18.1	14.2	14.3	14.5	1.8	1.8	0.0	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	1.6	2.7	5.4





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

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### Acronyms

ASTM American Society for Testing and Materials

A2LA American Association for Laboratory Accreditation

CARB California Air Resources Board

CAS Number Chemical Abstract Service registry Number

CFC Chlorofluorocarbon
CFU Colony-Forming Unit

DEC Department of Environmental Conservation

DEQ Department of Environmental Quality

DHS Department of Health Services

DOE Department of Ecology
DOH Department of Health

EPA U. S. Environmental Protection Agency

ELAP Environmental Laboratory Accreditation Program

GC Gas Chromatography

GC/MS Gas Chromatography/Mass Spectrometry

LUFT Leaking Underground Fuel Tank

M Modified

MCL Maximum Contaminant Level is the highest permissible concentration of a

substance allowed in drinking water as established by the USEPA.

MDL Method Detection Limit
MPN Most Probable Number
MRL Method Reporting Limit

NA Not Applicable
NC Not Calculated

NCASI National Council of the Paper Industry for Air and Stream Improvement

ND Not Detected

NIOSH National Institute for Occupational Safety and Health

PQL Practical Quantitation Limit

RCRA Resource Conservation and Recovery Act

SIM Selected Ion Monitoring

TPH Total Petroleum Hydrocarbons

tr Trace level is the concentration of an analyte that is less than the PQL but greater

than or equal to the MDL.

### **Inorganic Data Qualifiers**

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

### Metals Data Qualifiers

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

### Organic Data Qualifiers

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

### Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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







Client:

Portland, City of

Service Request No.:

K0905119

Project:

Portland Harbor Stormwater Samp

Date Received:

06/08/09

Sample Matrix:

Sediment

### **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 t	the analysis of these samples wer	re observed.
	R	06/23/00
Approved by		_Date

### Analytical Report

Client:

Portland, City of

Project Name:

Portland Harbor Stormwater Samp

Service Request: K0905119 **Date Collected:** 06/01/09

Project Number: NA

Sample Matrix: SEDIMENT Date Received: 06/08/09

Carbon, Total Organic (TOC)

Prep Method:

SOP

Units: Percent

Analysis Method

ASTM D4129-82M

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	

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

Units: Percent

Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result		Relative Percent Difference	Result Notes
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.05	6.26	6.28	6.27	<1	

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

Units: Percent Basis: NA

								CAS Percent	
Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	-	Percent Recovery	Recovery Acceptance	Result Notes
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.05	12.8	6.26	18.5	96	75-114	

QA/QC Report

Client:

Portland, City of

Project Name:

Portland Harbor Stormwater Samp

Project Number: Sample Matrix:

**SEDIMENT** 

Service Request:

K0905119 NA

Date Collected: Date Received: NA

Date Prepared:

NA

Date Analyzed:

06/18/09

Laboratory Control Sample Summary Inorganic Parameters

Sample Name: Lab Code:

Lab Control Sample

K0905119-LCS

Units: Percent

Basis: Dry

						CAS	
						Percent	
						Recovery	
Analyte	Prep Method	Analysis Method	True Value	Result		Acceptance Limits	Result Notes
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.42	0.46	110	74-123	

Analytical Results

Client: Portland, City of

**Project:** Portland Harbor Stormwater Samp

Sample Matrix: Sediment

Service Request: K0905119

Date Collected: 06/02/2009

**Date Received:** 06/08/2009

### **Organochlorine Pesticides**

 Sample Name:
 FO 095662
 Units: ug/Kg

 Lab Code:
 K0905119-005
 Basis:
 Dry

 Extraction Method:
 EPA 3541
 Level:
 Low

Analysis Method: 8081A

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	1.0	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	9.7 P	1.0	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	14	1.0	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND Ui	1.7	1.7	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	2.6	1.0	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND Ui	1.2	1.2	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND Ui	1.4	1.4	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND U	1.0	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND Ui	2.9	2.9	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND Ui	2.2	2.2	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND U	1.0	0.12	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	8.1	8.1	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND Ui	1.0	0.95	1	06/09/09	06/19/09	KWG0904936	Manusamonomen
Methoxychlor	12	1.0	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND Ui	190	190	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	69	25-125	06/19/09	Acceptable Acceptable
Decachlorobiphenyl	72	22-142	06/19/09	

### † 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:

 Printed:
 06/23/2009 13:45:17
 Form 1A - Organic
 Page 1 of 1

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 Merged
 14

Analytical Results

Portland, City of Client:

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

EPA 3541 **Extraction Method: Analysis Method:** 8081A

Units: ug/Kg Basis: Dry

Level: Low

1 of 1

Analyte Name	Result	Q MRI	. MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	MANUAL PRIORITORISCO CONTRACTORISCO	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND 1	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 1	U 0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND 1	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 1	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 1	U 0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND 1	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 1	U 0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND 1	U 0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND 1	U 0.50	0.12	1	06/09/09	06/19/09	KWG0904936	<del></del>
Endosulfan Sulfate	ND 1	U 0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND I	U 0.50	0.17	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND 1	U 0.50	0.093	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND 1	U 0.50	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND I	U 25	4.8	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name %	6Rec	Limits	Analyzed	Note
Tetrachloro-m-xylene	82	25-125	06/19/09	Acceptable Acceptable
Decachlorobiphenyl	85	22-142	06/19/09	

### † 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:

Printed: 06/23/2009 13:45:19 Form 1A - Organic Page u:\Stealth\Crystal.rpt\Form1m.rpt Merged

SuperSet Reference: RR103249 15

QA/QC Report

Client: Project: Portland, City of

Portland Harbor Stormwater Samp

Sample Matrix:

Sediment

Service Request: K0905119

**Surrogate Recovery Summary Organochlorine Pesticides** 

81

86

**Extraction Method:** EPA 3541 **Analysis Method:** 

Lab Control Sample

**Duplicate Lab Control Sample** 

8081A

Units: PERCENT

Level: Low

Sample Name	Lab Code	Sur1	Sur2
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

KWG0904936-1

KWG0904936-2

81

85

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.

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Form 2A - Organic 16

Page

RR103249

1 of 1

SuperSet Reference:

QA/QC Report

Client: Portland, City of

Project: Portland Harbor Stormwater Samp

Date Extracted: 06/09/2009 Sample Matrix: Sediment **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

Service Request: K0905119

	KW	Control Samp VG0904936-1 Control Spik		KW	Lab Control : 7G0904936-2 Lab Control	•	%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

Printed: 06/23/2009 13:45:27 Form 3C - Organic Page 1 of 1 u:\Stealth\Crystal.rpt\Form3DLC.rpt RR103249 SuperSet Reference: 17

# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

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06/03 3 15-49-97 B=67.2 REMARKS 9.75 - 21 4.75 P 55 RCOC #1 Zn Zn (CIRCLE ONE) > S Š <u>\_\_</u> <u>\_\_</u> ത് ഗ് TS results provided about Se Se ž ž 790g J0591 XOA Printed Name Ag Ag Signature Cond. (S) 10 . bnod. (S) 10 . bnod. (S) 20 . bnod. 0506 XO1 ×  $\times$ Please run low-level pesticites 8081 AK CA WI NORTHWEST Mg Mn Mo Ni Pb Mg Mn Mo Ni Hex-Chrom ( Metals, Total or Dissolved (woled still 682) q. Date/Time Ф RELINQUISHED BY: Cu Fe 10158 Film DCP 13V SJWLEVE VESTAL Ö Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Ö \*INDICATE STATE HYDROCARBON PROCEDURE: 00 Limited Sample size-S Printed Name 155 7991 Ö SPECIAL INSTRUCTIONS/COMMENTS: Signature Be B Circle which metals are to be analyzed Hydrocarbons (\*800 below)

Hydrocarbons (\*800 below) Ba SS Total Metals: Al As RECEIVED BY: NUMBER OF CONTAINERS TURNAROUND REQUIREMENTS Standard (10-15 working days) Hacker Stormwest Same INVOICE INFORMATION Printed Warne Schinest Requested Report Date Provide FAX Results LAB I.D. でよったことの 5 Day 24 hr. Sith of Contland Firm Acc Bill To: 1428 P.O. # 1450 133 TIME 1235 7 5/29/63 5/29/09 5/29/69 6/1/03 50/2/3 Report Dup., MS, MSD as RELINQUISHED BY: DATE ton, Acr Routine Report: Method IV. CLP Deliverable Report REPORT REQUIREMENTS Data Validation Report (includes all raw data) Blank, Surrogate, as Partland 500 SAMPLE I.D. F0051007 required 566 required 565 SAMPLER'S SIGNATURE 305 Printed Name EDD PROJECT MANAGER Signature 1 -MAIL ADDRESS PROJECT NAME ITY/STATE/ZIP -> =

Cooler Receipt and Preservation Form Service Request K09 Received: Opened: PIX Hand Delivered Samples were received via? US Mail Fed Ex UPS DHLGHGSCourier BoxOther NA Samples were received in: (circle) Cooler Envelope Were custody seals on coolers? NA N If yes, how many and where? Y Y If present, were custody seals intact? N If present, were they signed and dated? N NA N Is shipper's air-bill filed? If not, record air-bill number: Temperature of cooler(s) upon receipt (°C): Temperature Blank (°C): Thermometer ID: If applicable, list Chain of Custody Numbers: Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other Were custody papers properly filled out (ink, signed, etc.)? NA N 8. NA N Did all bottles arrive in good condition (unbroken)? Indicate in the table below. Were all sample labels complete (i.e analysis, preservation, etc.)? N 11. Did all sample labels and tags agree with custody papers? Indicate in the table below N Were appropriate bottles/containers and volumes received for the tests indicated? N NA Y Were the pH-preserved bottles tested\* received at the appropriate pH? Indicate in the table below N 14. Were VOA vials received without headspace? Indicate in the table below. Y N NA 15. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? Y N Υ N 16. Was C12/Res negative? Sample ID on COC Sample ID on Bottle Sample ID on COC Sample ID on Bottle Out of Head-**Bottle Count** Volume Reagent Lot Initials Sample ID **Bottle Type** Temp space Broke Reagent added Number Time \*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN). Additional Notes, Discrepancies, & Resolutions:

Columbia Analytical Services, Inc.

1



PORTLAND, OR 9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

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.

Work Order	<u>Project</u>	<u>ProjectNumber</u>
PSF0274	Portland Harbor	36238

TestAmerica Portland

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 Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 06/30/09 12:12

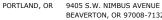
ANALVTICAL	REPORT FOR	CAMDIEC
ANALYTICAL	KEPOKIFOK	SAMPLES

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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Prepared

BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

Analyzed



City of Portland Water Pollution Laboratory

Method

6543 N. Burlington Ave.

Analyte

Project Name: **Portland Harbor**Project Number: 36238

Portland, OR 97203 Project Manager: Jennifer Shackelford

Result MDL\*

Report Created: 06/30/09 12:12

Notes

### Polynuclear Aromatic Compounds per EPA 8270M-SIM

Units

Batch

TestAmerica Portland

MRL

Property	Analyte		Method	Result	MDL*	MIKL	Units	DII	ватсп	Prepared	Anaiyzea	Note	es
Fluoranthene	PSF0274-04 (	FO095660)			0	ther dry		Samp	led: 06/01/	/09 11:35			RL7
Fluorantene	Dibenzo (a,h) anthra	ncene	EPA 8270m	ND		209	ug/kg dry	5x	9060313	06/09/09 12:00	06/15/09 19:21		
National	Fluoranthene		"	1440		209	"	"	"	"	"		
Name	Fluorene		"	ND		209	"	"	"	"	"		
Pyrene   1390   209   " " " " " " " " " " " " "   "   "	Indeno (1,2,3-cd) p	yrene	"	347		209	"	"	"	"	"		
Pyrene	Naphthalene		"	7900		209	"	"	"	"	"		
Surrogate(s):   Fluorene-d10	Phenanthrene		"	1390		209	"	"	"	"	"		
Pyrnen-droid   Pyrn	Pyrene		"	1310		209	"	"	"	"	"		
PSF0274-05   PSF	Surrogate(s):	Fluorene-d10				87.9%		24 - 125 %	"			"	
PSF0274-05   FO095662)		Pyrene-d10						41 - 141 %				"	
Acenaphthene		Benzo (a) pyrene-	-d12			80.4%		38 - 143 %	"			"	
Acenaphthylene "ND 103 """ """" """  Anthracene "ND 103 """" """" """"  Benzo (a) anthracene "159 103 """" """"""""""""""""""""""""""""""	PSF0274-05 (	FO095662)			O	ther dry		Samp	led: 06/02/	/09 11:51			RL7
Anthracene "ND 103 " " " " " " " " " " " " " " " " " " "	Acenaphthene		EPA 8270m	ND		103	ug/kg dry	2x	9060313	06/09/09 12:00	06/15/09 19:58		
Benzo (a) anthracene Benzo (a) pyrene Benzo (b) fluoranthene Benzo (c) fluoranthene Benzo (	Acenaphthylene		"	ND		103	"	"	"	"	"		
Benzo (a) pyrene " 175 103 " " " " " " " " " " Benzo (a) pyrene " 254 103 " " " " " " " " " " " " " " " " " " "	Anthracene		"	ND		103	"	"	"	"	"		
Benzo (a) pyrene 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 " ND 103 " " " " " " " " "  Indeno (1,2,3-cd) pyrene " 161 103 " " " " " " " " "  Naphthalene  Naphthalene " 8240 2580 " 50x " " " 06/11/09 23:19  Pyrene  Surrogate(s): Fluorene-d10  Pyrene-d10  Renzo (a) pyrene " 165 103 " " " " " " " " " " " " " " " " " " "	Benzo (a) anthrace	ne	"	159		103	"	"	"	"	"		
Benzo (ghi) perylene " 283 103 " " " " " " " " " Benzo (k) fluoranthene " 165 103 " " " " " " " " " " " " " " " " " " "	Benzo (a) pyrene		"	175		103	"	"	"	"	"		
Benzo (k) fluoranthene " 165 103 " " " " " " " " " " " " " " " " " " "	Benzo (b) fluoranth	iene	"	254		103	"	"	"	"	"		
Chrysene	Benzo (ghi) perylen	ie	"	283		103	"	"	"	"	"		
Dibenzo (a,h) anthracene " ND 103 " " " " " " " " " " " " " " " " " " "	Benzo (k) fluoranth	iene	"	165		103	"	"	"	"	"		
Fluoranthene " 532 103 " " " " " " " " " " Fluorene " ND 103 " " " " " " " " " " " " " " " " " " "	Chrysene		"	355		103	"	"	"	"	"		
Fluorene " ND 103 " " " " " " " " " " " " " " " " " " "	Dibenzo (a,h) anthra	acene	"	ND		103	"	"	"	"	"		
Indeno (1,2,3-cd) pyrene	Fluoranthene		"	532		103	"	"	"	"	"		
Naphthalene " 8240 2580 " 50x " " 06/11/09 23:19  Phenanthrene " 285 103 " 2x " " 06/15/09 19:58  Pyrene " 400 103 " " " " " " " " "  Surrogate(s): Fluorene-d10 Pyrene-d10 Pyrene-d10 Pyrene-d10 Pyrene-d10	Fluorene		"	ND		103	"	"	"	"	"		
Phenanthrene         "         285          103         "         2x         "         "         06/15/09 19:58           Pyrene         "         400          103         "         "         "         "         "         "           Surrogate(s):         Fluorene-d10         82.5%         24-125%         "         "         "           Pyrene-d10         61.7%         41-141%         "         "         "	Indeno (1,2,3-cd) p	yrene	"	161		103	"	"	"	"	"		
Phenanthrene         285          103         2x          06/15/09 19:58           Pyrene         "         400          103         "         "         "         "         "           Surrogate(s):         Fluorene-d10         82.5%         24 - 125 %         "         "         "           Pyrene-d10         61.7%         41 - 141 %         "         "         "	Naphthalene		"	8240		2580	"	50x	"	"	06/11/09 23:19		
Surrogate(s):     Fluorene-d10     82.5%     24 - 125 %     "       Pyrene-d10     61.7%     41 - 141 %     "	Phenanthrene		"	285		103	"	2x	"	"	06/15/09 19:58		
Pyrene-d10 61.7% 41 - 141 % " "	Pyrene		"	400		103	"	"	"	"	"		
	Surrogate(s):					82.5%		24 - 125 %	"			"	
Benzo (a) pyrene-d12 77.0% 38 - 143 % "												"	
		Benzo (a) pyrene-	-d12			77.0%		38 - 143 %	"			"	

TestAmerica Portland

Howard Holmes, Project Manage

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City of Portland Water Pollution Laboratory

**Portland Harbor** Project Name: Project Number: 36238

6543 N. Burlington Ave. Portland, OR 97203

Project Manager: Jennifer Shackelford

Report Created: 06/30/09 12:12

### Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	N	1ethod I	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-06 (	FO095677)			Otl	ier dry		Samp	led: 06/02/	09 11:51		R
Acenaphthene	EI	PA 8270m	ND		104	ug/kg dry	2x	9060313	06/09/09 12:00	06/15/09 20:34	
Acenaphthylene		"	ND		104	"	"	"		"	
Anthracene		"	ND		104	"	"	"		"	
Benzo (a) anthrace	ne	"	159		104	"	"	"	"	"	
Benzo (a) pyrene		"	194		104		"	"		"	
Benzo (b) fluoranth	iene	"	254		104	"	"	"	"	"	
Benzo (ghi) perylen	ie	"	290		104		"	"		"	
Benzo (k) fluoranth	iene	"	175		104	"	"	"	"	"	
Chrysene		"	351		104	"	"	"	"	"	
Dibenzo (a,h) anthra	ncene	"	ND		104		"	"	"	"	
Fluoranthene		"	497		104		"	"		"	
Fluorene		"	ND		104	"	"	"	"	"	
Indeno (1,2,3-cd) p	yrene	"	166		104	"	"	"	"	"	
Naphthalene		"	3750		104		"	"		"	
Phenanthrene		"	328		104		"	"		"	
Pyrene		"	383		104	"	"	"	"	"	
Surrogate(s):	Fluorene-d10				81.3%		24 - 125 %	"			"
2 ()	Pyrene-d10				62.7%		41 - 141 %	"			"
	Benzo (a) pyrene-d12				78.9%		38 - 143 %	"			"

TestAmerica Portland

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.

Portland, OR 97203

Project Name:

**Portland Harbor** 

Project Number: Project Manager: 36238 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)			Otl	ier dry		Samp	led: 06/01/	09 11:35				RL3
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			"	<b>Z</b> 3	
p-Terphenyl-d14				NR		10 - 150 %	"			"	<b>Z</b> 3	
PSF0274-05 (FO095662)			Otl	ner dry		Samp	led: 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 %	"			"	<b>Z</b> 3	
p-Terphenyl-d14				NR		10 - 150 %	"			"	<b>Z</b> 3	
PSF0274-06 (FO095677)			Otl	ner dry		Samp	led: 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 %	"			"	<b>Z</b> 3	
p-Terphenyl-d14				NR		10 - 150 %	"			"	<b>Z</b> 3	

TestAmerica Portland

Howard Holmes, Project Manager

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PORTLAND, OR

9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210



City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 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)			Ot	her dry		Samj	pled: 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)			Ot	her dry		Samj	pled: 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)			Ot	her dry		Samj	pled: 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)			Ot	her dry		Samj	pled: 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)			Ot	her dry		Samj	pled: 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)			Ot	her dry		Samj	pled: 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

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City of Portland Water Pollution Laboratory

Project Name: **Portla**Project Number: 36238

**Portland Harbor** 

6543 N. Burlington Ave.

Project Number:
Portland, OR 97203

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)			Oth	er dry		Sam	pled: 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)			Oth	er dry		Samj	pled: 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)			Oth	er dry		Samj	pled: 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)			Oth	er dry		Samj	pled: 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)			Oth	er dry		Samj	pled: 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)			Oth	er dry		Samj	pled: 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 Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 06/30/09 12:12

### ${\bf Polynuclear\ Aromatic\ Compounds\ per\ EPA\ 8270M-SIM\ -\ Laboratory\ Quality\ Control\ Results}$

TestAmerica Portland

QC Batc	h: 9060313	Soil Pre	paration M	lethod:	EPA 3550										
Analyte		Method	Result	M	DL* MR	L Units	Dil	Source Result	Spike Amt	REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (906031	13-BLK1)								Ext	racted:	06/09/09 12	2:00			
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	e	"	ND		- 13.4	"	"							"	
Benzo (a) pyrene		"	ND		- 13.4	"	"							"	
Benzo (b) fluoranthe	ene	"	ND		- 13.4	"	"							"	
Benzo (ghi) perylene	e	"	ND		- 13.4	ı "	"							"	
Benzo (k) fluoranthe	ene	"	ND		- 13.4	ļ "	"								
Chrysene		"	ND		- 13.4	. "	"							"	
Dibenzo (a,h) anthra	icene	"	ND		- 13.4	"	"							•	
Fluoranthene		"	ND		- 13.4	"	"							•	
Fluorene		"	ND		- 13.4	"	"							"	
Indeno (1,2,3-cd) py	rene	"	ND		- 13.4	"	"							"	
Naphthalene		•	ND		- 13.4	. "	"								
Phenanthrene		"	ND		- 13.4	"	"							"	
Pyrene		"	ND		- 13.4	"	"							"	
Surrogate(s):	Fluorene-d10		Recovery:	93.1%		Limits: 24-1	25% "							06/10/09 17:49	
	Pyrene-d10			86.1%		41-1	!41% "							"	
	Benzo (a) pyrene-d12			89.7%		38-1	143% "							"	
LCS (9060313	3-BS1)								Ext	racted:	06/09/09 12	2:00			
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)			"	
Surrogate(s):	Fluorene-d10		Recovery:	102%		Limits: 24-1	25% "							06/10/09 17:18	
Surroguie(s).	Pyrene-d10		necovery.	92.4%			141% "							"	
	Benzo (a) pyrene-d12			100%			143% "							"	
Matrix Snike	(9060313-MS1)				OC Som	rce: PSF020	1-01		Ext	racted:	06/09/09 12	2:00			
Acenaphthene	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	EPA 8270m	221					5.24	260	82.8%	(33-139)			06/10/09 16:15	
Benzo (a) pyrene		"	219				,,	23.7	"	75.1%	(45-149)			"	
Pyrene		"	193					55.4	"	52.7%				"	
Surrogate(s):	Fluorene-d10		Recovery:	87.1%		Limits: 24-1	25% "							06/10/09 16:15	
~	Pyrene-d10			72.6%			141% "							"	
	Benzo (a) pyrene-d12			84.9%			143% "							"	

TestAmerica Portland

Howard Holmes, Project Manager

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Benzo (a) pyrene-d12

City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

86.7%

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/30/09 12:12

### Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9060313	Soil Pre	paration M	ethod: EPA	3550										
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	s) Analyzed	Notes
Matrix Spike Dup (9060313-M	SD1)			QC Source	: PSF0201-01			Extr	acted:	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%	"	"	
Surrogate(s): Fluorene-d10		Recovery:	85.7%	Li	mits: 24-125%	"							06/10/09 16:46	
Pyrene-d10			76.8%		41-141%	"							"	

38-143% "

TestAmerica Portland

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City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.

