Intergovernmental Agreement for Remedial Investigation and Source Control Measures

DEQ No. LQVC-NWR-03-10

# Outfall Basin 18 Inline Solids Investigation

Technical Memorandum No. OF 18-2 City of Portland Outfall Project ECSI No. 2425

July 2010

PREPARED BY





ENVIRONMENTAL SERVICES CITY OF PORTLAND working for clean rivers

# ENVIRONMENTAL SERVICES

1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 • Dan Saltzman, Commissioner • Dean Marriott, Director

TECHNICAL MEMORANDUM No. OF18-2

# **Outfall Basin 18 Inline Solids Investigation**

TO:	Karen Tarnow, Oregon Department of Environmental Quality (DEQ)
FROM:	Linda Scheffler, City of Portland, Bureau of Environmental Services (BES) 🔏 Dawn Sanders, BES 🌮
COPIES:	Kristine Koch, U.S. Environmental Protection Agency (EPA) Julia Fowler, GSI Water Solutions, Inc.
DATE:	July 20, 2010
SUBJECT:	Portland Harbor Source Investigation

## Introduction

This technical memorandum summarizes the results of the City of Portland source investigations of inline solids in the Outfall Basin 18 stormwater conveyance system between March 2007 and June 2009. In 2007 and 2008, the Lower Willamette Group (LWG) installed inline sediment traps in the Basin 18 conveyance system to evaluate stormwater discharges representative of this mixed use basin, which includes industrial and open space land uses (Anchor and Integral, 2007). Because the LWG sample location represented the majority of the basin, the City installed sediment traps in several subbasins upstream of the LWG sample location between 2007 and 2009 to provide additional information to assist with source tracing activities. The initial City and LWG sediment trap deployment periods were concurrent to allow for a comparison of the two data sets.

Due to limited sediment volume in the traps, the LWG and the initial City samples were not analyzed for all target constituents. The City redeployed traps in Basin 18 during the fall and winter of 2008-09 to address the source investigation data gaps that resulted from the limited sample volumes recovered during the City's 2007 sediment trap deployment.

The objectives of the City's source investigations in Basin 18 were to identify potential source areas for contaminants detected at elevated concentrations in the LWG sediment traps and to conduct a pilot study of different trap designs and bottle shapes to evaluate stormwater solids capture rates. The analytical results indicate that sources of polychlorinated biphenyls (PCBs), pesticides, and metals are present in Basin 18, and that pollutant concentrations were significantly higher in two of the four subbasins sampled by the City. Additionally, polycyclic aromatic hydrocarbons (PAHs) and phthalates are being discharged at low concentrations in one or more of the four areas; however, the relatively low detections do not indicate the presence of

Ph: 503-823-7740 Fax: 503-823-6995 • www.cleanriverspdx.org • Using recycled paper. • An Equal Opportunity Employer. For disability accommodation requests call 503-823-7740, Oregon Relay Service at 1-800-735-2900, or TDD 503-823-6868.

significant sources of these contaminants. The pilot study portion of the investigation was inconclusive in terms of capture rate comparisons, but a new trap design showed promise for use in small-diameter pipe applications (see Attachment A).

These investigations are part of the City's ongoing Remedial Investigation associated with the Portland Harbor City of Portland Outfalls Project being conducted pursuant to the August 13, 2003, Intergovernmental Agreement (IGA) between DEQ and the City. The data collected under these investigations support ongoing work by DEQ and the City to characterize and control discharges to the Basin 18 stormwater conveyance system.

# **Basin 18 Configuration and Background**

### **Basin Physical System**

Outfall 18 discharges to the west side of the Willamette River at approximately river mile 8.8. Figure 1 provides an overview of the Basin 18 stormwater conveyance system. Basin 18 is a 465-acre stormwater basin, including approximately 189 acres of industrial land, 7 acres of major transportation and 2 acres of residential land. The remainder of the drainage area land use is open space within Forest Park.

The stormwater conveyance system consists of two main trunk lines and five main branches. The main trunk lines include a 72-inch-diameter line extending from NW Yeon Avenue to the outfall and a 48-inch-diameter line along NW Yeon. The two trunk lines intersect at City manhole AMZ087. In addition to drainage from the NW Yeon trunk line and the five main branches, the 72-inch-diameter trunk line receives drainage from the Burlington Northern Railroad Lake Yard and the Gunderson Inc. facilities.

Four of the five main branches convey runoff from properties on the south side of NW Yeon as shown on Figure 1 and described below:

- Western Subbasin. This subbasin receives drainage primarily from Forest Park but also from a few industrial facilities and a small portion of NW St. Helens Road. The branch line converges with the west-central subbasin at manhole AND536 and with the 72-inch-diameter main trunk line at manhole AMZ087.
- West-Central Subbasin. This subbasin receives drainage from Forest Park, numerous industrial facilities, and from NW St. Helens. This branch line converges with the western subbasin at manhole AND536 and with the 72-inch-diameter main trunk line at manhole AMZ087.
- **East-Central Subbasin.** This subbasin receives drainage from industrial properties and NW 35<sup>th</sup> Avenue. The line joins the NW Yeon main trunk line at manhole AMZ099.
- Eastern Subbasin. This subbasin receives drainage from a few industrial facilities and NW 35<sup>th</sup> Avenue. The junction of this branch with the NW Yeon trunk line is at manhole AMZ102.

The fifth branch conveys drainage from NW Front Avenue and a small portion of the Gunderson site to the 72-inch main trunk line at manholes AMZ093 and AAT537. This branch is downgradient of the LWG sampling location; samples representative of discharges from this branch were not collected during this investigation.

#### **Previous Studies**

Elevated concentrations of PCBs, metals, pesticides, and phthalates were detected in surface sediment samples collected by the City in 2002 near Outfall 18 (CH2M Hill; 2004). Following an evaluation of the outfall sediment data, the City designated Basin 18 as a Priority 1 basin for source investigation. Priority 1 designations were assigned to basins where significantly elevated contaminant concentrations had been detected in sediment near the outfall and further investigation efforts were needed to determine if these contaminants were being discharged to the City system.

As part of a pilot project in 2003, the City collected inline solids samples from the Basin 18 conveyance system to evaluate the feasibility of using inline solids as a source investigation tool and to identify basins where additional source investigation may be warranted (CH2M Hill, 2005). The investigation results indicated the potential presence