Project Number: 36238

Report Created:
Portland, OR 97203

Project Manager: Jennifer Shackelford

06/30/09 12:12

	Ph	thalates p	er EPA 82	70-SIM - TestAmeri			ality Con	itrol R	esults					
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 p-Terphenyl-d14		Recovery:	88.1% 105%	L	imits: 10-150								06/10/09 15:58	
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 p-Terphenyl-d14		Recovery:	85.0% 91.3%	L	imits: 10-150								06/24/09 20:23	
Matrix Spike (9060313-MS1)				OC Sourc	e: PSF0201-	-01		Extr	acted:	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 p-Terphenyl-d14		Recovery:	65.6% 87.3%		imits: 10-150								06/25/09 19:43	
p to promy at t														
Matrix Spike Dup (9060313-MS					e: PSF0201-					06/09/09 12				
Dimethyl phthalate	EPA 8270m	181		207	ug/kg dry	5x	ND	206	88.0%	(10-150)			06/25/09 20:19	
Diethyl phthalate	"	194		207	"	"	ND	"	94.3%	"	0.8339		"	
Di-n-butyl phthalate	"	203		207	"	"	ND	"	98.7%	"	0.8109		"	
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%	/ 11	,,	

TestAmerica Portland

Howard Holmes, Project Manager

p-Terphenyl-d14

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10-150% "

87.7%





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City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 06/30/09 12:12

### Organic Carbon, Total (TOC) - Laboratory Quality Control Results TestAmerica Connecticut QC Batch: 28522 **Soil Preparation Method:** NA Spike % (Limits) % RPD MDL\* Source Analyte Method Result MRL Units Dil (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 OC Source: Blank (220-28522-7) Extracted: 06/22/09 13:43 Total Organic Carbon - Duplicates 9060 ND 10.4 100 mg/Kg 1x 06/22/09 13:43 QC Source: PSF0274-05 Extracted: 06/22/09 15:30 Matrix Spike (93055S) 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 68000 06/22/09 15:16 mg/Kg 1x 0% (20)

TestAmerica Portland

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

36238 Report Created: 6543 N. Burlington Ave. Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 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.

Sample required dilution due to high concentrations of target analyte. RL7

Z3The 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).

Not Reported / Not Available NR/NA

dry Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.

Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported wet

on a Wet Weight Basis.

RPD RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).

METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table. MRL

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 -Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and Limits

percent solids, where applicable.

Electronic 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

Signature

Howard Holmes, Project Manager

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# **FestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

11922 E. First Ave, Spokane, WA 99206-5302 9405 SW Nimbus Ave Beaverton, OR 97008-7145 11720 North Creek Pkwy N Suite 400. Bothell, WA 98011-8244

425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 503-906-9200 FAX 906-9210 907 563-9200 FAN 563-9216

Work Order #: PSF0274

CHAIN OF CUSTODY REPORT

2000 W International Amport Rd Ste A10, Anchorage, AK 99502 1119

CLIENT	C.H. of Porthmen	STIME				INVOICE TO		,	-			TURNAR	TURNAROUND REQUEST	Т	r
REPORT TO:	, ]-	1 10 )	1 /1				Charlis Lythe	J. L.	17/E			in B	in Business Days *		
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PROJECT NAME:		Parties Holden	<u>*</u> )	<i>O</i> .		!	PRESERVATIVE	ATIVE				5 4	3 2 1	-	
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CLIEI	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	829	~6n9> +HA9	8270 1875 1878	01					MATRIX (W, S, O)	ζ # OF ) CONT.	LOCATION/ COMMENTS	T.A WO ID	
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8	5659	5/29/09 14	1428	<u> </u>	X	X	15=		49.9 %		0	3			
4	5660	6/1/09 1135	35	\ \ >	<b>Y</b>	×	75=	: 63.9	9		0	رم			
5	5662	6/2/08 11	( 151	<u> </u>	X	×	TS	= 51,	3 7		0	3			
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ADDITIONAL REMARKS		Note: Sample size is limited	32.5	5	3	<u>'</u>	TS Already	done	+	5 Already done + given above			TEMP: (		₹.
	(X)	\$ sond but to Para Andutial for PCB-all 209 conservers	Para	A	Lat to	الم	PrB-a	12 11	0 6C	enseners				نا	] 🗟
	0 )	PT PAR DWA	)  -  -			; >	; ;	; /' ; - '	) . ][		1	7	7. 7		

OBB Please run PAH + patholides, 8270-51M as four UTC project of low defeation limits.

### TestAmerica Portland

# Sample Receiving Checklist

	k Ord										
Chei	nt Nar	me and Project: City of Fortland  Portland Harmy									
	Zone: DT/EST	CDT/CST MDT/MST PDT/PST AK OTHER									
Co	oler #(: erature										
NΑ	Yes	No Initials: BLE									
X		1. If ESI client, were temp blanks received? If no, document on NOD.									
X		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.									
	$\boxtimes$	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?									
		<ul> <li>10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.</li> <li>11. Did chain of custody agree with samples received? If no, document on NOD.</li> </ul>									
		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									
L.		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.									
		<ul> <li>18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.</li> <li>19. Are analyses with short holding times received in hold?</li> </ul>									
	<b>P</b>	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 #: PSFO274

ms or discrepancies and the actions taken to resolve them on a Motice of Discrepancy	opjei		(NOD)		
Was an NOD for created for noted discrepancies and placed in folder?					
Were HF stickers affixed to each container, and containers stored in Sx fridge?					
Səgbifi ngi				<b></b>	
Were Foreign sample stickers affixed to each container and containers stored in	.4٤			<b>A</b>	
Did the sample ID, Date, and Time from label match what was logged?	.55				
Were sample bottles and COC double checked for dissolved/filtered metals?	.25			$\Lambda$	
Were the subcontracted samples/containers put in Sx fridge?	.1E				
1		oN	$Y_{es}$	V/N	
rage Checks: Initials:	015	pur	Buna	ara	
	-5		••		
Was HF dilution logged?	30.			M	(04
Were subcontract COCs printed?	.62		$\overline{A}$	<b>M</b>	MA
Were short hold notices printed and delivered?	.82				
Were rush notices printed and delivered?	.72				
Were tests logged checked against the COC?	.92			/	
Were special log in instructions read and followed?	.25.		<b>/</b>		
s and times?	date				
Did the chain of custody include "received by" and "relinquished by" signatures.	.42				
document on NOD and contact PM.	'ou				
Sufficient volume provided for client requested MS/MSD or matrix duplicates? If	.£2			Z	
Sufficient volume provided for all analysis? If no, document on NOD & contact PM.	.22				
. 0		oN	Yes	V/N	
:slsitinl	:	бска	in Ch	Log	



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

### **Report Prepared for:**

Howard Holmes Test America 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

### **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:

got C. Muye

Scott Unze, Project Manager (612) 607-6383

(612) 607-6444 (fax) scott.unze@pacelabs.com



### **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.

**Report Prepared Date:** 

June 29, 2009



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

### **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



1096886

SENDING LABORATORY:			RECEIVII	NG LABORA	TORY:		
TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008 Phone: (503) 906-9200 Fax: (503) 906-9210 Project Manager: Howard	Holmes 906-93	231	1700 Eli Minneap Phone :( Fax: (61 Project L	m Street Su polis, MN 554 (612) 607-17 2) 607-6444	114 ′00	lce: <b>(</b> Y) / N	J
needs Excel EDD		.,					<del></del> .
Analysis	Units	Due	Expires		Comments		
Sample ID: PSF0274-01  1668 Coplanar PCBs - SUB  Containers Supplied: 4 oz. jar (B)	Other dry ug/l	06/22/09	<u>Sampled: <b>05/</b></u> 11/25/09 12:35	29/09 12:35	% 50(1d % 51.60 ***209 Con	CofP I F0095 geners*** to Pace	3D 657 0
Sample ID: PSF0274-02  1668 Coplanar PCBs - SUB  Containers Supplied: 4 oz. jar (B)	Other dry ug/l	06/22/09	<u>Sampled: <b>05/2</b></u> 11/25/09 11:33	29/09 11:33	44.7 ***209 Con	FOO950 geners*** to Pace	<u>558</u> 00
Sample ID: PSF0274-03  1668 Coplanar PCBs - SUB  Containers Supplied: 4 oz. jar (C)	Other dry ug/l	06/22/09	<u>Sampled: <b>05/2</b></u> 11/25/09 14:28	9/09 14:28	49. 9 ***209 Cons	F00950 geners*** to Pace	,59 00
Sample ID: PSF0274-04  1668 Coplanar PCBs - SUB  Containers Supplied: 4 oz. jar (B)	Other dry ug/l	06/22/09	Sampled: <b>06/0</b> 11/28/09 11:35	1/09 11:35	63.9 ***209 Cong	F00956 eners*** to Pace	<u>60</u> 80
Sample ID: PSF0274-05  1668 Coplanar PCBs - SUB  Containers Supplied: 4 oz. jar (C)	Other dry ug/l	06/22/09	<u>Sampled: <b>06/02</b></u> 11/29/09 11:51	2/09 11:51	51.3 ***209 Cong	<i>F00956</i> eners*** to Pace	62 008
Sample ID: PSF0274-06  1668 Coplanar PCBs - SUB  Containers Supplied: 4 oz. jar (B)	Other dry ug/l	06/22/09	<u>Sampled: <b>06/02</b></u> 11/29/09 11:51	//09 11:51	51. 3 ***209 Conge	F0 0956 eners*** to Pace	<u>77</u> 026
Client would Client provu Sample an	ded t valab	he to	Solids data	was t	there was		rnited to basis
Musuu Ell Released By	1 <u>4</u>	19/09 19/09 1e/Time	Received By Received By	i De Rus	Dat <u>Cabs_6</u> /	te/Time 10/02/09-16	age 1 of 1

Semple Condition (Upon Readings)

Client Name: Project # <u>109 6886</u>

Courier: 7 Fed Ex UPS USPS USPS Tracking #: 4796-8712-608	Client Commerc	cial Pace Other	Optional Proj. Due: Dare:	
Custody Seal on Cooler/Box Present:	yes ☐ no S∈	eals intact: 🛛 yes	Proj Name	\$
Packing Material: Bubble Wrap	ibble Bags 🔲 None			iroc.ro
Thermometer Used <u>80244642</u> , 179425	Type of ice: W		Temp Blank: Yes No	
Cooler Temperature 3.2		sue is Frozen; Yes No	Samples on ice, cooling process has be Date and Initials of person examir	nina
Temp should be above freezing to 6°C		Comments:	contents: 6/10	Lo
Chain of Custody Present:	GYes □No □N			
Chain of Custody Filled Out:	Yes ONo ON		erry and and a fight decision of the high property of the second and a	***************************************
Chain of Custody Relinquished:	ØYes □No □N/	AND DESCRIPTION OF THE PERSON		·*************************************
Sampler Name & Signature on COC:		/A 4.	A CONTRACT OF THE PROPERTY OF	
Samples Arrived within Hold Time:	Yes INO IN			
Short Hold Time Analysis (<72hr):	□Yes □No □KN/			- CO.,
Rush Turn Around Time Requested:	□Yes ØNo □N/A			Billion of the State of the Sta
Sufficient Volume:	Yes ONO ON/A			Eldanyiya.
Correct Containers Used:	ØYes □No □N/A	THE RESERVE THE PROPERTY OF TH	AND ASSESSMENT OF THE PROPERTY	n-Corphone
-Pace Containers Used:	□Yes □No □N/A	1		
Containers Intact:	Yes ONO ONA			~ 4-7EFU
Filtered volume received for Dissolved tests	□Yes □No ØN/A			
Sample Labels match COC:	Yes □No □N/A		A Parameter A Parameter State Control of the Contro	***************************************
-Includes date/time/ID/Analysis Matrix:	31			
All containers needing acid/base preservation have been checked. Noncomoliance are noted in 13.	Dyes Ono DNA	13	·	nn.v
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes □No ØN/A	10.		
•	-	Initial when	Lot # of added	
exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)  Samples checked for dechlorination:		completed	preservative	
leadspace in VOA Vials ( >6mm):	☐Yes ☐No ☐N/A 1			
rip Blank Present:	□Yes □No ☑N/A 1			
rip Blank Custody Seals Present	☐Yes ☐No ☐N/A 1	6.		
	□Yes □No ☑N/A			
ace Trip Blank Lot # (if purchased):				
ient Notification/ Resolution:		F	ield Data Required? Y / N	
Person Contacted:	Date/Tim		•	
Comments/ Resolution:	PPF V M TO THE TOTAL SECTION OF THE TOTAL SECTION O			
				-
	·			
				_
				-
roject Manager Review:	0		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) 6/004 F-ALLC003rRage\_1520f.56

# Appendix B

Sample Analysis Summary



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID PSF0274-05;F0095662 Lab Sample ID 1096886005

P90623A\_07 Filename

Injected By BAL Total Amount Extracted 16.6 g

% Moisture 48.7 8.50 g Dry Weight Extracted ICAL ID P90623A02

CCal Filename(s) P90623A 01 Method Blank ID

BLANK-20249

Solid Matrix Dilution 20

Collected 06/02/2009 Received 06/10/2009 Extracted 06/11/2009

Analyzed 06/23/2009 21:42

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.409	2.69	2.0	1.04	52
13C-4-MoCB	3	7.745	2.85	2.0	1.12	56
13C-2,2'-DiCB	4	8.009	1.64	2.0	0.953	48
13C-4,4'-DiCB	15	15.450	1.53	2.0	1.39	70
13C-2,2',6-TrCB	19	11.963	1.04	2.0	1.14	57
13C-3,4,4'-TrCB	37	23.571	1.03	2.0	1.50	75
13C-2,2',6,6'-TeCB	54	15.740	0.77	2.0	1.11	55
13C-3,4,4',5-TeCB	81	30.866	0.82	2.0	1.34	67
13C-3,3',4,4'-TeCB	77	31.470	0.80	2.0	1.29	65
13C-2,2',4,6,6'-PeCB	104	22.146	1.54	2.0	1.39	69
13C-2,3,3',4,4'-PeCB	105	35.075	1.59	2.0	1.20	60
13C-2,3,4,4',5-PeCB	114	34.421	1.66	2.0	1.17	58
13C-2,3',4,4',5-PeCB	118	33.918	1.66	2.0	1.26	63
13C-2,3',4,4',5'-PeCB	123	33.566	1.57	2.0	1.27	64
13C-3,3',4,4',5-PeCB	126	38.329	1.55	2.0	1.06	53
13C-2,2',4,4',6,6'-HxCB	155	28.418	1.25	2.0	1.66	83
13C-HxCB (156/157)	156/157	41.381	1.28	4.0	2.26	56
13C-2,3',4,4',5,5'-HxCB	167	40.257	1.21	2.0	1.20	60
13C-3,3',4,4',5,5'-HxCB	169	44.718	1.27	2.0	0.962	48
13C-2,2',3,4',5,6,6'-HpCB	188	34.405	1.06	2.0	2.73	137
13C-2,3,3',4,4',5,5'-HpCB	189	47.245	1.06	2.0	1.46	73
13C-2,2',3,3',5,5',6,6'-OcCB	202	39.922	0.89	2.0	2.43	121
13C-2,3,3',4,4',5,5',6-OcCB	205	49.810	0.89	2.0	1.29	64
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.513	0.76	2.0	1.23	61
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	46.663	0.82	2.0	1.66	83
13CDeCB	209	53.065	0.72	2.0	1.14	57
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.044	1.01	2.0	1.64	82
13C-2,3,3',5,5'-PeCB	111	31.587	1.59	2.0	1.42	71
13C-2,2',3,3',5,5',6-HpCB	178	37.591	1.04	2.0	1.53	77
Recovery Standards						
13C-2,5-DiCB	9	10.573	1.64	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.157	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.686	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.105	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	49.336	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

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-05;F0095662 1096886005 P90623A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1				ND		29.4
2				ND		29.4
3				ND		29.4
4		8.021	1.54	279		29.4
5				ND		29.4
5 6		11.101	1.67	88.2		29.4
7				ND		29.4
8		11.652	1.56	466		29.4
9				ND		29.4
10				ND		29.4
11		14.743	1.54	1820		176
12	12/13			ND		58.8
13	12/13			ND		58.8
14				ND		29.4
15		15.474	1.46	377		29.4
16		15.355	1.03	940		29.4
17		14.851	1.08	730		29.4
18	18/30	14.348	1.05	1590		58.8
19		11.987	1.00	208		29.4
20	20/28	19.077	1.00	2200		58.8
21	21/33	19.329	1.00	1340		58.8
22		19.765	1.02	912		29.4
23				ND		29.4
24				ND		29.4
25		18.373	0.98	142		29.4
26	26/29	18.105	1.02	366		58.8
27		15.103	1.09	115		29.4
28	20/28	19.077	1.00	(2200)		58.8
29	26/29	18.105	1.02	(366)		58.8
30	18/30	14.348	1.05	(1590)		58.8
31		18.742	1.01	`186Ó		29.4
32		16.025	1.04	538		29.4
33	21/33	19.329	1.00	(1340)		58.8
34				ND		29.4
35		23.152	0.98	65.1		29.4
36				ND		29.4
37		23.588	1.00	922		29.4
38				ND		29.4
39				ND		29.4
40	40/41/71	23.370	0.79	1300		176
41	40/41/71	23.370	0.79	(1300)		176
42		22.834	0.79	555		58.8
43		21.408	0.82	87.0		58.8
44	44/47/65	22.297	0.78	3230		176
45	45/51	19.195	0.79	1060		118
46		19.446	0.80	161		58.8
47	44/47/65	22.297	0.78	(3230)		176
48		22.029	0.76	` 439		58.8

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-05;F0095662 1096886005 P90623A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.727	0.78	1630		118
50	50/53	18.356	0.79	579		118
51	45/51	19.195	0.79	(1060)		118
52	49/01	21.190	0.78	2590		58.8
53	50/53	18.356	0.79	(579)		118
54	30/33			ND		58.8
55				ND		58.8
56		27.529	0.76	1050		58.8
57		25.483	0.76	117		58.8
58		23.403		ND		58.8
59	59/62/75	22.632	0.81	221		176
60	39/02/73	27.747	0.77	566		58.8
61	61/70/74/76			3620		235
62		26.489 22.632	0.77 0.81			176
	59/62/75		0.81	(221)		
63		26.120		75.8		58.8
64	44/47/05	23.639	0.84	833		58.8
65	44/47/65	22.297	0.78	(3230)		176
66		26.825	0.75	1770		58.8
67		25.835	0.76	67.4		58.8
68	40/00			ND (4000)		58.8
69	49/69	21.727	0.78	(1630)		118
70	61/70/74/76	26.489	0.77	(3620)		235
71	40/41/71	23.370	0.79	(1300)		176
72				NĎ		58.8
73	0.4 /20 /2.4 /20			ND (2.222)		58.8
74	61/70/74/76	26.489	0.77	(3620)		235
<b>75</b>	59/62/75	22.632	0.81	(221)		176
76	61/70/74/76	26.489	0.77	(3620)		235
77		31.487	0.75	344		58.8
78				ND		58.8
79				ND		58.8
80				ND		58.8
81				ND		58.8
82		31.034	1.58	472		58.8
83		29.156	1.71	194		58.8
84		26.607	1.58	966		58.8
85	85/116/117	30.548	1.60	681		176
86	86/87/97/108/119/125	29.877	1.50	2880		353
87	86/87/97/108/119/125	29.877	1.50	(2880)		353
88	88/91	26.422	1.59	700		118
89				ND		58.8
90	90/101/113	28.703	1.57	6270		176
91	88/91	26.422	1.59	(700)		118
92		28.099	1.59	935		58.8
93	93/98/100/102	25.785	1.58	347		235
94		24.997	1.75	85.0		58.8
95		25.483	1.57	4100		58.8
96				ND		58.8

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-05;F0095662 1096886005

P90623A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.877	1.50	(2880)		353
98	93/98/100/102	25.785	1.58	`(347)		235
99		29.323	1.56	170Ó		58.8
100	93/98/100/102	25.785	1.58	(347)		235
101	90/101/113	28.703	1.57	(6270)		176
102	93/98/100/102	25.785	1.58	(347)		235
103		24.812	1.78	`77.Ŕ		58.8
104				ND		58.8
105		35.109	1.56	1520		58.8
106				ND		58.8
107	107/124	33.231	1.58	139		118
108	86/87/97/108/119/125	29.877	1.50	(2880)		353
109		33.482	1.55	217		58.8
110	110/115	30.749	1.58	5560		118
111				ND		58.8
112				ND		58.8
113	90/101/113	28.703	1.57	(6270)		176
114		34.455	1.48	` 77.Ó		58.8
115	110/115	30.749	1.58	(5560)		118
116	85/116/117	30.548	1.60	(681)		176
117	85/116/117	30.548	1.60	(681)		176
118		33.935	1.55	3620		58.8
119	86/87/97/108/119/125	29.877	1.50	(2880)		353
120				` NĎ		58.8
121				ND		58.8
122				ND		58.8
123				ND		58.8
124	107/124	33.231	1.58	(139)		118
125	86/87/97/108/119/125	29.877	1.50	(2880)		353
126		38.362	1.55	` 89.Ź		58.8
127				ND		58.8
128	128/166	38.379	1.25	1220		118
129	129/138/163	37.138	1.25	12600		176
130		36.467	1.24	529		58.8
131		33.482	1.19	108		58.8
132		33.952	1.25	4170		58.8
133		34.606	1.27	164		58.8
134	134/143	32.879	1.27	514		118
135	135/151	31.738	1.26	6280		118
136		29.122	1.26	1970		58.8
137		36.685	1.15	206		58.8
138	129/138/163	37.138	1.25	(12600)		176
139	139/140			ND		118
140	139/140			ND		118
141		36.065	1.25	2670		58.8
142				ND		58.8
143	134/143	32.879	1.27	(514)		118
144		32.325	1.27	687		58.8

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

NA = Not Applicable NC = Not Calculated \*= See Discussion ! = Outside QC Limits RT = Retention Time I = Interference

ng's = Nanograms

ND = Not Detected



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-05;F0095662 1096886005 P90623A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145				ND		58.8
146		35.260	1.25	1620		58.8
147	147/149	32.694	1.26	12000		118
148				ND		58.8
149	147/149	32.694	1.26	(12000)		118
150				NĎ		58.8
151	135/151	31.738	1.26	(6280)		118
152				ND		58.8
153	153/168	35.897	1.25	11700		118
154		32.040	1.24	114		58.8
155				ND		58.8
156	156/157	41.381	1.23	954		118
157	156/157	41.381	1.23	(954)		118
158		37.541	1.19	1090		58.8
159				ND		58.8
160				ND		58.8
161				ND		58.8
162		39.821	1.24	146		58.8
163	129/138/163	37.138	1.25	(12600)		176
164		36.820	1.23	867		58.8
165				ND		58.8
166	128/166	38.379	1.25	(1220)		118
167		40.291	1.20	` 32Ó		58.8
168	153/168	35.897	1.25	(11700)		118
169				` NĎ		58.8
170		44.047	1.03	3830		58.8
171	171/173	40.459	1.02	1210		118
172		42.169	1.04	634		58.8
173	171/173	40.459	1.02	(1210)		118
174		39.369	1.05	`404Ó		58.8
175		38.262	1.13	183		58.8
176		35.646	1.05	639		58.8
177		39.821	1.04	2510		58.8
178		37.625	1.03	960		58.8
179		34.740	1.03	2220		58.8
180	180/193	42.823	1.03	8720		118
181				ND		58.8
182				ND		58.8
183	183/185	39.167	1.03	2900		118
184				ND		58.8
185	183/185	39.167	1.03	(2900)		118
186				NĎ		58.8
187		38.547	1.05	6060		58.8
188				ND		58.8
189		47.267	0.96	166		58.8
190		44.601	1.01	764		58.8
191		43.192	1.00	143		58.8
192				ND		58.8

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-05;F0095662 1096886005 P90623A\_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.823	1.03	(8720)		118
194		49.358	0.86	`150Ó		88.2
195		46.944	0.90	734		88.2
196		45.439	0.89	1050		88.2
197	197/200	41.851	0.90	384		176
198	198/199	44.785	0.89	2240		176
199	198/199	44.785	0.89	(2240)		176
200	197/200	41.851	0.90	(384)		176
201		40.895	0.93	`27Ó		88.2
202		39.956	0.91	324		88.2
203		45.640	0.89	1070		88.2
204				ND		88.2
205		49.832	0.99	105		88.2
206		51.535	0.82	547		88.2
207				ND		88.2
208		46.707	0.88	167		88.2
209		53.087	0.74	95.9		88.2

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

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



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-05;F0095662 1096886005 P90623A\_07

Congener Group	Concentration ng/Kg	
Congener Group	ng/kg	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	3030	
Total Trichloro Biphenyls	11900	
Total Tetrachloro Biphenyls	20300	
Total Pentachloro Biphenyls	30600	
Total Hexachloro Biphenyls	59900	
Total Heptachloro Biphenyls	35000	
Total Octachloro Biphenyls	7680	
Total Nonachloro Biphenyls	714	
Decachloro Biphenyls	95.9	
Total PCBs	169000	

ND = Not Detected
Results reported on a dry weight basis

Solid



Tel: 612-607-1700 Fax: 612- 607-6444

### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Matrix Dilution

Client's Sample ID PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A\_04

Injected By
Total Amount Extracted

% Moisture

Dry Weight Future and 1970 g

 Dry Weight Extracted
 8.70 g
 Collected
 06/02/2009

 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 18:37

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.408	3.36	2.0	0.899	45
13C-4-MoCB	3	7.756	2.44	2.0	1.04	56 I
13C-2,2'-DiCB	4	8.020	1.60	2.0	0.928	46
13C-4,4'-DiCB	15	15.401	1.59	2.0	1.51	76
13C-2,2',6-TrCB	19	11.926	1.07	2.0	1.10	55
13C-3,4,4'-TrCB	37	23.496	1.08	2.0	1.61	80
13C-2,2',6,6'-TeCB	54	15.681	0.77	2.0	1.27	64
13C-3,4,4',5-TeCB	81	30.774	0.78	2.0	1.59	80
13C-3,3',4,4'-TeCB	77	31.361	0.78	2.0	1.55	78
13C-2,2',4,6,6'-PeCB	104	22.087	1.64	2.0	1.07	54
13C-2,3,3',4,4'-PeCB	105	34.983	1.62	2.0	1.46	73
13C-2,3,4,4',5-PeCB	114	34.329	1.63	2.0	1.41	71
13C-2,3',4,4',5-PeCB	118	33.826	1.63	2.0	1.40	70
13C-2,3',4,4',5'-PeCB	123	33.474	1.59	2.0	1.41	70
13C-3,3',4,4',5-PeCB	126	38.186	1.55	2.0	1.34	67
13C-2,2',4,4',6,6'-HxCB	155	28.342	1.25	2.0	1.35	68
13C-HxCB (156/157)	156/157	41.238	1.31	4.0	2.76	69
13C-2,3',4,4 <sup></sup> 5,5'-HxĆB	167	40.115	1.28	2.0	1.48	74
13C-3,3',4,4',5,5'-HxCB	169	44.542	1.26	2.0	1.36	68
13C-2,2',3,4',5,6,6'-HpCB	188	34.329	1.09	2.0	1.67	83
13C-2,3,3',4,4',5,5'-HpCB	189	47.064	0.99	2.0	1.49	74
13C-2,2',3,3',5,5',6,6'-OcCB	202	39.796	0.94	2.0	1.50	75
13C-2,3,3',4,4',5,5',6-OcCB	205	49.629	0.88	2.0	1.39	70
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.353	0.80	2.0	1.22	61
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	46.525	0.81	2.0	1.54	77
13CDeCB	209	52.927	0.68	2.0	1.16	58
Cleanup Standards						
13C-2,4,4'-TrCB	28	18.985	1.05	2.0	1.58	79
13C-2,3,3',5,5'-PeCB	111	31.478	1.60	2.0	1.51	75
13C-2,2',3,3',5,5',6-HpCB	178	37.482	1.09	2.0	1.56	78
Recovery Standards						
13C-2,5-DiCB	9	10.548	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.098	0.80	2.0	NA	NA NA
13C-2,2',4,5,5'-PeCB	101	28.594	1.67	2.0	NA	NA NA
13C-2,2',3,4,4',5'-HxCB	138	36.995	1.25	2.0	NA	NA NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	49.155	0.90	2.0	NA NA	NA NA
100 2,2,0,0,4,4,0,0 0000	104	40.100	0.50	2.0	14/1	1 1/ 1

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-06;F0095677 1096886006 P90622A\_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1				ND		28.7
2				ND		28.7
3				ND		28.7
4		8.044	1.77	70.7		28.7
5		0.0 <del>44</del> 	1.77	ND		28.7
5 6				ND ND		28.7
7				ND ND		28.7
8		11.614	1.62	136		28.7
9		11.014	1.02	ND		
10				ND ND		28.7 28.7
10		 14.694	1.57			
	10/10			474 ND		172
12	12/13			ND		57.5 57.5
13	12/13			ND		57.5
14		45.405		ND		28.7
15		15.425	1.47	84.8		28.7
16		15.317	1.17	150		28.7
17		14.802	1.12	119		28.7
18	18/30	14.299	1.05	263		57.5
19		11.938	1.16	45.0		28.7
20	20/28	19.019	1.06	398		57.5
21	21/33	19.270	1.04	250		57.5
22		19.706	1.01	173		28.7
23				ND		28.7
24				ND		28.7
25				ND		28.7
26	26/29	18.046	1.02	62.7		57.5
27				ND		28.7
28	20/28	19.019	1.06	(398)		57.5
29	26/29	18.046	1.02	(62.7)		57.5
30	18/30	14.299	1.05	(263)		57.5
31		18.683	1.07	`326		28.7
32		15.983	1.08	96.0		28.7
33	21/33	19.270	1.04	(250)		57.5
34				NĎ		28.7
35				ND		28.7
36				ND		28.7
37		23.513	1.03	156		28.7
38				ND		28.7
39				ND		28.7
40	40/41/71	23.295	0.80	175		172
41	40/41/71	23.295	0.80	(175)		172
42	40/41/11	22.775	0.76	73.7		57.5
43		22.115	0.76	ND		57.5 57.5
43 44	44/47/65	22.188	0.82	210		172
44 45	45/51	19.136	0.82	119		115
	<del>4</del> 0/0 I		0.79	ND		57.5
46 47	44/47/65	 22.188	0.82	אם (210)		57.5 172
	44/47/00			(210) ND		
48				ND		57.5

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

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-06;F0095677 1096886006 P90622A\_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.668	0.79	195		115
50	50/53			ND		115
51	45/51	19.136	0.79	(119)		115
52		21.132	0.79	`346		57.5
53	50/53			ND		115
54				ND		57.5
55				ND		57.5
56		27.437	0.75	190		57.5
57				ND		57.5
58				ND		57.5
59	59/62/75			ND		172
60		27.655	0.77	101		57.5
61	61/70/74/76	26.414	0.77	635		230
62	59/62/75			ND		172
63				ND		57.5
64		23.563	0.78	118		57.5
65	44/47/65	22.188	0.82	(210)		172
66		26.749	0.76	`319		57.5
67				ND		57.5
68				ND		57.5
69	49/69	21.668	0.79	(195)		115
70	61/70/74/76	26.414	0.77	(635)		230
71	40/41/71	23.295	0.80	(175)		172
72				` NĎ		57.5
73				ND		57.5
74	61/70/74/76	26.414	0.77	(635)		230
75	59/62/75			` NĎ		172
76	61/70/74/76	26.414	0.77	(635)		230
77				` NĎ		57.5
78				ND		57.5
79				ND		57.5
80				ND		57.5
81				ND		57.5
82		30.942	1.65	111		57.5
83				ND		57.5
84		26.548	1.57	181		57.5
85	85/116/117			ND		172
86	86/87/97/108/119/125	29.801	1.54	600		345
87	86/87/97/108/119/125	29.801	1.54	(600)		345
88	88/91			NĎ		115
89				ND		57.5
90	90/101/113	28.627	1.59	1220		172
91	88/91			ND		115
92		28.024	1.64	172		57.5
93	93/98/100/102			ND		230
94				ND		57.5
95		25.424	1.59	762		57.5
96				ND		57.5

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

\_ ...

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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-06;F0095677 1096886006 P90622A 04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.801	1.54	(600)		345
98	93/98/100/102			` NĎ		230
99		29.231	1.55	388		57.5
100	93/98/100/102			ND		230
101	90/101/113	28.627	1.59	(1220)		172
102	93/98/100/102			` NĎ		230
103				ND		57.5
104				ND		57.5
105		35.000	1.54	461		57.5
106				ND		57.5
107	107/124			ND		115
108	86/87/97/108/119/125	29.801	1.54	(600)		345
109		33.390	1.68	`70.Ó		57.5
110	110/115	30.656	1.57	1170		115
111				ND		57.5
112				ND		57.5
113	90/101/113	28.627	1.59	(1220)		172
114				` NĎ		57.5
115	110/115	30.656	1.57	(1170)		115
116	85/116/117			` NĎ		172
117	85/116/117			ND		172
118		33.843	1.59	1040		57.5
119	86/87/97/108/119/125	29.801	1.54	(600)		345
120				NĎ		57.5
121				ND		57.5
122				ND		57.5
123				ND		57.5
124	107/124			ND		115
125	86/87/97/108/119/125	29.801	1.54	(600)		345
126				` NĎ		57.5
127				ND		57.5
128	128/166	38.253	1.26	327		115
129	129/138/163	37.029	1.26	3390		172
130		36.358	1.37	129		57.5
131				ND		57.5
132		33.876	1.27	1040		57.5
133				ND		57.5
134	134/143			ND		115
135	135/151	31.646	1.29	1190		115
136		29.030	1.28	397		57.5
137		36.576	1.32	58.9		57.5
138	129/138/163	37.029	1.26	(3390)		172
139	139/140			` NĎ		115
140	139/140			ND		115
141		35.956	1.26	811		57.5
142				ND		57.5
143	134/143			ND		115
144		32.233	1.23	155		57.5

Conc = Concentration

EML =Method Specified Reporting Limit (1668A) EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

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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



### Method 1668A Polychlorobiphenyl **Sample Analysis Results**

Client Sample ID Lab Sample ID Filename

PSF0274-06;F0095677 1096886006 P90622A 04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145				ND		57.5
146		35.151	1.25	404		57.5
147	147/149	32.618	1.25	2820		115
148				ND		57.5
149	147/149	32.618	1.25	(2820)		115
150				NĎ		57.5
151	135/151	31.646	1.29	(1190)		115
152				` NĎ		57.5
153	153/168	35.788	1.26	3100		115
154				ND		57.5
155				ND		57.5
156	156/157	41.238	1.22	288		115
157	156/157	41.238	1.22	(288)		115
158		37.431	1.29	`306		57.5
159				ND		57.5
160				ND		57.5
161				ND		57.5
162				ND		57.5
163	129/138/163	37.029	1.26	(3390)		172
164		36.727	1.33	` 24 <b>7</b>		57.5
165				ND		57.5
166	128/166	38.253	1.26	(327)		115
167		40.131	1.29	`10Ś		57.5
168	153/168	35.788	1.26	(3100)		115
169				ND		57.5
170		43.904	1.04	1400		57.5
171	171/173	40.316	1.03	420		115
172		42.026	1.09	223		57.5
173	171/173	40.316	1.03	(420)		115
174		39.243	1.03	1530		57.5
175				ND		57.5
176		35.553	1.02	179		57.5
177		39.695	1.07	839		57.5
178		37.515	1.04	257		57.5
179		34.648	1.04	585		57.5
180	180/193	42.680	1.05	3190		115
181				ND		57.5
182				ND		57.5
183	183/185	39.058	1.06	1020		115
184				ND		57.5
185	183/185	39.058	1.06	(1020)		115
186				NĎ		57.5
187		38.421	1.06	1710		57.5
188				ND		57.5
189				ND		57.5
190		44.441	1.04	283		57.5
191				ND		57.5
192				ND		57.5

Conc = Concentration

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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



# Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-06;F0095677 1096886006 P90622A\_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.680	1.05	(3190)		115
194		49.176	0.93	658		86.2
195		46.784	0.89	293		86.2
196		45.296	0.89	359		86.2
197	197/200			ND		172
198	198/199	44.642	0.90	736		172
199	198/199	44.642	0.90	(736)		172
200	197/200			NĎ		172
201				ND		86.2
202		39.829	0.91	117		86.2
203		45.498	0.88	420		86.2
204				ND		86.2
205				ND		86.2
206		51.375	0.78	173		86.2
207				ND		86.2
208				ND		86.2
209				ND		86.2

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

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



### Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PSF0274-06;F0095677 1096886006 P90622A\_04

Congener Group	Concentration ng/Kg	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	766	
Total Trichloro Biphenyls	2040	
Total Tetrachloro Biphenyls	2480	
Total Pentachloro Biphenyls	6180	
Total Hexachloro Biphenyls	14800	
Total Heptachloro Biphenyls	11600	
Total Octachloro Biphenyls	2580	
Total Nonachloro Biphenyls	173	
Decachloro Biphenyls	ND	
Total PCBs	40600	

ND = Not Detected
Results reported on a dry weight basis



### Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID BLANK-20249 Filename P90621B 07 Injected By BAL **Total Amount Extracted** 11.0 g **ICAL ID** P90621B02

Solid Matrix Extracted Analyzed

06/11/2009 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	<u>75</u>
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',6,6'-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 75
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
13CDeCB	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 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



# Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-20249 P90621B\_07

				Concentration	<b>EMPC</b>	EML
IUPAC	Co-elutions	RT	Ratio	ng/Kg	ng/Kg	ng/Kg
1				ND		22.8
2				ND		22.8
3				ND		22.8
				ND		22.8
5				ND		22.8
4 5 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	12/10			ND		22.8
15				ND		22.8
16				ND		22.8
17				ND		22.8
18	18/30			ND		45.5
19	10/30			ND		22.8
20	20/28			ND		45.5
21	21/33			ND ND		45.5
22	21/33			ND ND		22.8
23				ND ND		22.8
23 24		<del></del>		ND ND		22.8
25				ND ND		22.8
26 26	26/29			ND ND		45.5
20 27	20/29	<b></b>		ND ND		22.8
28	20/28	<b></b>		ND ND		45.5
20 29	26/29			ND ND		45.5 45.5
30	20/29 40/20			ND ND		45.5 45.5
30 31	18/30	 18.666	1.04	24.2		45.5 22.8
32				24.2 ND		
32 33	21/33			ND ND		22.8 45.5
33 34	21/33			ND ND		45.5 22.8
34 25						
35				ND		22.8
36				ND		22.8
37				ND		22.8
38				ND		22.8
39	40/44/74			ND		22.8
40	40/41/71			ND		137
41	40/41/71			ND		137
42				ND		45.5
43	4.4.4.7.0.7			ND		45.5
44	44/47/65			ND		137
45	45/51			ND		91.1

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



# 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
46				ND		45.5
47	44/47/65			ND		137
48	44/47/05			ND		45.5
49	49/69			ND		91.1
50	50/53			ND ND		91.1
51	45/51			ND ND		91.1
52	40/01			ND		45.5
53	50/53			ND		91.1
54	30/33			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	33/02/13			ND		45.5
61	61/70/74/76			ND		182
62	59/62/75			ND		137
63	33/02/13			ND		45.5
64				ND		45.5
65	44/47/65			ND		137
66	44/41/05			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	10/ 11/7 1			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	0.7.107.17.10			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

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



# 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
91	88/91			ND		91.1
92				ND		45.5
93	93/98/100/102			ND		182
94	00/00/100/102			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	00/00/100/102			ND		45.5
100	93/98/100/102			ND		182
101	90/101/113			ND		137
102	93/98/100/102			ND		182
103	30/30/100/102			ND		45.5
104				ND		45.5
105				ND		45.5
106				ND		45.5
107	107/124			ND		91.1
107	86/87/97/108/119/125			ND ND		273
109	00/01/91/100/119/123			ND ND		45.5
110	110/115			ND ND		91.1
110	110/113			ND ND		45.5
112		<b></b>	<b></b>	ND ND	<b></b>	45.5 45.5
113	90/101/113			ND ND		137
113	90/101/113			ND ND		45.5
115	110/115			ND ND		91.1
116	85/116/117			ND ND		137
117	85/116/117			ND ND		137
117	00/110/117			ND ND		45.5
119	86/87/97/108/119/125			ND ND		45.5 273
120	00/07/97/100/119/125			ND ND		45.5
120				ND ND		45.5 45.5
121				ND ND		45.5 45.5
122				ND ND		45.5 45.5
123	107/124			ND ND		91.1
124	86/87/97/108/119/125			ND ND		273
125	00/07/97/100/119/125			ND ND		
126				ND ND		45.5
127	128/166			ND ND		45.5 91.1
				ND ND		137
129	129/138/163			ND ND		45.5
130				ND ND		
131						45.5 45.5
132				ND ND		45.5 45.5
133	124/142			ND ND		45.5 04.4
134	134/143			ND ND		91.1
135	135/151			ND		91.1

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



# 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
136				ND		45.5
136				ND ND		45.5 45.5
137	129/138/163			ND ND		45.5 137
130				ND ND		91.1
139	139/140 139/140			ND ND		91.1
140	139/140			ND ND		91.1 45.5
141		<b></b>		ND ND		45.5 45.5
142	134/143			ND ND		45.5 91.1
143	134/143			ND ND		91.1 45.5
145				ND		45.5
146	4.47/4.40			ND		45.5
147	147/149			ND		91.1
148	4.47/4.40			ND		45.5
149	147/149			ND		91.1
150	405/454			ND		45.5
151	135/151			ND		91.1
152	450/400			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

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



# 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
181				ND		45.5
182				ND ND		45.5 45.5
183	183/185	<b></b>		ND ND		91.1
184	103/103	<b></b>		ND ND		45.5
185	183/185	<b></b>		ND ND		91.1
186	103/103			ND ND		45.5
187				ND ND		45.5 45.5
188				ND ND		45.5 45.5
189				ND ND		45.5 45.5
		<b></b>				
190				ND		45.5
191				ND		45.5
192	400/400			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



### Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKVB BLANK-20249 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



### Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID CCal Filena

CCal Filename(s) Method Blank ID LCS-20250 P90621B\_05 10.2 g

P90621B02 P90621B\_01 BLANK-20249 Matrix Solid Dilution 3

Extracted 06/11/2009 Analyzed 06/22/2009 06:12

Injected By BAL

	ı	Native Analy	tes	Labeled Analytes			
PCB Isomer	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

ND = Not Detected

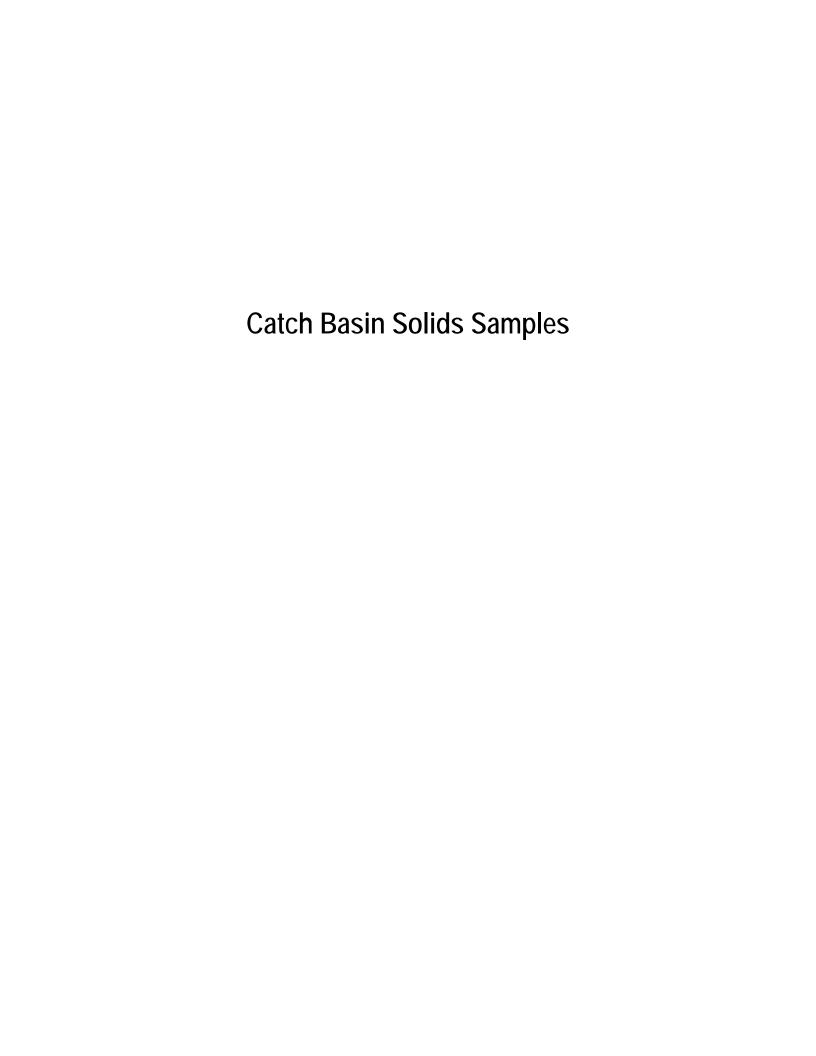
NA = Not Applicable

NC = Not Calculated

! = See Discussion

ng = Nanograms I = Interference

Nn = Result obtained from alternate analysis



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



# **Bureau of Environmental Services** C TO TABLE

Date: 4/10/09

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				•		•	•	•	•	C	921	4/8/09	44_9	IL-44-ABC352-CBtoN-0409 N RIVER, CB NEAR ABC352	FO095474
				•	•	•	•	•	•	C	818	4/8/09	44_8	IL-44-NLORING-CBtoN-0409 N LORING & CLARK	FO095473
				•	•	•	•	•	•	C ·	752	4/8/09	44_7	IL-44-NLORING-CBtoS-0409 N LORING & CLARK	FO095472
				•	•	•	•	•	•	C	1348	4/7/09	44_6	IL-44-ABC261-0409 N LEWIS & RR TRACKS	F0095471
	Rode corrected 6/s/09-PHA	acode co		•	•	•	•	•	•	C	1311	4/7/09	44_4	IL-44-ABC259-CBtoN&,0409 N CLARK & RR TRACKS	FO095470
				•	•	•	•	•	•	င	1147	4/7/09	44_3	IL-44-ABC335-0409 N HARDING & RR TRACKS	FO095469
4 THE STATE OF THE	70000			•	•	•	•	•	•	<u>ဂ</u>	948	4/7/09	44_2	IL-44-ABC345-0409 N RIVER & RANDOLPH	F0095468
			er.		•	•	•	•	•	c	848	4/7/09	44_1	IL-44-ABC343-0409 N LORING & RANDOLPH	FO095467
			Pb, Hg,		Grain Siz	TOC Total So	NWTPH-	SVOCs (	<u> </u>	Sample Type	Sample Time	Sample Date	Point Code	Location	WPCL Sample I.D.
			Ni, Ag, Zr				Dx	Phthalate CAS)	clors - LI			THE STOR	Per P#	World ID = 486 348 - les by 4/2 place	* 10 095476- non
		. 0	1)	Cd, Cr, Cu,				S (IA)		and off			iver Lots	OUTFALLS 44 (Albina River Lots)	>
ents	Field Comments		Metals		General	ଜୁ		Organics	o						
	nalyses	Requested Analyses	Req		0					4	SEDIMENT	Matrix:		)1	File Number: 1020.001
				704								₹	NE SA	Project Name: PORTLAND HARBOR INLINE SAMP	Project Name: PORT

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



Page: Date: <u>4/10/09</u> + e L

Collected By: JXB/MUS/PTB/

Project Name: PORTLAND HARBOR INLINE SAMP	AND HARBOR INL	INE SA	₽ 											٠.															
File Number: 1020,001			Matrix:	SEDIMENT	甲							-			Z	ĕ	es	Requested Analyses	<u> </u>	Se	ဟ								•
							Organics	anic	S		General	ia		×	Metals						T	eld (	Com	Field Comments	its				Ш
	OUTFALL 44A (Albina River Lots)	River Lots)					A)	, ,				-	Cr. Cu.	,,				-							-				
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						clors	htha!	CAS)	)x ·		ids		*******	-		-		- %											
WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	PCB Aro	PAHs + F	SVOCs (	NWTPH-I	TOC	Total Sol	Grain Siz	Total Met	Pb, Hg, I	, , ,			•											
FO095477	IL-44A-ADZ315-0409 CB ON NE RUSSELL ST	44A_1	4/8/09	1001	C	. •	•	•	•	•	•	•		•		-										ļ			
FO095478	IL-44A-NERODNEY-CBIONE-0409 NE RODNEY AT NE RUSSELL	44A_2	4/8/09	1036	င	•	•	•	•	•		•		•			<u> </u>	·											
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ignature: LordChul	7	Signature:			Time:				Signature:	ure:							Time:		Signature:	ture:						Time:	. 8		
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6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656





**Sample ID: FO095477** 

Sample Collected: 04/08/09 Sample Received: 04/10/09 10:01

Sample Status: COMPLETE AND

VÁLIDATED

Proj./Company Name:

PORTLAND HARBOR INLINE SAMP

Address/Location:

IL-44A-ADZ315-0409 #10 SIEVED

**CB ON NE RUSSELL ST** 

System ID:

Page 1 of 4 AN04134

Sample Point Code:

44A\_1

EID File #:

Report Page:

1020.001

Sample Type:

**COMPOSITE** 

LocCode:

**PORTHARI** 

Sample Matrix:

**SEDIMENT** 

Collected By: JXB/MJS

### 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: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	89.2	% W/W	0.01	SM 2540 G	04/14/09
METALS					
ARSENIC	8.20	mg/Kg dry wt	0.50	EPA 6020	04/22/09
CADMIUM	1.08	mg/Kg dry wt	0.10	EPA 6020	04/22/09
CHROMIUM	67.3	mg/Kg dry wt	0.50	EPA 6020	04/22/09
COPPER	293	mg/Kg dry wt	0.25	EPA 6020	04/22/09
LEAD	176	mg/Kg dry wt	0.10	EPA 6020	04/22/09
MERCURY	0.064	mg/Kg dry wt	0.010	EPA 6020	04/22/09
NICKEL	77.8	mg/Kg dry wt	0.25	EPA 6020	04/22/09
SILVER	0.28	mg/Kg dry wt	0.10	EPA 6020	04/22/09
ZINC	308	mg/Kg dry wt	0.50	EPA 6020	04/22/09
GC ANALYSIS					
NWTPH-Dx	•				
DIESEL RANGE HYDROCARBONS (C12-C24)	<250	mg/Kg dry wt	250	NWTPH-Dx	04/16/09
OIL RANGE HYDROCARBONS (>C24)	1180	mg/Kg dry wt	500	NWTPH-Dx	04/16/09
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	μg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1221	<20	μg/Kg dry wt	20	EPA 8082	04/29/09
Aroclor 1232	<10	μg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1248	<10	μg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1254	25	μg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1260	51	μg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1262	<10	μg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1268	<10	$\mu$ g/Kg dry wt	10	EPA 8082	04/29/09
OUTSIDE ANALYSIS				•	
TOTAL ORGANIC CARBON	54800	mg/Kg dry wt	50	EPA 9060 MOD	04/21/09
GRAIN SIZE BY ASTM - ARI	•				
Clay (<3.2 µm)	1.5	Fract %	0.1	ASTM D421/422	04/15/09
Coarse Sand (4750-2000 µm)	0.1	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (150-75 μm)	12.9	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (250-150 $\mu$ m)	12.1	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (425-250 μm)	14.8	Fract %	0.1	ASTM D421/422	04/15/09

Report Date: 05/21/09



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Sample ID: **FO095477** 

Sample Collected: 04/08/09 Sample Received: 04/10/09 10:01

Sample Status: COMPLETE AND

VALIDATED

Proj./Company Name:

PORTLAND HARBOR INLINE SAMP

Address/Location:

IL-44A-ADZ315-0409 #10 SIEVED

**CB ON NE RUSSELL ST** 

Sample Point Code:

44A\_1

Sample Type: Sample Matrix:

COMPOSITE SEDIMENT

System ID:

AN04134

EID File #: LocCode: 1020.001

Page 2 of 4

Collected By: JXB/MJS

Report Page:

PORTHARI

### 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: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
					<del></del>
Gravel (>4750 µm)	<0.1	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (2000-850 μm)	13.7	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (850-425 μm)	14.3	Fract %	0.1	ASTM D421/422	04/15/09
Silt (13-9 µm)	3.7	Fract %	0.1	ASTM D421/422	04/15/09
Silt (22-13 µm)	7.5	Fract %	0.1	ASTM D421/422	04/15/09
Silt (32-22 μm)	3.0	Fract %	0.1	ASTM D421/422	04/15/09
Silt (7-3.2 μm)	4.5	Fract %	0.1	ASTM D421/422	04/15/09
Silt (75-32 μm)	9.6	Fract %	0.1	ASTM D421/422	04/15/09
Silt (9-7 $\mu$ m)	2.2	Fract %	0.1	ASTM D421/422	04/15/09
POLYNUCLEAR AROMATICS & PHTH					
Acenaphthene	<75.3	$\mu$ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Acenaphthylene	<75.3	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Anthracene	<75.3	$\mu$ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(a)anthracene	92.3	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(a)pyrene	131	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(b)fluoranthene	180	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(ghi)perylene	224	$\mu$ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(k)fluoranthene	123	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Bis(2-ethylhexyl) phthalate	3000	$\mu$ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Butyl benzyl phthalate	<1510	μg/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Chrysene	211	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Dibenzo(a,h)anthracene	<75.3	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Diethyl phthalate	<1510	μg/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Dimethyl phthalate	<1510	μg/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Di-n-butyl phthalate	<1510	μg/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Di-n-octyl phthalate	<1510	μg/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Fluoranthene	223	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Fluorene	<75.3	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Indeno(1,2,3-cd)pyrene	126	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Naphthalene	<75.3	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Phenanthrene	114	$\mu$ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Pyrene	233	μg/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<290	$\mu$ g/Kg dry wt	290	EPA 8270 LV	04/16/09
SEMI-VOLATILE ORGANICS - CAS					

Report Date: 05/21/09





6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656





Sample ID: **FO095477** 

Sample Collected: 04/08/09 Sample Received: 04/10/09 10:01

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Address/Location:

IL-44A-ADZ315-0409 #10 SIEVED

CB ON NE RUSSELL ST

Sample Point Code:

44A\_1

Sample Type: Sample Matrix: COMPOSITE SEDIMENT

System ID: EID File #:

LocCode:

AN04134 1020.001

**PORTHARI** 

Collected By: JXB/MJS

Report Page: Page 3 of 4

### 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: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Took Downwater	D14	11-14-	##D1		Analysis Date
Test Parameter	Result	Units	MRL	Method	Date
1,2-Dichlorobenzene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
1,3-Dichlorobenzene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
1,4-Dichlorobenzene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4,5-Trichlorophenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4,6-Trichlorophenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4-Dichlorophenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4-Dimethylphenol	<1500	$\mu$ g/Kg dry wt	1500	EPA 8270 LV	04/16/09
2,4-Dinitrophenol	<5700	μg/Kg dry wt	5700	EPA 8270 LV	04/16/09
2,4-Dinitrotoluene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,6-Dinitrotoluene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Chloronaphthalene	<290	$\mu$ g/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Chlorophenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Methylnaphthalene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Methylphenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Nitroaniline	<570	μg/Kg dry wt	570	EPA 8270 LV	04/16/09
2-Nitrophenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
3,3'-Dichlorobenzidine	<2900	μg/Kg dry wt	2900	EPA 8270 LV	04/16/09
3-Nitroaniline	<570	μg/Kg dry wt	570	EPA 8270 LV	04/16/09
4,6-Dinitro-2-methylphenol	<2900	μg/Kg dry wt	2900	EPA 8270 LV	04/16/09
4-Bromophenylphenyl ether	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Chloro-3-methylphenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Chloroaniline	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Chlorophenylphenyl ether	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Methylphenol	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Nitroaniline	<570	μg/Kg dry wt	570	EPA 8270 LV	04/16/09
4-Nitrophenol	<2900	μg/Kg dry wt	2900	EPA 8270 LV	04/16/09
Acenaphthene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Acenaphthylene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Anthracene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(a)anthracene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(a)pyrene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(b)fluoranthene	320	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(g,h,i)perylene	340	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(k)fluoranthene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzoic acid	<5700	μg/Kg dry wt	5700	EPA 8270 LV	04/16/09

Report Date: 05/21/09



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Sample ID: FO095477

Sample Collected: 04/08/09

10:01

Sample Status: COMPLETE AND

Sample Received: 04/10/09

VALIDATED

Proj./Company Name:

PORTLAND HARBOR INLINE SAMP

Address/Location:

IL-44A-ADZ315-0409 #10 SIEVED

CB ON NE RUSSELL ST

Sample Point Code:

44A 1

Sample Type: Sample Matrix:

COMPOSITE **SEDIMENT** 

System ID: EID File #: AN04134

Page 4 of 4

LocCode:

1020.001 **PORTHARI** 

Collected By: JXB/MJS

Report Page:

### 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: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzyl alcohol	<570	μg/Kg dry wt	570	EPA 8270 LV	04/16/09
Bis(2-chloroethoxy) methane	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Bis(2-chloroethyl) ether	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Bis(2-chloroisopropyl) ether	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Bis(2-ethylhexyl) phthalate	<2900	μg/Kg dry wt	2900	EPA 8270 LV	04/16/09
Butyl benzyl phthalate	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Chrysene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Dibenzo(a,h)anthracene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Dibenzofuran	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Diethyl phthalate	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Dimethyl phthalate	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Di-n-butyl phthalate	<570	μg/Kg dry wt	570	EPA 8270 LV	04/16/09
Di-n-octyl phthalate	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Fluoranthene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Fluorene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Hexachlorobenzene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Hexachlorobutadiene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Hexachlorocyclopentadiene	<1500	μg/Kg dry wt	1500	EPA 8270 LV	04/16/09
Hexachloroethane	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Indeno(1,2,3-cd)pyrene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Isophorone	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Naphthalene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Nitrobenzene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
N-Nitrosodi-n-propylamine	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
N-Nitrosodiphenylamine	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Pentachlorophenol	<2900	μg/Kg dry wt	2900	EPA 8270 LV	04/16/09
Phenanthrene	<290	μg/Kg dry wt	290	EPA 8270 LV	04/16/09
Phenol	<850	μg/Kg dry wt	850	EPA 8270 LV	04/16/09
Pyrene	300	μg/Kg dry wt	290	EPA 8270 LV	04/16/09

End of Report for Sample ID: FO095477

Report Date: 05/21/09 Validated By:





6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



10:36



Sample ID: **FO095478** 

Sample Collected: 04/08/09

Sample Status: COMPLETE AND

Sample Received: 04/10/09

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Address/Location:

IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED

NE RODNEY AT NE RUSSELL

Sample Point Code:

44A 2

Sample Type: Sample Matrix:

COMPOSITE **SEDIMENT** 

System ID:

AN04135

EID File #: LocCode:

1020.001

Page 1 of 4

Collected By: JXB/MJS

Report Page:

**PORTHARI** 

### 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 results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL		· · · · · · · · · · · · · · · · · · ·	·		
TOTAL SOLIDS	30.9	% W/W	0.01	SM 2540 G	04/14/09
METALS	·	•			
ARSENIC	2.05	mg/Kg dry wt	0.50	EPA 6020	04/22/09
CADMIUM	0.81	mg/Kg dry wt	0.10	EPA 6020	04/22/09
CHROMIUM	28.8	mg/Kg dry wt	0.50	EPA 6020	04/22/09
COPPER	62.4	mg/Kg dry wt	0.25	EPA 6020	04/22/09
LEAD	76.0	mg/Kg dry wt	0.10	EPA 6020	04/22/09
MERCURY	0.049	mg/Kg dry wt.	0.010	EPA 6020	04/22/09
NICKEL	20.6	mg/Kg dry wt	0.25	EPA 6020	04/22/09
SILVER	0.21	mg/Kg dry wt	0.10	EPA 6020	04/22/09
ZINC	346	mg/Kg dry wt	0.50	EPA 6020	04/22/09
GC ANALYSIS					
NWTPH-Dx					
DIESEL RANGE HYDROCARBONS (C12-C24)	<750	mg/Kg dry wt	750	NWTPH-Dx	04/16/09
OIL RANGE HYDROCARBONS (>C24)	7710	mg/Kg dry wt	1500	NWTPH-Dx	04/16/09
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<30	$\mu$ g/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1221	<60	μg/Kg dry wt	60	EPA 8082	04/29/09
Aroclor 1232	<30	μg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1248	<30	μg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1254	<30	μg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1260	72	μg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1262	<30	μg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1268	<30	μg/Kg dry wt	30	EPA 8082	04/29/09
OUTSIDE ANALYSIS		•	•		
TOTAL ORGANIC CARBON	113000	mg/Kg dry wt	50	EPA 9060 MOD	04/21/09
GRAIN SIZE BY ASTM - ARI			•		
Clay (<3.2 µm)	1.7	Fract %	0.1	ASTM D421/422	04/15/09
Coarse Sand (4750-2000 μm)	0.9	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (150-75 μm)	6.2	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (250-150 $\mu$ m)	6.4	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (425-250 µm)	10.8	Fract %	0.1	ASTM D421/422	04/15/09

Report Date: 05/21/09





### City of Portland Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



10:36



Sample ID: FO095478

Sample Collected: 04/08/09 Sample Received: 04/10/09

Sample Status: COMPLETE AND

**VALIDATED** 

Proj./Company Name: PORTLAND HARBOR INLINE SAMP Address/Location: IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED Report Page: Page 2 of 4

NE RODNEY AT NE RUSSELL

AN04135 System ID:

Sample Point Code:

44A\_2

1020.001

Sample Type: Sample Matrix: COMPOSITE **SEDIMENT** 

LocCode:

EID File #:

**PORTHARI** Collected By: JXB/MJS

### 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 results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gravel (>4750 μm)	<0.1	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (2000-850 μm)	18.8	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (850-425 µm)	16.7	Fract %	0.1	ASTM D421/422	04/15/09
Silt (13-9 μm)	6.0	Fract %	0.1	ASTM D421/422	04/15/09
Silt (22-13 µm)	8.6	Fract %	0.1	ASTM D421/422	04/15/09
Silt (32-22 μm)	6.9	Fract %	0.1	ASTM D421/422	04/15/09
Silt (7-3.2 μm)	5.2	Fract %	0.1	ASTM D421/422	04/15/09
Silt (75-32 μm)	9.1	Fract %	0.1	ASTM D421/422	04/15/09
Silt (9-7 µm)	2.6	Fract %	0.1	ASTM D421/422	04/15/09
POLYNUCLEAR AROMATICS & PHTHALATES	- TA				•
Acenaphthene	<234	µg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Acenaphthylene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Anthracene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(a)anthracene	<234	µg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(a)pyrene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(b)fluoranthene	254	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(ghi)perylene	297	$\mu$ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(k)fluoranthene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Bis(2-ethylhexyl) phthalate	26100	μg/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Butyl benzyl phthalate	<11700	μg/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Chrysene	455	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Dibenzo(a,h)anthracene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Diethyl phthalate	<11700	$\mu$ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Dimethyl phthalate	<11700	μg/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Di-n-butyl phthalate	<11700	μg/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Di-n-octyl phthalate	<11700	μg/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Fluoranthene	588	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Fluorene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Indeno(1,2,3-cd)pyrene	<234	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Naphthalene	<234	$\mu$ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Phenanthrene	427	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
Pyrene	648	μg/Kg dry wt	234	EPA8270M-SIM	04/17/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
1,2-Dichlorobenzene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09

Report Date: 05/21/09

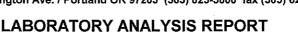
Validated By:





### City of Portland Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656





Sample ID: FO095478

Sample Collected: 04/08/09 Sample Received: 04/10/09 10:36

Sample Status: COMPLETE AND

VALIDATED

Page 3 of 4

Proj./Company Name:

PORTLAND HARBOR INLINE SAMP

Address/Location:

IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED

NE RODNEY AT NE RUSSELL

Sample Point Code:

44A\_2

Sample Type: Sample Matrix: COMPOSITE

**SEDIMENT** 

Report Page: System ID:

AN04135

EID File #: LocCode:

1020.001

**PORTHARI** Collected By: JXB/MJS

### 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 results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	<del>, ,</del>				
1,3-Dichlorobenzene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
1,4-Dichlorobenzene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4,5-Trichlorophenol	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4,6-Trichlorophenol	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4-Dichlorophenol	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4-Dimethylphenol	<2300	$\mu$ g/Kg dry wt	2300	EPA 8270 LV	04/16/09
2,4-Dinitrophenol	<9000	μg/Kg dry wt	9000	EPA 8270 LV	04/16/09
2,4-Dinitrotoluene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2,6-Dinitrotoluene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Chloronaphthalene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Chlorophenol	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Methylnaphthalene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Methylphenol	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Nitroaniline	<900	μg/Kg dry wt	900	EPA 8270 LV	04/16/09
2-Nitrophenol	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
3,3'-Dichlorobenzidine	<4500	μg/Kg dry wt	4500	EPA 8270 LV	04/16/09
3-Nitroaniline	<900	μg/Kg dry wt	900	EPA 8270 LV	04/16/09
4,6-Dinitro-2-methylphenol	<4500	μg/Kg dry wt	4500	EPA 8270 LV	04/16/09
4-Bromophenylphenyl ether	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Chloro-3-methylphenol	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Chloroaniline	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Chlorophenylphenyl ether	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Methylphenol	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Nitroaniline	<900	μg/Kg dry wt	900	EPA 8270 LV	04/16/09
4-Nitrophenol	<4500	μg/Kg dry wt	4500	EPA 8270 LV	04/16/09
Acenaphthene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
Acenaphthylene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Anthracene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(a)anthracene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(a)pyrene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(b)fluoranthene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(g,h,i)perylene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(k)fluoranthene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzoic acid	<9000	$\mu$ g/Kg dry wt	9000	EPA 8270 LV	04/16/09
Benzyl alcohol	<900	μg/Kg dry wt	900	EPA 8270 LV	04/16/09
Bis(2-chloroethoxy) methane	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09

Report Date: 05/21/09

Validated By:





### **City of Portland Water Pollution Control Laboratory**

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



10:36



Sample ID: FO095478

Sample Collected: 04/08/09

Sample Status: COMPLETE AND

**VALIDATED** 

Sample Received: 04/10/09

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

NE RODNEY AT NE RUSSELL

Address/Location:

IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED

System ID:

Report Page:

AN04135

Page 4 of 4

Sample Point Code:

44A 2

EID File #:

1020.001

Sample Type: Sample Matrix: COMPOSITE SEDIMENT

LocCode: Collected By: JXB/MJS

**PORTHARI** 

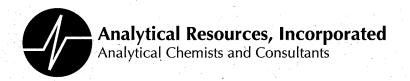
### Comments:

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 results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Bis(2-chloroisopropyl) ether	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Bis(2-ethylhexyl) phthalate	13000	μg/Kg dry wt	4500	EPA 8270 LV	04/16/09
Butyl benzyl phthalate	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Chrysene	450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Dibenzo(a,h)anthracene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Dibenzofuran	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Diethyl phthalate	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Dimethyl phthalate	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Di-n-butyl phthalate	<900	μg/Kg dry wt	900	EPA 8270 LV	04/16/09
Di-n-octyl phthalate	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Fluoranthene	570	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Fluorene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Hexachlorobenzene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Hexachlorobutadiene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Hexachlorocyclopentadiene	<2300	μg/Kg dry wt	2300	EPA 8270 LV	04/16/09
Hexachloroethane	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Indeno(1,2,3-cd)pyrene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Isophorone	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Naphthalene	470	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Nitrobenzene	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
N-Nitrosodi-n-propylamine	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
N-Nitrosodiphenylamine	<450	μg/Kg dry wt	450	EPA 8270 LV	04/16/09
Pentachlorophenol	<4500	μg/Kg dry wt	4500	EPA 8270 LV	04/16/09
Phenanthrene	<450	$\mu$ g/Kg dry wt	450	EPA 8270 LV	04/16/09
Phenol	<1400	μg/Kg dry wt	1400	EPA 8270 LV	04/16/09
Pyrene	750	μg/Kg dry wt	450	EPA 8270 LV	04/16/09

End of Report for Sample ID: FO095478

Report Date: 05/21/09 Validated By:



April 24, 2009

Mr. Howard Holmes Test America, Inc. 9405 SW Nimbus Ave. Beaverton, OR 97008

Subject: Project No.: PSD0460;

**ARI Project No.: OV47** 

Dear Mr. Holmes,

The following pages provide the grain size data 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 Laboratory Manager

206-695-6246

guennas@arilabs.com

Enclosures

cc: File OV47

### SUBCONTRACT ORDER

## TestAmerica Portland PSD0460

### **RECEIVING LABORATORY: SENDING LABORATORY:** TestAmerica Portland Analytical Resources, Inc. (ARI) 4611 S 134th Place, Suite 100 9405 SW Nimbus Ave. Beaverton, OR 97008 Tukwilla, WA 98168 Phone: (503) 906-9200 Phone: (206) 621-6490 Fax: 206-621-7523 Fax: (503) 906-9210 Project Manager: Howard Holmes Project Location: OR - OREGON Receipt Temperature: Y / N Ice: needs Excel EDD Analysis Units Due **Expires** Comments Sample ID: PSD0460-01 Soil Sampled: 04/07/09 08:48 Grain Size (ASTM) - SUB 04/27/09 10/04/09 08:48 sub to Analytical Resources Inc (ARI) ug/l Containers Supplied: 8 oz. jar (A) Sample ID: PSD0460-02 Soil Sampled: 04/07/09 09:48 Grain Size (ASTM) - SUB 04/27/09 10/04/09 09:48 sub to Analytical Resources Inc (ARI) ug/l Containers Supplied: 8 oz. jar (A) Sample ID: PSD0460-03 Soil Sampled: 04/07/09 11:47 Grain Size (ASTM) - SUB ug/l 04/27/09 10/04/09 11:47 sub to Analytical Resources Inc (ARI) Containers Supplied: 8 oz. jar (A) Sample ID: PSD0460-04 Soil Sampled: 04/07/09 13:11 Grain Size (ASTM) - SUB ug/l 04/27/09 10/04/09 13:11 sub to Analytical Resources Inc (ARI) Containers Supplied: 8 oz. jar (A) Sample ID: PSD0460-05 Soil Sampled: 04/07/09 13:48 Grain Size (ASTM) - SUB ug/l 04/27/09 10/04/09 13:48 sub to Analytical Resources Inc (ARI) Containers Supplied: 8 oz. jar (A) Sample ID: PSD0460-06 Soil Sampled: 04/08/09 07:52 Grain Size (ASTM) - SUB ug/l 04/27/09 10/05/09 07:52 sub to Analytical Resources Inc (ARI) Containers Supplied: 8 oz. jar (A)

Mmama Eelley
Released By

Released By

41409 1240 Date/Time

Received By

4/15/09 930 Date/Time

Date/Time

Received By

Date/Time

Page 1 of 2

### SUBCONTRACT ORDER

# TestAmerica Portland PSD0460

Analysis	Units	Due	Expires	Comments
Sample ID: PSD0460-07	Soil		Sampled: 04/08/09 08:18	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 08:18	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-08	Soil		Sampled: <b>04/08/09 09:21</b>	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 09:21	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-09	Soil		Sampled: <b>04/08/09 13:31</b>	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 13:31	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-10	Soil		Sampled: 04/08/09 12:13	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 12:13	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-11	Soil		Sampled: 04/08/09 10:01	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 10:01	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-12	Soil		Sampled: <b>04/08/09 10:36</b>	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 10:36	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				

Client: Test America, Inc.

**ARI Project No.: OV47** 

Client Project: PSD0460

### Case Narrative

- 1. Twelve samples were received on April 15, 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 samples contained organic debris that may have broken down during the sieving process, affecting the grain size data.
- 6. The samples displayed and oily sheen and a fuel odor, which may have affected the grain size.
- 7. The data is provided in summary tables and plots.
- 8. There were no further anomalies in the samples or test method.

Approved by:

Title:

Geotechnical Division Manager

Data:

Test America, Inc. PSD0460

Percent Finer (Passing) Than the Indicated Size

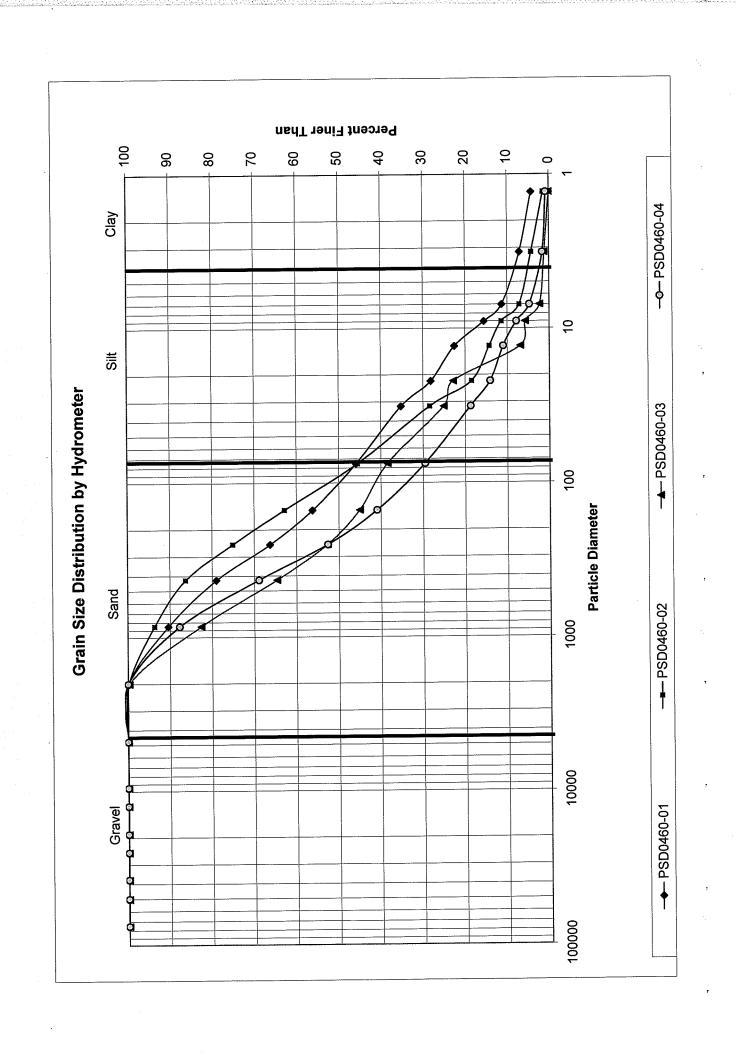
1.3	4.2	1.4	0.0	0.8	1.5	2.2	3.0	4.7	2.9	2.3	0.0	6.0	
3.2	7.0	4.3	1.1	1.6	7.	3.6	4.5	6.2	4.4	4.6	1.5	1.7	
7	11.3	7.1	2.3	4.7	4.6	5.8	6.7	9.3	5.9	6.2	6.0	6.9	
0	15.5	11.4	5.7	7.8	7.7	7.2	8.2	12.4	8.8	8.5	8.2	9.5	
13	22.5	14.2	6.8	10.9	9.3	8.7	10.5	14.0	11.7	15.4	11.9	15.5	
22	28.2	18.5	22.8	14.0	10.8	11.6	15.0	16.3	19.0	18.5	19.4	24.2	
32	35.2	28.4	25.1	18.7	12.4	14.5	18.0	18.6	23.4	21.6	22.4	31.1	
#200 (75)	45.9	45.5	38.4	29.5	20.3	23.0	27.0	24.3	30.1	27.7	32.0	40.2	
#100 (150)	56.2	62.8	45.0	40.9	28.2	37.5	42.2	37.0	44.3	41.3	44.9	46.4	
#60 (250)	66.3	75.1	52.6	52.5	37.5	52.9	57.6	52.5	58.6	55.0	57.1	52.8	
#40 (425)	78.9	6.98	64.6	8.89	52.8	72.8	76.2	74.0	75.3	71.9	71.8	63.6	
#20 (850)	90.4	93.7	82.6	7.78	74.3	9.06	91.0	91.8	91.0	88.1	86.2	80.3	
#10 (2000)	100.0	93.8	99.7	100.0	6.66	6.66	6.66	100.0	100.0	99.8	99.9	99.1	
#4 (4750)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	
3/8"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1 1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
 	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Sieve Size (microns)	PSD0460-01	PSD0460-02	PSD0460-03	PSD0460-04	PSD0460-05	PSD0460-06	PSD0460-07	PSD0460-08	PSD0460-09	PSD0460-10	PSD0460-11	PSD0460-12	

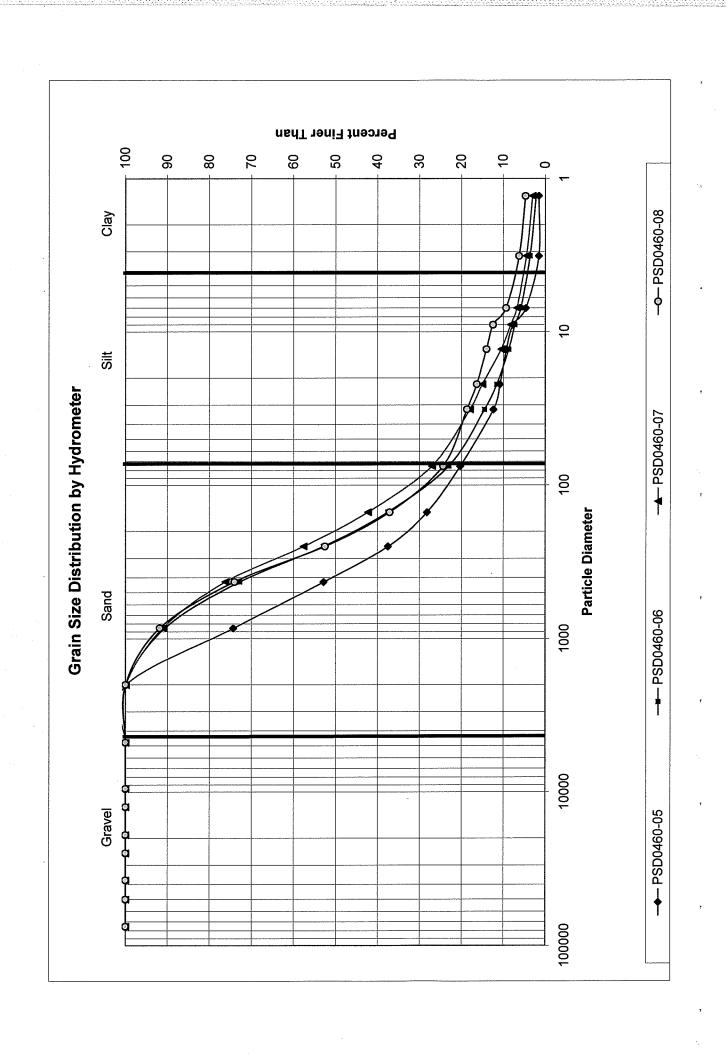
Testing performed according to ASTM D421/D422

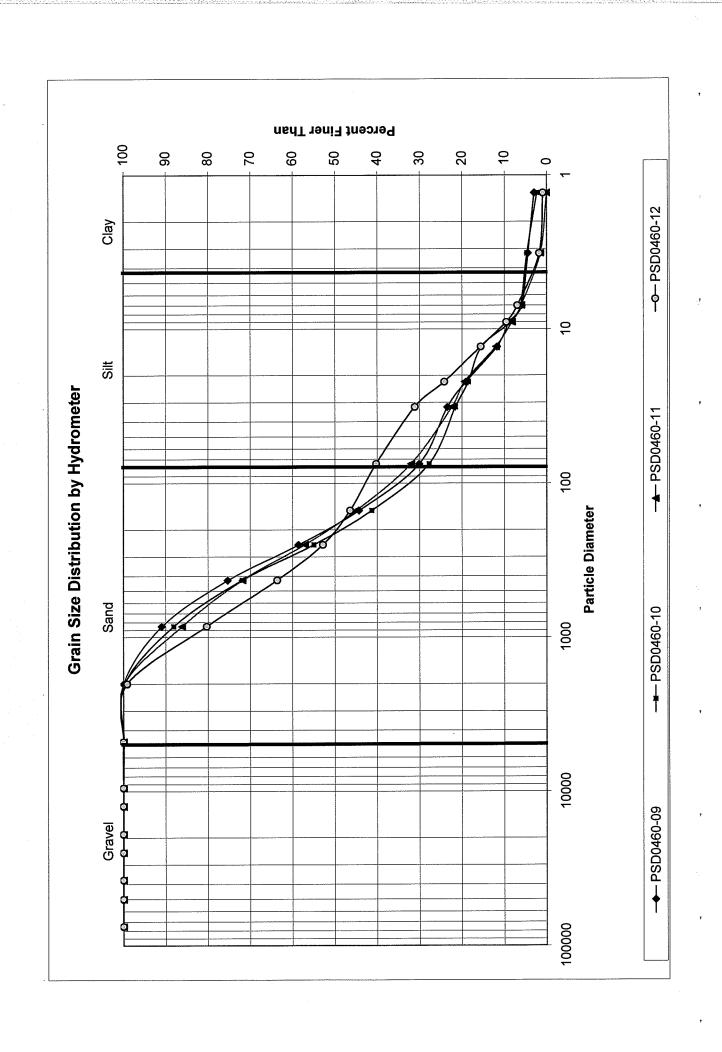
Test America, Inc. PSD0460

Percent Retained in Each Size Fraction

	П	Τ	F .		T · · ·	Т	T	Τ	Γ	T	<u> </u>	1	
% Clay	<3.2	7.0	4.3	1.1	1.6	1.5	3.6	4.5	6.2	4.4	4.6	1.5	1.7
% Very Fine Silt	7-3.2	4.2	2.8	1.1	3.1	3.1	2.2	2.2	3.1	1.5	1.5	4.5	5.2
% Fine Silt	2-6	4.2	4.3	3.4	3.1	3.1	1.4	1.5	3.1	2.9	2.3	2.2	2.6
% Fine	13-9	7.0	2.8	1.1	3.1	1.5	1.4	2.2	1.6	2.9	6.9	3.7	6.0
% Medium Silt	22-13	5.6	4.3	16.0	3.1	1.5	2.9	4.5	2.3	7.3	3.1	7.5	9.8
% Coarse Silt	32-22	7.0	10.0	2.3	4.7	1.5	2.9	3.0	2.3	4.4	3.1	3.0	6.9
% Very Coarse Silt	75-32	10.7	17.1	13.3	10.8	7.9	8.5	9.0	2.2	6.7	6.2	9.6	9.1
Ъ	150-75	10.3	17.3	9.9	11.4	7.9	14.6	15.2	12.7	14.2	13.5	12.9	6.2
% Fine Sand	250-150	10.1	12.2	9.7	11.7	9.3	15.4	15.4	15.5	14.3	13.7	12.1	6.4
%	425-250	12.7	11.2	11.9	16.3	15.4	19.9	18.6	21.5	16.7	16.9	14.8	10.8
m Sand	850-425	11.5	7.4	18.0	18.9	21.5	17.8	14.9	17.8	15.7	16.3	14.3	16.7
% Medium Sand	2000-850	9.6	6.1	17.1	12.3	25.6	9.3	8.8	8.2	9.0	11.6	13.7	18.8
% Coarse Sand	4750- 2000	0.0	0.2	0.3	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.9
	3/8"-4750	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
% Gravel	1/2-3/8"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3/4-1/2"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1-3/4"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gravel	1 1/2"-1"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%Coarse Gravel	2-1 1/2"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3-2"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Description	Particle Size (microns)	PSD0460-01	PSD0460-02	PSD0460-03	PSD0460-04	PSD0460-05	PSD0460-06	PSD0460-07	PSD0460-08	PSD0460-09	PSD0460-10	PSD0460-11	PSD0460-12









June 4, 2009

Analytical Report for Service Request No: K0903237

Jennifer Shackelford Portland, City of 1120 SW Fifth Avenue # 1000 Portland, OR 97204

RE: Portland Harbor - Inline Samp

Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on April 14, 2009. For your reference, these analyses have been assigned our service request number K0903237.

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/cb

Page 1 of

### 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

POL 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.
- 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.
- 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).
- $U \quad \text{ The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.} \\$
- 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.
- 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)	-





Client:

Portland, City of

Service Request No.:

K0903237

Project:

Portland Harbor - Inline Samp

Date Received:

04/14/09

Sample Matrix:

Sediment

### 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

Twelve sediment samples were received for analysis at Columbia Analytical Services on 04/14/09. 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.

### Semivolatile Organic Compounds by EPA Method 8270C

### **Surrogate Exceptions:**

The control criteria for all surrogates in sample FO095470 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.

The control criteria for Terpehnyl-d14 in few samples were not applicable. The analysis of the samples required dilutions, which resulted in surrogate concentrations below the reporting limit. No further corrective action was appropriate.

### Relative Percent Difference (RPD) Exceptions:

The RPD criterion for 2,4-Dimethylphenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG0903189-3 and KWG0903189-4 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.

### **Elevated Method Reporting Limits:**

The detection limits were 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 dilution. 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.

Analytical Results

Client:

Portland, City of Portland Harbor - In

Project: Sample Matrix:

Sediment

Total Solids

Prep Method: Analysis Method: NONE 160.3M Units: PERCENT
Basis: Wet

Service Request: K0903237

Test Notes:

		Date	Date	Date		Result Notes
Sample Name	Lab Code	Collected	Received	Analyzed	Result	Mesuit 140tes
F0095467	K0903237-001	04/07/2009	04/14/2009	04/15/2009	63.7	
F0095468	K0903237-002	04/07/2009	04/14/2009	04/15/2009	77.0	
F0095469	K0903237-003	04/07/2009	04/14/2009	04/15/2009	68.5	
F0095470	K0903237-004	04/07/2009	04/14/2009	04/15/2009	80.8	
F0095471	K0903237-005	04/07/2009	04/14/2009	04/15/2009	59.9	
F0095472	K0903237-006	04/08/2009	04/14/2009	04/15/2009	72.2	
F0095473	K0903237-007	04/08/2009	04/14/2009	04/15/2009	68.2	
F0095474	K0903237-008	04/08/2009	04/14/2009	04/15/2009	68.4	
F0095475	K0903237-009	04/08/2009	04/14/2009	04/15/2009	49.0	
F0095476	K0903237-010	04/08/2009	04/14/2009	04/15/2009	56.5	
F0095477	K0903237-011	04/08/2009	04/14/2009	04/15/2009	88.9	
F0095478	K0903237-012	04/08/2009	04/14/2009	04/15/2009	22.2	

SuperSet Reference: W0903240

QA/QC Report

Client: Project: Portland, City of Portland Harbor - In

Sample Matrix:

Sediment

Service Request: K0903237

**Date Collected:** 04/08/2009 **Date Received:** 04/14/2009 **Date Analyzed:** 04/15/2009

**Duplicate Sample Summary Total Solids** 

Prep Method:

Analysis Method:

NONE

160.3M

Units: PERCENT

Basis: Wet

Test Notes:

Sample Name

Sample Result Lab Code

Result

23.8

Average

Percent Result Notes Difference

F0095478

K0903237-012

22.2

Duplicate

Sample

23.0

7

Relative

Printed: 06/04/2009 13:49 u:\Stealth\Crystal.rpt\Solids.rpt

SuperSet Reference: W0903240

8

Analytical Results

Client: Portland, City of

**Project:** Portland Harbor - Inline Samp

Sample Matrix: Sediment

**Service Request:** K0903237 **Date Collected:** 04/08/2009 **Date Received:** 04/14/2009

### Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** FO095477 **Lab Code:** K0903237-011

**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	290	54	25	04/16/09	04/28/09	KWG0903189	***************************************
Phenol	ND	U	850	57	25	04/16/09	04/28/09	KWG0903189	
2-Chlorophenol	ND	U	290	57	25	04/16/09	04/28/09	KWG0903189	
1,3-Dichlorobenzene	ND	U	290	85	25	04/16/09	04/28/09	KWG0903189	
1,4-Dichlorobenzene	ND	U	290	82	25	04/16/09	04/28/09	KWG0903189	
1,2-Dichlorobenzene	ND	U	290	82	25	04/16/09	04/28/09	KWG0903189	
Benzyl Alcohol	ND	U	570	60	25	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroisopropyl) Ether	ND	U	290	74	25	04/16/09	04/28/09	KWG0903189	
2-Methylphenol	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
Hexachloroethane	ND		290	88	25	04/16/09	04/28/09	KWG0903189	
N-Nitrosodi-n-propylamine	ND		290	68	25	04/16/09	04/28/09	KWG0903189	
4-Methylphenol†	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
Nitrobenzene	ND	U	290	62	25	04/16/09	04/28/09	KWG0903189	
Isophorone	ND	U	290	29	25	04/16/09	04/28/09	KWG0903189	
2-Nitrophenol	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
2,4-Dimethylphenol	ND	U	1500	160	25	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroethoxy)methane	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
2,4-Dichlorophenol	ND	U	290	29	25	04/16/09	04/28/09	KWG0903189	
Benzoic Acid	ND		5700	2700	25	04/16/09	04/28/09	KWG0903189	
1,2,4-Trichlorobenzene	ND		290	74	25	04/16/09	04/28/09	KWG0903189	
Naphthalene	ND	U	290	65	25	04/16/09	04/28/09	KWG0903189	
4-Chloroaniline	ND	U	290	54	25	04/16/09	04/28/09	KWG0903189	
Hexachlorobutadiene	ND	U	290	71	25	04/16/09	04/28/09	KWG0903189	
4-Chloro-3-methylphenol	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	
2-Methylnaphthalene	ND	U	290	62	25	04/16/09	04/28/09	KWG0903189	
Hexachlorocyclopentadiene	ND	U	1500	820	25	04/16/09	04/28/09	KWG0903189	
2,4,6-Trichlorophenol	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	
2,4,5-Trichlorophenol	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
2-Chloronaphthalene	ND	U	290	45	25	04/16/09	04/28/09	KWG0903189	
2-Nitroaniline	ND	U	570	90	25	04/16/09	04/28/09	KWG0903189	
Acenaphthylene	ND		290	34	25	04/16/09	04/28/09	KWG0903189	
Dimethyl Phthalate	87		290	29	25	04/16/09	04/28/09	KWG0903189	
2,6-Dinitrotoluene	ND	U	290	57	25	04/16/09	04/28/09	KWG0903189	
Acenaphthene	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	

Comments:

Analytical Results

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237 Date Collected: 04/08/2009

**Date Received:** 04/14/2009

### Semi-Volatile Organic Compounds by GC/MS

Sample Name:

FO095477

Lab Code:

K0903237-011

Extraction Method: EPA 3541 Analysis Method:

8270C

Units: ug/Kg Basis: Dry

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
3-Nitroaniline	ND U	570	71	25	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrophenol	ND U	5700	480	25	04/16/09	04/28/09	KWG0903189	
Dibenzofuran	ND U	290	34	25	04/16/09	04/28/09	KWG0903189	
4-Nitrophenol	ND U	2900	510	25	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrotoluene	ND U	290	43	25	04/16/09	04/28/09	KWG0903189	
Fluorene	ND U	290	31	25	04/16/09	04/28/09	KWG0903189	
4-Chlorophenyl Phenyl Ether	ND U	290	40	25	04/16/09	04/28/09	KWG0903189	
Diethyl Phthalate	ND U	290	37	25	04/16/09	04/28/09	KWG0903189	
4-Nitroaniline	ND U	570	51	25	04/16/09	04/28/09	KWG0903189	
2-Methyl-4,6-dinitrophenol	ND U	2900	40	25	04/16/09	04/28/09	KWG0903189	
N-Nitrosodiphenylamine	ND U	290	45	25	04/16/09	04/28/09	KWG0903189	
4-Bromophenyl Phenyl Ether	ND U	290	45	25	04/16/09	04/28/09	KWG0903189	
Hexachlorobenzene	ND U	290	34	25	04/16/09	04/28/09	KWG0903189	
Pentachlorophenol	ND U	2900	570	25	04/16/09	04/28/09	KWG0903189	
Phenanthrene	130 JD	290	40	25	04/16/09	04/28/09	KWG0903189	
Anthracene	ND U	290	45	25	04/16/09	04/28/09	KWG0903189	
Di-n-butyl Phthalate	280 JD	570	230	25	04/16/09	04/28/09	KWG0903189	
Fluoranthene	280 JD	290	45	25	04/16/09	04/28/09	KWG0903189	
Pyrene	<b>300</b> D	290	43	25	04/16/09	04/28/09	KWG0903189	
Butyl Benzyl Phthalate	150 JD	290	90	25	04/16/09	04/28/09	KWG0903189	
3,3'-Dichlorobenzidine	ND U	2900	110	25	04/16/09	04/28/09	KWG0903189	
Benz(a)anthracene	130 JD	290	48	25	04/16/09	04/28/09	KWG0903189	
Chrysene	160 JD	290	43	25	04/16/09	04/28/09	KWG0903189	
Bis(2-ethylhexyl) Phthalate	<b>2000</b> JD	2900	200	25	04/16/09	04/28/09	KWG0903189	
Di-n-octyl Phthalate	ND U	290	48	25	04/16/09	04/28/09	KWG0903189	
Benzo(b)fluoranthene	<b>320</b> D	290	34	25	04/16/09	04/28/09	KWG0903189	
Benzo(k)fluoranthene	<b>81</b> JD	290	40	25	04/16/09	04/28/09	KWG0903189	
Benzo(a)pyrene	170 JD	290	48	25	04/16/09	04/28/09	KWG0903189	
Indeno(1,2,3-cd)pyrene	<b>240</b> JD	290	43	25	04/16/09	04/28/09	KWG0903189	
Dibenz(a,h)anthracene	ND U	290	43	25	04/16/09	04/28/09	KWG0903189	
Benzo(g,h,i)perylene	<b>340</b> D	290	43	25	04/16/09	04/28/09	KWG0903189	
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Comments:

Analytical Results

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237

Date Collected: 04/08/2009 **Date Received:** 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name:

FO095477

Lab Code:

K0903237-011

Basis: Dry

Units: ug/Kg

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	27	10-89	04/28/09	Acceptable
Phenol-d6	47	15-103	04/28/09	Acceptable
Nitrobenzene-d5	76	10-108	04/28/09	Acceptable
2-Fluorobiphenyl	75	10-105	04/28/09	Acceptable
2,4,6-Tribromophenol	74	16-122	04/28/09	Acceptable
Terphenyl-d14	99	31-126	04/28/09	Acceptable

### † Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Comments:

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 $u: \label{lem:linear_continuity} u: \label{lem:linear_continuity} \label{lem:linear_continuity} u: \label{lem:linear_continuity} \label{lem:linear_continuity} u: \label{lem:linear_continuity} \label{lem:linear_continuity} \label{lem:linear_continuity} \label{lem:linear_continuity} \label{lem:linear_continuity} \label{lem:linear_continuity} \label{lem:linear_continuity} \label{lem:linear_continuity} u: \label{lem:linear_continuity} \label{lem:linear_c$ 

Merged

Form 1A - Organic 41

Page 3 of 3

SuperSet Reference: RR101814

Analytical Results

Client: Portland, City of

Service Request: K0903237 Project: Portland Harbor - Inline Samp Date Collected: 04/08/2009 **Date Received:** 04/14/2009

Sample Matrix: Sediment

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095478 Units: ug/Kg Lab Code: K0903237-012 Basis: Dry **Extraction Method:** EPA 3541 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	450	85	20	04/16/09	04/29/09	KWG0903189	
Phenol	230	JD	1400	90	20	04/16/09	04/29/09	KWG0903189	
2-Chlorophenol	ND	U	450	90	20	04/16/09	04/29/09	KWG0903189	
1,3-Dichlorobenzene	ND	U	450	140	20	04/16/09	04/29/09	KWG0903189	
1,4-Dichlorobenzene	ND	U	450	130	20	04/16/09	04/29/09	KWG0903189	
1,2-Dichlorobenzene	ND	U	450	130	20	04/16/09	04/29/09	KWG0903189	
Benzyl Alcohol	ND	U	900	94	20	04/16/09	04/29/09	KWG0903189	
Bis(2-chloroisopropyl) Ether	ND	U	450	120	20	04/16/09	04/29/09	KWG0903189	
2-Methylphenol	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
Hexachloroethane	ND	U	450	140	20	04/16/09	04/29/09	KWG0903189	,
N-Nitrosodi-n-propylamine	ND		450	110	20	04/16/09	04/29/09	KWG0903189	
4-Methylphenol†	290	JD	450	68	20	04/16/09	04/29/09	KWG0903189	
Nitrobenzene	ND	U	450	99	20	04/16/09	04/29/09	KWG0903189	
Isophorone	ND	U	450	45	20	04/16/09	04/29/09	KWG0903189	
2-Nitrophenol	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
2,4-Dimethylphenol	ND	U	2300	250	20	04/16/09	04/29/09	KWG0903189	
Bis(2-chloroethoxy)methane	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
2,4-Dichlorophenol	ND	U	450	45	20	04/16/09	04/29/09	KWG0903189	
Benzoic Acid	ND	U	9000	4300	20	04/16/09	04/29/09	KWG0903189	
1,2,4-Trichlorobenzene	ND		450	120	20	04/16/09	04/29/09	KWG0903189	
Naphthalene	470	D	450	110	20	04/16/09	04/29/09	KWG0903189	
4-Chloroaniline	ND		450	85	20	04/16/09	04/29/09	KWG0903189	
Hexachlorobutadiene	ND		450	120	20	04/16/09	04/29/09	KWG0903189	
4-Chloro-3-methylphenol	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	
2-Methylnaphthalene	ND	U	450	99	20	04/16/09	04/29/09	KWG0903189	
Hexachlorocyclopentadiene	ND	U	2300	1300	20	04/16/09	04/29/09	KWG0903189	
2,4,6-Trichlorophenol	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	
2,4,5-Trichlorophenol	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
2-Chloronaphthalene	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
2-Nitroaniline	ND	U	900	150	20	04/16/09	04/29/09	KWG0903189	
Acenaphthylene	ND		450	54	20	04/16/09	04/29/09	KWG0903189	
Dimethyl Phthalate	350		450	45	20	04/16/09	04/29/09	KWG0903189	
2,6-Dinitrotoluene	ND	U	450	90	20	04/16/09	04/29/09	KWG0903189	
Acenaphthene	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	

Comments:	
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Form 1A - Organic 10

SuperSet Reference:

Analytical Results

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237 Date Collected: 04/08/2009 **Date Received:** 04/14/2009

Units: ug/Kg

Basis: Dry Level: Low

### Semi-Volatile Organic Compounds by GC/MS

Sample Name:

FO095478

Lab Code:

K0903237-012

Extraction Method: EPA 3541

Analysis Method:

8270C

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	CONTRACTOR	900	120	20	04/16/09	04/29/09	KWG0903189	DASS CONTRACTOR OF THE PARTY OF
2,4-Dinitrophenol	ND		9000	770	20	04/16/09	04/29/09	KWG0903189	
Dibenzofuran	ND	U	450	54	20	04/16/09	04/29/09	KWG0903189	
4-Nitrophenol	ND	U	4500	810	20	04/16/09	04/29/09	KWG0903189	
2,4-Dinitrotoluene	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
Fluorene	ND	U	450	50	20	04/16/09	04/29/09	KWG0903189	
4-Chlorophenyl Phenyl Ether	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	
Diethyl Phthalate	ND	U	450	59	20	04/16/09	04/29/09	KWG0903189	
4-Nitroaniline	ND	U	900	81	20	04/16/09	04/29/09	KWG0903189	
2-Methyl-4,6-dinitrophenol	ND	U	4500	63	20	04/16/09	04/29/09	KWG0903189	
N-Nitrosodiphenylamine	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
4-Bromophenyl Phenyl Ether	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
Hexachlorobenzene	ND	U	450	54	20	04/16/09	04/29/09	KWG0903189	
Pentachlorophenol	2800	JD	4500	900	20	04/16/09	04/29/09	KWG0903189	
Phenanthrene	320	JD	450	63	20	04/16/09	04/29/09	KWG0903189	
Anthracene	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
Di-n-butyl Phthalate	ND	U	900	360	20	04/16/09	04/29/09	KWG0903189	
Fluoranthene	570	D	450	72	20	04/16/09	04/29/09	KWG0903189	
Pyrene	750		450	68	20	04/16/09	04/29/09	KWG0903189	
Butyl Benzyl Phthalate	ND	U	450	150	20	04/16/09	04/29/09	KWG0903189	
3,3'-Dichlorobenzidine	ND	U	4500	170	20	04/16/09	04/29/09	KWG0903189	
Benz(a)anthracene	160	JD	450	77	20	04/16/09	04/29/09	KWG0903189	
Chrysene	450	D	450	68	20	04/16/09	04/29/09	KWG0903189	
Bis(2-ethylhexyl) Phthalate	13000	D	4500	320	20	04/16/09	04/29/09	KWG0903189	
Di-n-octyl Phthalate	ND	U	450	77	20	04/16/09	04/29/09	KWG0903189	
Benzo(b)fluoranthene	340	JD	450	54	20	04/16/09	04/29/09	KWG0903189	
Benzo(k)fluoranthene	130	JD	450	63	20	04/16/09	04/29/09	KWG0903189	
Benzo(a)pyrene	ND		450	77	20	04/16/09	04/29/09	KWG0903189	
Indeno(1,2,3-cd)pyrene	210	JD	450	68	20	04/16/09	04/29/09	KWG0903189	
Dibenz(a,h)anthracene	ND		450	68	20	04/16/09	04/29/09	KWG0903189	
Benzo(g,h,i)perylene	420	JD	450	68	20	04/16/09	04/29/09	KWG0903189	

Comments:

Analytical Results

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237

Date Collected: 04/08/2009

**Date Received:** 04/14/2009

### Semi-Volatile Organic Compounds by GC/MS

Sample Name:

FO095478

Lab Code:

K0903237-012

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	33	10-89	04/29/09	Acceptable
Phenol-d6	47	15-103	04/29/09	Acceptable
Nitrobenzene-d5	57	10-108	04/29/09	Acceptable
2-Fluorobiphenyl	56	10-105	04/29/09	Acceptable
2,4,6-Tribromophenol	51	16-122	04/29/09	Acceptable
Terphenyl-d14	71	31-126	04/29/09	Acceptable

### † Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Comments:

Printed: 06/04/2009 13:47:36

Merged

Form 1A - Organic 44

Page 3 of 3 RR101814

SuperSet Reference:

### Analytical Results

Portland, City of Client:

Portland Harbor - Inline Samp Project:

Sediment Sample Matrix:

Service Request: K0903237 Date Collected: NA Date Received: NA

### Semi-Volatile Organic Compounds by GC/MS

Sample Name: Lab Code:

Method Blank KWG0903189-5

Extraction Method: Analysis Method: 8270C

EPA 3541

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	i	04/16/09	04/28/09	KWG0903189	NOTE
Phenol	ND U	3.0 15	2.0	1	04/16/09	04/28/09	KWG0903189	
2-Chlorophenol	ND U	5.0	2.0	1	04/16/09	04/28/09	KWG0903189	
A								
1,3-Dichlorobenzene	ND U	5.0	3.0	1	04/16/09	04/28/09	KWG0903189	
1,4-Dichlorobenzene	ND U	5.0	2.9	1	04/16/09	04/28/09	KWG0903189	
1,2-Dichlorobenzene	ND U	5.0	2.9	1	04/16/09	04/28/09	KWG0903189	
Benzyl Alcohol	ND U	10	2.1	1	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroisopropyl) Ether	ND U	5.0	2.6	1	04/16/09	04/28/09	KWG0903189	
2-Methylphenol	ND U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Hexachloroethane	ND U	5.0	3.1	1	04/16/09	04/28/09	KWG0903189	
N-Nitrosodi-n-propylamine	ND U	5.0	2.4	1 .	04/16/09	04/28/09	KWG0903189	
4-Methylphenol†	ND U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Nitrobenzene	ND U	5.0	2.2	1	04/16/09	04/28/09	KWG0903189	
Isophorone	ND U	5.0	1.0	1	04/16/09	04/28/09	KWG0903189	
2-Nitrophenol	ND U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
2,4-Dimethylphenol	ND U	25	5.5	1	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroethoxy)methane	ND U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
2,4-Dichlorophenol	ND U	5.0	1.0	1	04/16/09	04/28/09	KWG0903189	
Benzoic Acid	ND U	100	96	1	04/16/09	04/28/09	KWG0903189	
1,2,4-Trichlorobenzene	ND U	5.0	2.6	1	04/16/09	04/28/09	KWG0903189	
Naphthalene	ND U	5.0	2.3	1	04/16/09	04/28/09	KWG0903189	
4-Chloroaniline	ND U	5.0	1.9	1	04/16/09	04/28/09	KWG0903189	
Hexachlorobutadiene	ND U	5.0	2.5	1	04/16/09	04/28/09	KWG0903189	
4-Chloro-3-methylphenol	ND U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
2-Methylnaphthalene	ND U	5.0	2.2	1	04/16/09	04/28/09	KWG0903189	
Hexachlorocyclopentadiene	ND U	29	29	1	04/16/09	04/28/09	KWG0903189	
2,4,6-Trichlorophenol	ND U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
2,4,5-Trichlorophenol	ND U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
2-Chloronaphthalene	ND U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
2-Nitroaniline	ND U	10	3.2	1	04/16/09	04/28/09	KWG0903189	
Acenaphthylene	ND U	5.0	1.2	I	04/16/09	04/28/09	KWG0903189	
Dimethyl Phthalate	ND U	5.0	1.0	1	04/16/09	04/28/09	KWG0903189	
2,6-Dinitrotoluene	ND U	5.0	2.0	1	04/16/09	04/28/09	KWG0903189	
Acenaphthene	ND U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	

Comments:

Analytical Results

Client: Portland, City of

Project: Portland Harbor - Inline Samp

Sample Matrix: Sediment

Service Request: K0903237

Date Collected: NA
Date Received: NA

### Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank Lab Code: KWG0903189-5

**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	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrophenol	ND	U	100	17	1	04/16/09	04/28/09	KWG0903189	
Dibenzofuran	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
4-Nitrophenol	ND	U	50	18	1	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrotoluene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Fluorene	ND	U	5.0	1.1	1	04/16/09	04/28/09	KWG0903189	
4-Chlorophenyl Phenyl Ether	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
Diethyl Phthalate	ND	U	5.0	1.3	1	04/16/09	04/28/09	KWG0903189	
4-Nitroaniline	ND	U	10	1.8	1	04/16/09	04/28/09	KWG0903189	
2-Methyl-4,6-dinitrophenol	ND	U	50	1.4	1	04/16/09	04/28/09	KWG0903189	
N-Nitrosodiphenylamine	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
4-Bromophenyl Phenyl Ether	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
Hexachlorobenzene	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
Pentachlorophenol	ND	U	50	20	1	04/16/09	04/28/09	KWG0903189	
Phenanthrene	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
Anthracene	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
Di-n-butyl Phthalate	ND	U	10	7.9	1	04/16/09	04/28/09	KWG0903189	
Fluoranthene	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
Pyrene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Butyl Benzyl Phthalate	ND	U	5.0	3.2	1	04/16/09	04/28/09	KWG0903189	
3,3'-Dichlorobenzidine	ND	U	50	3.7	1	04/16/09	04/28/09	KWG0903189	
Benz(a)anthracene	ND	U	5.0	1.7	1	04/16/09	04/28/09	KWG0903189	
Chrysene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Bis(2-ethylhexyl) Phthalate	ND	U	50	7.0	1	04/16/09	04/28/09	KWG0903189	
Di-n-octyl Phthalate	ND	U	5.0	1.7	1	04/16/09	04/28/09	KWG0903189	
Benzo(b)fluoranthene	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
Benzo(k)fluoranthene	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
Benzo(a)pyrene	ND	U	5.0	1.7	1	04/16/09	04/28/09	KWG0903189	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Dibenz(a,h)anthracene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Benzo(g,h,i)perylene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	

Comments:

### Analytical Results

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237

Date Collected: NA Date Received: NA

### Semi-Volatile Organic Compounds by GC/MS

Sample Name:

Method Blank

Lab Code:

KWG0903189-5

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	57	10-89	04/28/09	Acceptable
Phenol-d6	63	15-103	04/28/09	Acceptable
Nitrobenzene-d5	65	10-108	04/28/09	Acceptable
2-Fluorobiphenyl	68	10-105	04/28/09	Acceptable
2,4,6-Tribromophenol	74	16-122	04/28/09	Acceptable
Terphenyl-d14	96	31-126	04/28/09	Acceptable

### † Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Comments:

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Merged

Form 1A - Organic 47

SuperSet Reference: RR101814

Page 3 of 3

QA/QC Report

Client: Project: Portland, City of

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

**Surrogate Recovery Summary** Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541 **Analysis Method:** 

8270C

Service Request: K0903237

Units: PERCENT

Level: Low

Sample Name	Lab Code	Sur1	<u>Sur2</u>	Sur3	Sur4	<u>Sur5</u>	<u>Sur6</u>
FO095467	K0903237-001	36 D	51 D	53 D	66 D	52 D	87 D
FO095468	K0903237-002	44 D	56 D	57 D	69 D	65 D	92 D
FO095469	K0903237-003	33 D	51 D	64 D	75 D	66 D	104 D
FO095470	K0903237-004	0 D #	45 D #	82 D #	78 D #	57 D #	123 D #
FO095471	K0903237-005	49 D	60 D	65 D	75 D	87 D	106 D #
FO095472	K0903237-006	47 D	58 D	65 D	74 D	78 D	93 D
FO095473	K0903237-007	47 D	55 D	63 D	66 D	71 D	88 D
FO095474	K0903237-008	22 D	43 D	71 D	72 D	39 D	95 D #
FO095475	K0903237-009	47 D	61 D	66 D	67 D	78 D	93 D #
FO095476	K0903237-010	52 D	64 D	73 D	71 D	77 D	90 D #
FO095477	K0903237-011	27 D	47 D	76 D	75 D	74 D	99 D #
FO095478	K0903237-012	33 D	47 D	57 D	56 D	51 D	71 D
Method Blank	KWG0903189-5	57	63	65	68	74	96
FO095468MS	KWG0903189-1	52 D	62 D	67 D	73 D	76 D	93 D
FO095468DMS	KWG0903189-2	46 D	60 D	65 D	75 D	70 D	92 D
Lab Control Sample	KWG0903189-3	52	57	57	58	65	80
Duplicate Lab Control Sample	KWG0903189-4	52	57	58	59	65	75

### 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.

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RR101814

Page 1 of 1

SuperSet Reference:

QA/QC Report

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237

Date Extracted: 04/16/2009

Date Analyzed: 04/28/2009

Matrix Spike/Duplicate Matrix Spike Summary Semi-Volatile Organic Compounds by GC/MS

Sample Name:

FO095468

Lab Code:

K0903237-002

**Extraction Method:** 

EPA 3541

Analysis Method:

8270C

Units: ug/Kg

Basis: Dry

Level: Low

Extraction Lot: KWG0903189

FO095468MS KWG0903189-1

FO095468DMS KWG0903189-2

	Sample	Matrix Spike				cate Matrix S		%Rec		RPD
Analyte Name	Result	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
Phenol	ND	119	162	73	107	162	66	10-120	11	40
2-Chlorophenol	ND	103	162	64	97.8	162	60	12-105	5	40
1,4-Dichlorobenzene	ND	101	162	62	102	162	63	10-105	1	40
N-Nitrosodi-n-propylamine	ND	125	162	77	138	162	85	10-111	10	40
1,2,4-Trichlorobenzene	ND	109	162	67	111	162	69	10-102	2	40
4-Chloro-3-methylphenol	ND	114	162	71	94.0	162	58	10-119	20	40
Acenaphthene	ND	130	162	80	130	162	80	23-106	0	40
4-Nitrophenol	ND	89.4	162	55	123	162	76	11-143	31	40
2,4-Dinitrotoluene	ND	125	162	77	114	162	70	22-125	9	40
Pentachlorophenol	ND	94.0	162	58	104	162	64	10-146	10	40
Pyrene	130	240	162	67	260	162	79	10-146	8	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:

Portland, City of

Project:

Portland Harbor - Inline Samp

Sample Matrix:

Sediment

Service Request: K0903237

Date Extracted: 04/16/2009 Date Analyzed: 04/28/2009

### 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: KWG0903189

Lab Control	Sample
KWG0903	3189-3

Duplicate Lab Control Sample KWG0903189-4

Lab Control Spike					v G0903189-4 e Lab Control		0.75		W. W. W.
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	%Rec Limits	RPD	RPD Limit
Bis(2-chloroethyl) Ether	114	250	45	138	250	55	22-98	20	40
Phenol	113	250	45	145	250	58	34-101	25	40
2-Chlorophenol	113	250	45	143	250	57	30-91	23	40
1,3-Dichlorobenzene	107	250	43	139	250	56	10-97	26	40
1,4-Dichlorobenzene	110	250	44	139	250	56	10-98	24	40
1,2-Dichlorobenzene	111	250	44	141	250	56	10-98	24	40
Benzyl Alcohol	117	250	47	153	250	61	30-101	27	40
Bis(2-chloroisopropyl) Ether	103	250	41	134	250	53	17-100	26	40
2-Methylphenol	96.8	250	39	128	250	51	10-93	27	40
Hexachloroethane	110	250	44	139	250	56	10-99	23	40
N-Nitrosodi-n-propylamine	111	250	44	145	250	58	10-103	26	40
4-Methylphenol	99.8	250	40	134	250	54	10-98	30	40
Nitrobenzene	112	250	45	145	250	58	22-99	26	40
Isophorone	105	250	42	137	250	55	35-91	26	40
2-Nitrophenol	115	250	46	153	250	61	30-98	28	40
2,4-Dimethylphenol	39.3	250	16	71.9	250	29	10-81	59 *	40
Bis(2-chloroethoxy)methane	110	250	44	144	250	58	34-93	28	40
2,4-Dichlorophenol	108	250	43	147	250	59	35-91	31	40
Benzoic Acid	267	750	36	271	750	36	10-50	1	40
1,2,4-Trichlorobenzene	109	250	44	141	250	56	18-96	25	40
Naphthalene	112	250	45	148	250	59	23-95	28	40
4-Chloroaniline	99.7	250	40	130	250	52	10-95	26	40
Hexachlorobutadiene	106	250	42	139	250	56	14-100	27	40
4-Chloro-3-methylphenol	106	250	43	140	250	56	28-98	27	40
2-Methylnaphthalene	112	250	45	146	250	58	30-92	27	40
Hexachlorocyclopentadiene	92.6	250	37	115	250	46	10-81	22	40
2,4,6-Trichlorophenol	114	250	46	148	250	59	31-96	26	40
2,4,5-Trichlorophenol	118	250	47	150	250	60	38-95	24	40
2-Chloronaphthalene	113	250	45	146	250	58	33-95	25	40
2-Nitroaniline	118	250	47	152	250	61	40-104	25	40
Acenaphthylene	119	250	47	154	250	62	38-99	26	40
Dimethyl Phthalate	123	250	49	153	250	61	44-99	22	40
2,6-Dinitrotoluene	124	250	50	158	250	63	42-100	24	40
Acenaphthene	115	250	46	149	250	60	39-90	26	40
3-Nitroaniline	127	250	51	158	250	63	28-100	22	40
2,4-Dinitrophenol	135	250	54	163	250	65	14-104	19	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.

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Form 3C - Organic

50

Page RR101814

1 of 2

QA/QC Report

Client: Portland, City of

Portland Harbor - Inline Samp Project:

Sediment Sample Matrix:

Service Request: K0903237

Date Extracted: 04/16/2009 Date Analyzed: 04/28/2009

### 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: KWG0903189

	KW	Control Samp /G0903189-3 Control Spike		. KW	Lab Control ( /G0903189-4 e Lab Control		%Rec		RPD Limit
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	
Dibenzofuran	116	250	46	148	250	59	40-91	24	40
4-Nitrophenol	131	250	52	161	250	64	42-115	21	40
2,4-Dinitrotoluene	138	250	55	172	250	69	43-106	22	40
Fluorene	120	250	48	154	250	62	41-94	25	40
4-Chlorophenyl Phenyl Ether	116	250	46	149	250	60	41-93	25	40
Diethyl Phthalate	128	250	51	155	250	62	46-104	19	40
4-Nitroaniline	134	250	53	160	250	64	29-107	18	40
2-Methyl-4,6-dinitrophenol	148	250	59	177	250	71	30-107	18	40
N-Nitrosodiphenylamine	117	250	47	149	250	60	20-100	24	40
4-Bromophenyl Phenyl Ether	118	250	47	151	250	60	42-97	24	40
Hexachlorobenzene	121	250	48	152	250	61	42-98	22	40
Pentachlorophenol	104	250	42	141	250	57	28-100	30	40
Phenanthrene	127	250	51	156	250	62	44-97	20	40
Anthracene	127	250	51	156	250	62	31-104	20	40
Di-n-butyl Phthalate	140	250	56	159	250	64	47-129	13	40
Fluoranthene	138	250	55	160	250	64	45-111	14	40
Pyrene	135	250	54	162	250	65	46-112	18	40
Butyl Benzyl Phthalate	136	250	55	162	250	65	50-119	17	40
3,3'-Dichlorobenzidine	112	250	45	145	250	58	10-112	26	40
Benz(a)anthracene	136	250	54	160	250	64	45-110	17	40
Chrysene	138	250	55	164	250	66	50-108	17	40
Bis(2-ethylhexyl) Phthalate	140	250	56	166	250	67	48-127	17	40
Di-n-octyl Phthalate	145	250	58	172	250	69	52-126	17	40
Benzo(b)fluoranthene	136	250	55	163	250	65	51-111	18	40
Benzo(k)fluoranthene	141	250	57	169	250	67	52-109	18	40
Benzo(a)pyrene	128	250	51	155	250	62	26-125	19	40
Indeno(1,2,3-cd)pyrene	142	250	57	172	250	69	47-119	19	40
Dibenz(a,h)anthracene	144	250	58	171	250	68	50-115	17	40
Benzo(g,h,i)perylene	139	250	56	166	250	67	43-115	18	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

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

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# Columbia Analytical Services\*\*

# CHAIN OF CUSTODY

H<sub>O</sub> PAGE 1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

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REMARKS P CN. > > Date/Time ŝ (S) RECEIVED BY: -Sem - Va 12 Roady 219 άō σ̈́ 9 Ŝ ğ Z Z 0991 XOV OTHER AG AG Signature × ¥ NORTHWEST Z Ž Š Pb Mg Min Mo Z Total or Dissolved Š 3 đ CA Φ L Ů, RELINGUISHED BY 909 3 Õ AK Please run Cou-level Ö Ö 'INDICATE STATE HYDROCARBON PROCEDURE 8 ್ಟಿ Ö P<sub>O</sub> ВСа Ca SPECIAL INSTRUCTIONS/COMMENTS: മ 89 89 Circle which metals are to be analyzed IIO Jeseig (mojeg pes) sugi 83 Ba Sp 8 Dissolved Metals: At As AS Total Metals: At NUMBER OF CONTAINERS RECEIVED BY: TURNAROUND REQUIREMENTS Standard (10-15 working days) INVOICE INFORMATION Std. Men LAB I.D. MATRIX Requested Report Date 48 hr. Provide FAX Results erHand Harbor Inline Samp NPC Jennifer Shackelland 24 hr. 5 Day Date Time 1036 Bill To: TIME 00 P.O. # John of Portand 1/8/03 DATE Report Dup., MS, MSD as RELINQUISHED BY: Routine Report: Method IV. CLP Deliverable Report REPORT REQUIREMENTS Data Validation Report (includes all raw data) Blank, Surrogate, as 8± 5 F443700 SAMPLE I.D. required required SAMPLER'S SIGNATURE EDD MAR ADDRESS TY-STATE/ZIP = > ==

Firm

Printed Name

## Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form

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) Marie	C	TI)	

Client / Project: Cry of Port Received: 414 09	Cooler Co	r Receipt ar	i I	Service F	r <b>orm</b> Request <i>I</i> /	K09	3037	and the second and a second and a second as a second a	**************************************
<ol> <li>Samples were received via?</li> <li>Samples were received in: (circ</li> <li>Were <u>custody seals</u> on coolers?         If present, were custody seals in     </li> </ol>	US Mail Fe	d Ex UPS	Envelop If ye	IL GI e G	other	here?	Courier	Hand De	POT TOTT same the see to see a see and a share.
4. Is shipper's air-bill filed? If no					were they	signed and	dated?	Y	N
<ol> <li>Temperature of cooler(s) upon Temperature Blank (°C):         Thermometer ID:     </li> <li>If applicable, list Chain of Customark Packing material used. Insert.</li> </ol>	ody Numbers:	4. NA SMO s	744 Gel Pucks	Wet Ic	re Sleev.	es Other			
8. Were custody papers properly f 9. Did all bottles arrive in good o 10. Were all sample labels complet 11. Did all sample labels and tags a 12. Were appropriate bottles/com 13. Were the pH-preserved bottles 14. Were VOA vials and 1631 Mer 15. Are CWA Microbiology samp 16. Was C12/Res negative?	condition (unbrole (i.e analysis, presigned with custody tainers and voluntested* received a cury bottles received cury bottles received and cury bo	ken)? Indicates exervation, etc.  papers? Indicates papers? Indicates received to the appropriate without he	)? cate in the for the tes te pH? In adspace?	table bei its indica dicate in Indicate	low ted? the table in the tab.	le below.	N/ N/ N/ N/ N/ N/ N/ N/ N/	YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY	
Sample ID on Bottle	Sample ID o	on COC		Sample ID	on Bottle		Sample ID	on COC	
Sample ID	Bottle Count Bottle Type	Out of Head- Temp space	Broke	oH R	eagent	Volume added	Reagent Lot Number	Initials	Time
*Does not include all pH preserved sample ali Additional Notes, Discrepancies,			OP (SMO-C	EN).					



PORTLAND, OR 9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

May 14, 2009

Jennifer Shackelford City of Portland Water Pollution Laboratory 6543 N. Burlington Ave. Portland, OR 97203

RE: Portland Harbor

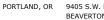
Enclosed are the results of analyses for samples received by the laboratory on 04/13/09 16:05. The following list is a summary of the Work Orders contained in this report, generated on 05/14/09 15:55.

If you have any questions concerning this report, please feel free to contact me.

Work Order	<u>Project</u>	ProjectNumber
PSD0460	Portland Harbor	36238

TestAmerica Portland

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 **Portland Harbor** Project Name:

6543 N. Burlington Ave. 36238 Report Created: Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

# ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
	<u> </u>	Matrix	Date Sampled	Date Received
FO095467	PSD0460-01	Soil	04/07/09 08:48	04/13/09 16:05
FO095468	PSD0460-02	Soil	04/07/09 09:48	04/13/09 16:05
FO095469	PSD0460-03	Soil	04/07/09 11:47	04/13/09 16:05
FO095470	PSD0460-04	Soil	04/07/09 13:11	04/13/09 16:05
FO095471	PSD0460-05	Soil	04/07/09 13:48	04/13/09 16:05
FO095472	PSD0460-06	Soil	04/08/09 07:52	04/13/09 16:05
FO095473	PSD0460-07	Soil	04/08/09 08:18	04/13/09 16:05
FO095474	PSD0460-08	Soil	04/08/09 09:21	04/13/09 16:05
FO095475	PSD0460-09	Soil	04/08/09 13:31	04/13/09 16:05
FO095476	PSD0460-10	Soil	04/08/09 12:13	04/13/09 16:05
FO095477	PSD0460-11	Soil	04/08/09 10:01	04/13/09 16:05
FO095478	PSD0460-12	Soil	04/08/09 10:36	04/13/09 16:05

TestAmerica Portland

Howard Holmes, Project Manager



PORTLAND, OR

9405 S.W. NIMBUS AVENUE BEAVERTON, OR 97008-7132 ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford05/14/09 15:55

# **Analytical Case Narrative**

TestAmerica - Portland, OR

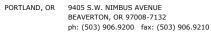
# PSD0460

8270 SIM Phthalates

Bis(2-ethylhexyl)phthalate was detected in the method blank between the MDL and MRL. Sample data was not affected as all of the samples had concentrations greater than 10x the method blank contamination level. Results were flagged and reported. No other anomalies were reported.

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

# Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PSD0460-11 (1	FO095477)			So	il		Samp	led: 04/08/	09 10:01			RL
Acenaphthene	Е	PA 8270m	ND		75.3	ug/kg dry	2x	9040656	04/17/09 18:30	04/22/09 22:42		
Acenaphthylene		"	ND		75.3	"	"	"	"	"		
Anthracene		"	ND		75.3	"	"	"	"	"		
Benzo (a) anthracen	ie	"	92.3		75.3	"	"	"	"	"		
Benzo (a) pyrene		"	131		75.3	"	"	"	"	"		
Benzo (b) fluoranth	ene	"	180		75.3	"	"	"	"	"		
Benzo (ghi) peryleno	e	"	224		75.3	"	"	"	"	"		
Benzo (k) fluoranth	ene	"	123		75.3	"	"	"	"	"		
Chrysene		"	211		75.3	"	"	"	"	"		
Dibenzo (a,h) anthrae	cene	"	ND		75.3	"	"	"	"	"		
Fluoranthene		"	223		75.3	"	"	"	"	"		
Fluorene		"	ND		75.3	"	"	"	"	"		
Indeno (1,2,3-cd) py	rene	"	126		75.3	"	"	"	"	"		
Naphthalene		"	ND		75.3	"	"	"	"	"		
Phenanthrene		"	114		75.3	"	"	"	"	"		
Pyrene		"	233		75.3	"	"	"	"	"		
Surrogate(s):	Fluorene-d10				91.8%		24 - 125 %	"			"	
	Pyrene-d10				80.0%		41 - 141 %	"			"	
	Benzo (a) pyrene-d12				79.5%		38 - 143 %	"			"	

PSD0460-12 (FO095478)			Soil	ļ		Sam	pled: 04/08/	09 10:36		RL3
Acenaphthene	EPA 8270m	ND		234	ug/kg dry	2x	9040656	04/17/09 18:30	04/22/09 23:14	_
Acenaphthylene	"	ND		234	"	"	"	"	"	
Anthracene	"	ND		234	"	"	"	"	"	
Benzo (a) anthracene	"	ND		234	"	"	"	"	"	
Benzo (a) pyrene	"	ND		234	"	"	"	"	"	
Benzo (b) fluoranthene	"	254		234	"	"	"	"	"	
Benzo (ghi) perylene	"	297		234	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND		234	"	"	"	"	"	
Chrysene	"	455		234	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND		234	"	"	"	"	"	
Fluoranthene	"	588		234	"	"	"	"	"	
Fluorene	"	ND		234	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND		234	"	"	"	"	"	
Naphthalene	"	ND		234	"	"	"	"	"	
Phenanthrene	"	427		234	"	"	"	"	"	

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

# Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PSD0460-12	(FO095478)			Soil			Samp	led: 04/08/	/09 10:36			RL3
Pyrene	1	EPA 8270m	648		234	ug/kg dry	2x	9040656	04/17/09 18:30	04/22/09 23:14		
Surrogate(s):	Fluorene-d10				110%		24 - 125 %	"			"	
	Pyrene-d10				93.6%		41 - 141 %	"			"	
	Benzo (a) pyrene-d1.	2			101%		38 - 143 %	"			"	

TestAmerica Portland





City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

# Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Note	es
PSD0460-08 (FO095474)			So	il		Samp	led: 04/08/	09 09:21			RL3
Dimethyl phthalate	EPA 8270m	ND		4900	ug/kg dry	50x	9040656	04/17/09 18:30	04/24/09 01:37		
Diethyl phthalate	"	ND		4900	"	"	"	"	"		
Di-n-butyl phthalate	"	ND		4900	"	"	"	"	"		
Butyl benzyl phthalate	"	ND		4900	"	"	"	"	"		
Bis(2-ethylhexyl)phthalate	"	10900		4900	"	"	"	"	"	В	1
Di-n-octyl phthalate	"	ND		4900	"	"	"	"	"		
Surrogate(s): 2-Fluorobiphenyl p-Terphenyl-d14				98.1% 107%		10 - 150 % 10 - 150 %	"			" Z.	3
PSD0460-09 (FO095475)			So	il		Samp	led: 04/08/	09 13:31			RL3
Dimethyl phthalate	EPA 8270m	ND		6370	ug/kg dry	50x	9040656	04/17/09 18:30	04/24/09 02:13		
Diethyl phthalate	"	ND		6370	"	"	"	"	"		
Di-n-butyl phthalate	"	ND		6370	"	"	"	"	"		
Butyl benzyl phthalate	"	ND		6370	"	"	"	"	"		
Bis(2-ethylhexyl)phthalate	"	19700		6370	"	"	"	"	"	В	1
Di-n-octyl phthalate	"	14400		6370	"	"	"	"	"		
Surrogate(s): 2-Fluorobiphenyl p-Terphenyl-d14				101% 111%		10 - 150 % 10 - 150 %	"			"	
PSD0460-10 (FO095476)			So	il		Samp	led: 04/08/	09 12:13			RL3
Dimethyl phthalate	EPA 8270m	ND		927	ug/kg dry	10x	9040656	04/17/09 18:30	04/28/09 18:12		
Diethyl phthalate	"	ND		927	"	"	"	"	"		
Di-n-butyl phthalate	"	ND		927	"	"	"	"	"		
Butyl benzyl phthalate	"	ND		927	"	"	"	"	"		
Bis(2-ethylhexyl)phthalate	"	1350		927	"	"	"	"	"	В	1
Di-n-octyl phthalate	"	ND		927	"	"	"	"	"		
Surrogate(s): 2-Fluorobiphenyl p-Terphenyl-d14				94.1% 113%		10 - 150 % 10 - 150 %	"			"	
PSD0460-11 (FO095477)			So	il		Samp	led: 04/08/	09 10:01			RL3
Dimethyl phthalate	EPA 8270m	ND		1510	ug/kg dry	20x	9040656	04/17/09 18:30	04/24/09 07:06		
Diethyl phthalate	"	ND		1510	"	"	"	"	"		
Di-n-butyl phthalate	"	ND		1510	"	"	"	"	"		
Butyl benzyl phthalate	"	ND		1510	"	"	"	"	"		
Bis(2-ethylhexyl)phthalate	"	3000		1510	"	"	"	"	"	В	1
Di-n-octyl phthalate	"	ND		1510	"	"	"	"	"		

TestAmerica Portland

Howard Holmes, Project Manager



**Portland Harbor** 

36238

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Report Created:

05/14/09 15:55



City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Project Number:

Portland, OR 97203 Project Manager: Jennifer Shackelford

# Phthalates per EPA 8270-SIM

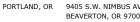
TestAmerica Portland

Project Name:

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PSD0460-11 (FO095477)			So	il		Samp	led: 04/08/	09 10:01			RL
Surrogate(s): 2-Fluorobip p-Terphenyl	-			98.6% 119%		10 - 150 % 10 - 150 %	20x		04/24	1/09 07:06 "	
PSD0460-12 (FO095478)	ı		So	il		Samp	led: 04/08/	09 10:36			RL3
Dimethyl phthalate	EPA 8270m	ND		11700	ug/kg dry	50x	9040656	04/17/09 18:30	04/24/09 02:50		
Diethyl phthalate	"	ND		11700	"	"	"	"	"		
Di-n-butyl phthalate	"	ND		11700	"	"	"	"	"		
Butyl benzyl phthalate	"	ND		11700	"	"	"	"	"		
Bis(2-ethylhexyl)phthalate	"	26100		11700	"	"	"	"	"	B1	
Di-n-octyl phthalate	"	ND		11700	"	"	"	"	"		
Surrogate(s): 2-Fluorobip	phenyl			106%		10 - 150 %	"			"	
p-Terpheny	l-d14			114%		10 - 150 %	"			"	

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.

Portland, OR 97203

Project Name:

**Portland Harbor** 

36238 Project Number: Project Manager:

Jennifer Shackelford

Report Created: 05/14/09 15:55

# Percent Dry Weight (Solids) per Standard Methods

TestAmerica Portland

					TCStAIII	erica Forti	and				
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-01	(FO095467)			Soil			Samp	oled: 04/07/	09 08:48		
% Solids		NCA SOP	67.2		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-02	(FO095468)			Soil			Samp	oled: 04/07/	09 09:48		
% Solids		NCA SOP	76.1		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-03	(FO095469)			Soil			Samp	oled: 04/07/	09 11:47		
% Solids		NCA SOP	69.8		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-04	(FO095470)			Soil			Samp	oled: 04/07/	09 13:11		
% Solids		NCA SOP	80.4		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-05	(FO095471)			Soil			Samp	oled: 04/07/	09 13:48		
% Solids		NCA SOP	70.5		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-06	(FO095472)			Soil			Samp	oled: 04/08/	09 07:52		
% Solids		NCA SOP	71.0		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-07	(FO095473)			Soil			Samp	oled: 04/08/	09 08:18		
% Solids		NCA SOP	69.4		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-08	(FO095474)			Soil			Samp	oled: 04/08/	09 09:21		
% Solids		NCA SOP	68.3		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-09	(FO095475)			Soil			Samp	oled: 04/08/	09 13:31		
% Solids		NCA SOP	52.5		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-10	(FO095476)			Soil			Samp	oled: 04/08/	09 12:13		
% Solids		NCA SOP	72.0		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-11	(FO095477)			Soil			Came	oled: 04/08/	00 10.01		

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City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. 36238 Report Created: Project Number: Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

# Percent Dry Weight (Solids) per Standard Methods

TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-11	(FO095477)			Soil			Sam	pled: 04/08/	09 10:01		
% Solids		NCA SOP	88.8		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-12	(FO095478)			Soil	[		Sam	pled: 04/08/	09 10:36		
% Solids		NCA SOP	28.6		0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	

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City of Portland Water Pollution Laboratory **Portland Harbor** 

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

Project Name:

# **Organic Carbon, Total (TOC)**

TestAmerica Connecticut

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-01	(FO095467)			Soil			Sam	pled: 04/07	/09 08:48		
Total Organic C Duplicates	arbon -	9060	29600	3.3	100	mg/Kg	1x	26574	04/21/09 14:07	04/21/09 14:07	
PSD0460-02	(FO095468)			Soil			Sam	pled: 04/07	/09 09:48		
Total Organic C Duplicates	arbon -	9060	15200	3.3	100	mg/Kg	1x	26574	04/21/09 14:20	04/21/09 14:20	
PSD0460-03	(FO095469)			Soil			Sam	pled: 04/07	/09 11:47		
Total Organic C Duplicates	arbon -	9060	25800	3.3	100	mg/Kg	1x	26574	04/21/09 14:34	04/21/09 14:34	
PSD0460-04	(FO095470)			Soil			Sam	pled: 04/07	/09 13:11		
Total Organic C Duplicates	arbon -	9060	64100	3.3	100	mg/Kg	1x	26574	04/21/09 14:48	04/21/09 14:48	
PSD0460-05	(FO095471)			Soil			Sam	pled: 04/07	/09 13:48		
Total Organic C Duplicates	arbon -	9060	36800	3.3	100	mg/Kg	1x	26574	04/21/09 15:16	04/21/09 15:16	
PSD0460-06	(FO095472)			Soil			Sam	pled: 04/08/	/09 07:52		
Total Organic C Duplicates	arbon -	9060	24700	3.3	100	mg/Kg	1x	26574	04/21/09 15:30	04/21/09 15:30	
PSD0460-07	(FO095473)			Soil			Sam	pled: 04/08/	/09 08:18		
Total Organic C Duplicates	arbon -	9060	28100	3.3	100	mg/Kg	1x	26574	04/21/09 15:44	04/21/09 15:44	
PSD0460-08	(FO095474)			Soil			Sam	pled: 04/08/	/09 09:21		
Total Organic C Duplicates	arbon -	9060	30000	3.3	100	mg/Kg	1x	26574	04/21/09 15:58	04/21/09 15:58	
PSD0460-09	(FO095475)			Soil			Sam	pled: 04/08/	/09 13:31		
Total Organic C Duplicates	arbon -	9060	56100	3.3	100	mg/Kg	1x	26574	04/21/09 16:12	04/21/09 16:12	
PSD0460-10	(FO095476)			Soil			Sam	pled: 04/08/	/09 12:13		
Total Organic C Duplicates	arbon -	9060	49500	3.3	100	mg/Kg	1x	26574	04/21/09 16:41	04/21/09 16:41	
				Soil							

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City of Portland Water Pollution Laboratory **Portland Harbor** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

# **Organic Carbon, Total (TOC)**

TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-11 (FO095477)			Soil			Samj	oled: 04/08/	09 10:01		
Total Organic Carbon - Duplicates	9060	54800	3.3	100	mg/Kg	1x	26574	04/21/09 16:55	04/21/09 16:55	
PSD0460-12 (FO095478)			Soil			Samj	oled: 04/08/	09 10:36		
Total Organic Carbon - Duplicates	9060	113000	3.3	100	mg/Kg	1x	26574	04/21/09 17:09	04/21/09 17:09	

TestAmerica Portland





City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.

Project Number: 36238 Report Created:

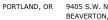
Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

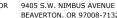
# Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results TestAmerica Portland

QC Batch	: 9040656	Soil Pre	paration M	ethod:	EPA :	3550										
Analyte		Method	Result	N	/IDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (904065	6-BLK1)									Ext	racted:	04/17/09 18	:30			
Acenaphthene		EPA 8270m	ND			13.4	ug/kg wet	1x							04/21/09 14:43	
Acenaphthylene		"	ND			13.4	"	"							"	
Anthracene		"	ND			13.4	"	"							"	
Benzo (a) anthracene		"	ND			13.4	"	"							"	
Benzo (a) pyrene		"	ND			13.4	"	"							"	
Benzo (b) fluoranther	ie	"	ND			13.4	"	"							"	
Benzo (ghi) perylene		"	ND			13.4	"	"							"	
Benzo (k) fluoranther	ie	"	ND			13.4	"	"							"	
Chrysene		"	ND			13.4	"	"							"	
Dibenzo (a,h) anthrac	ene	"	ND			13.4	"	"							"	
Fluoranthene		"	ND			13.4	"	"							"	
Fluorene		"	ND			13.4	"	"							"	
Indeno (1,2,3-cd) pyro	ene	"	ND			13.4	"	"							"	
Naphthalene		"	ND			13.4	"	"							"	
Phenanthrene		"	ND			13.4	"	"							"	
Pyrene		"	ND			13.4	"	"							"	
Surrogate(s):	Fluorene-d10		Recovery:	116%		Li	mits: 24-125%	"							04/21/09 14:43	
	Pyrene-d10			111%			41-141%	"							"	
	Benzo (a) pyrene-d12			111%			38-143%	"							"	
LCS (9040656-	·BS1)									Ext	racted:	04/17/09 18	:30			MNR
Acenaphthene		EPA 8270m	174			13.4	ug/kg wet	1x		166	105%	(33-139)			04/21/09 14:11	
Benzo (a) pyrene		"	162			13.4	"	"		"	97.5%	(45-149)			"	
Pyrene		"	153			13.4	"	"		"	92.3%	(39-138)			"	
Surrogate(s):	Fluorene-d10		Recovery:	122%		Li	mits: 24-125%	"							04/21/09 14:11	
	Pyrene-d10			115%			41-141%	"							"	
	Benzo (a) pyrene-d12			121%			38-143%	"							"	

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Howard Holmes, Project Manage





Spike % (Limits) % RPD

Extracted: 04/17/09 18:30

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City of Portland Water Pollution Laboratory

**Portland Harbor** Project Name:

6543 N. Burlington Ave. Portland, OR 97203

Blank (9040656-BLK1)

Analyte

Project Manager: Jennifer Shackelford

36238

Dil

Source

Report Created: 05/14/09 15:55

Notes

(Limits) Analyzed

# Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

Units

TestAmerica Portland

MRL

MDL\*

Result

Project Number:

QC Batch:	9040656	Soil Preparation Method:	EPA 3550
-----------	---------	--------------------------	----------

Method

Dimethyl phthalate		EPA 8270m	ND		26.8	ug/kg wet	1x	 				 04/22/09 14:19	
Diethyl phthalate		"	ND		26.8	"	"	 				 "	
Di-n-butyl phthalate		"	ND		26.8	"	"	 				 "	
Butyl benzyl phthala	nte	"	ND		26.8	"	"	 				 "	
Bis(2-ethylhexyl)ph	thalate	"	ND		26.8	"	"	 				 "	N1
Di-n-octyl phthalate		"	ND		26.8	"	"	 				 "	
Surrogate(s):	2-Fluorobiphenyl p-Terphenyl-d14		Recovery:	93.9% 112%	I	imits: 10-1509 10-150						04/22/09 17:22	
LCS (9040656	5-BS1)							Ext	racted:	04/17/09 18:	30		MNR
LCS (9040656 Dimethyl phthalate	5-BS1)	EPA 8270m	103		80.1	ug/kg wet	3x	 133	77.4%	(20-150)		 04/23/09 21:21	MNR
	5-BS1)	EPA 8270m	103 104		80.1 80.1	ug/kg wet	3x					 04/23/09 21:21	MNR
Dimethyl phthalate	,							133	77.4%	(20-150)		  	MNR
Dimethyl phthalate Diethyl phthalate	,	"	104		80.1	"	"	 133	77.4% 77.9%	(20-150)		"	MNK
Dimethyl phthalate Diethyl phthalate Di-n-butyl phthalate	ate	"	104 110		80.1 80.1	"	"	 133	77.4% 77.9% 83.2%	(20-150)		 "	MNR B
Dimethyl phthalate Diethyl phthalate Di-n-butyl phthalate Butyl benzyl phthala	nte thalate	" "	104 110 115		80.1 80.1 80.1	" "	"	 133	77.4% 77.9% 83.2% 86.7%	(20-150)	  	 " "	

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THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR

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City of Portland Water Pollution Laboratory Project Name: Portland Harbor

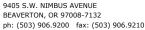
6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford05/14/09 15:55

Percent Dry Weight (Solids) per Standard Methods - Laboratory Quality Control Results  TestAmerica Portland										
QC Batch: 9040593 Soil Preparation Method: Dry Weight										
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike % (Limits) % (Limits) Analyzed Notes		
Duplicate (9040593-DUP1)	Duplicate (9040593-DUP1) QC Source: PSD0460-01 Extracted: 04/15/09 16:21									
% Solids	NCA SOP	67.0		0.0100 %	6 by Weight	1x	67.2	0.298% (20) 04/15/09 16:21		

TestAmerica Portland

Howard Holmes, Project Manager







City of Portland Water Pollution Laboratory Project Name: Portland Harbor

6543 N. Burlington Ave.

Project Number: 36238 Report Created:

Portland, OR 97203 Project Manager: Jennifer Shackelford 05/14/09 15:55

### Organic Carbon, Total (TOC) - Laboratory Quality Control Results TestAmerica Connecticut QC Batch: 26574 **Soil Preparation Method:** NA Spike % (Limits) % RPD MDL\* Source Analyte Method Result MRL Units Dil (Limits) Analyzed Notes LCS (220-26574-5) QC Source: Extracted: 04/21/09 12:23 Total Organic Carbon - Duplicates 9060 4487 3.3 100 mg/Kg 1x 3530 127% (28-172) 04/21/09 12:23 OC Source: Extracted: 04/21/09 12:30 Blank (220-26574-6) Total Organic Carbon - Duplicates 9060 ND 3.3 100 mg/Kg 1x 04/21/09 12:30 PSD0460-12 Extracted: 04/21/09 17:38 Matrix Spike (877612S) QC Source: Total Organic Carbon - Duplicates 9060 251900 3.3 100 mg/Kg 1x 113000 129000 108% (75-125) 04/21/09 17:38 Duplicate (877612X) QC Source: PSD0460-12 Extracted: 04/21/09 17:23 Total Organic Carbon - Duplicates 9060 116300 3.3 100 113000 04/21/09 17:23 mg/Kg 1x3% (20)

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Howard Holmes, Project Manager



**Portland Harbor** 

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City of Portland Water Pollution Laboratory Project Name:

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford05/14/09 15:55

### **Notes and Definitions**

## Report Specific Notes:

MNR

B - Analyte was detected in the associated Method Blank.

- Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank

No results were reported for the MS/MSD. The sample used for the MS/MSD required dilution due to the sample matrix. Because of
this, the spike compounds were diluted below the detection limit.

N1 - See case narrative.

RL3 - Reporting limit raised due to high concentrations of non-target analytes.

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.

## <u>Laboratory Reporting Conventions:</u>

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 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

# **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 S09-924-9200 FAX 924-9290, S03-903-9000 FAX 924-9290, 007.564-9200 EAV 563-9210

Work Order #: PSDOHLOD	TURNAROUND REQUEST	in Business Days *	Organic & Inorganic Analyses	Im Hydrocarbon Analyses	5 4 3 2 1 <1	] ] ] ]	OTHER Specify:	* Turnaround Requests less than standard may incur Rush Charges.	MATRIX # OF LOCATION/ TA (W, S, O) CONT. COMMENTS WO ID	\$ 3	5 3	5 3	5 3	5 3	5 3	5 3	N N	N N	N ()	FIRM: TAP TIME: 13-00	6. Ching THE 115/09	1 TEAMS. (18 CHAGE OF Z	TAL-1000(0408)
HAIN OF CUSTODY REPORT	1 / 1/	lates Lytic		36.238	PRESERVATIVE		REQUESTED ANALYSES												6	PA RECEIVED BY, (S. C. L.	RECEIVED BY: Myranne: Myranne	ist as bu UIC prajects wo low D	
CHAIN OF CU	INVOICE TO:		(A	P.O. NUMBER:	מאפ	- 6	V/	2	01 01 HY2	X X X 8480	8448 X X X	$ 1 47 \times  X  \times  X $	$ X  \times  X  \times  X $	1348 X X X	0.752 X X X X	18 X X X	$\times \times \times \times$	1331 X X X	213 X X X	FIRM CIFT of Portland TIME 12, C	DATE: K/13,	PAH/phydrde alist as dow	1
•	CLIENT CIFY of Furthernal	REPORT TO: Tonn for Sharkelking	ADDRESS: CONTROL OF CO	PHONE: FAX.	PROJECT NAME: C	PROJECT NIMBER	Juline Samp	SAMPLED BY:	CLIENT SAMPLE SAMPLING IDENTIFICATION DATE/TIME	FO095467 4/7/09 08		110 / 163	1311	471 (13	472 14/8/09 07	473 1 0818	1260 ) 474 /	(475) (3	21 \$ 924 9	RELEASED BY: KOOTE NOW PRINT NAME: KOJ 4 ALO OTE PRINT NAME: KOJ 4 ALO	100	ADDITIONAL REMARKS. (3) PURIL FROM PA)	

# **FestAmerica**

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

Work Order #: PSDCUM	TURNAROUND REQUEST	in Business Days *	Organic & Inogame Analyses	STD Petroleum Hydrocarbon Analyses	5 4 3 2 1 <1	]	OTHER Specify:	* Turnaround Requests less than standard may incur Rush Charges.	MATRIX # OF LOCATION/ TA (W. S. O) CONT. COMMENTS WO ID	(m)	3						PRAT 40 TIME 12: 0'B	DATE: 415/0/	S TEME: CASE ZOF Z	
CHAIN OF CUSTODY REPORT	INVOICE TO:	Charles (utle		PO. NUMBER: 3 & 2.38	PRESERVATIVE		REQUESTED ANALYSES										DATE: 7/3/ RECEIVED BY: 7/4 TIME: 72:00 PRINT NAME: 13%	TIME 16:05 PRINT NAME: MYLVANOW ENER PRINT	is for UIC projects	
	CLIENT: C, to of Portland	` ~	ADDRESS JENNIFE STACKELTS	PHONE: FAX:		700		51.	CLIENT SAMPLE SAMPLING H P C C C IDENTIFICATION DATE/TIME P S C C C C C C C C C C C C C C C C C C	X X X 1001 10/8/4 7 X X	x X X 1036 X X X			∞	6	01	RELEASED BY: CLISTE & WANT FIRM: (1, 1/2 of Continual PRINT NAME)	Beh	ADDITIONAL REMARKS.  (B) PURE USE PATIONALING (134	

# TestAmerica Portland Sample Receiving Checklist

Work	(Orde	er #:	PSDOYLO Rate/Time Received: 41309 @ 1605
			nd Project: City of Portland
			This Section: Yes No Yes No
Reside Quote	ual Ch	lorine	e Check Required: Quarantined:
Time	Zone: OT/EST	-	□CDT/CST □MDT/MST □PDT/PST □OTHER
			hecks: Temperature out of Range:  Not enough or No Ice
	oler #(: erature Dig	es:[	
N/A	Yes	No	Initials:
			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.
	À		4. Bottles received intact? If no, document on NOD.
	RAK		5. Sample is not multiphasic? If no, document on NOD.
	×		6. Proper Container and preservatives used? If no, document on NOD.
$\square$			7. pH of all samples checked and meet requirements? If no, document on NOD.
$\square$			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.
	*Z		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
		Á	14. Did samples require preservation with sodium thiosulfate?
			15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
<u>K</u>			16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
			<ul><li>17. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no. document on NOD and contact PM before proceeding.</li><li>18. Are analyses with short holding times received in hold?</li></ul>
	<u> </u>		19. Was Standard Turn Around (TAT) requested?
	$\overline{\not}$		20. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

# TestAmerica Portland Sample Receiving Checklist

Work Order #: **PSD0460** 

Login Check	s: Initials: <b>B</b> 提	
N/A Yes No	mittais.	
<b>X</b> -	<ul><li>21. Sufficient volume provided for all analysis? If no, document on NOD &amp; contact?</li><li>22. Sufficient volume provided for client requested MS/MSD or matrix duplicates? In no, document on NOD and contact PM.</li><li>23. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?</li></ul>	lf
	24. Were special log in instructions read and followed?	
_ 🕱 🗆	25. Were tests logged checked against the COC?	
$\Sigma$ $\square$ $\square$	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: BLE	
	0. Were the subcontracted samples/containers put in Sx fridge?	
	1. Were sample bottles and COC double checked for dissolved/filtered and to the	
<i>F</i> – –	2. Did the sample ID, Date, and Time from label match what was logged?  3. Were Foreign sample stickers affixed to each container and containers stored in preign fridge?	
	4. Were HF stickers affixed to each container, and containers stored in Sx fridge?	
Document any proform (NOD).	iems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy	<b>V</b>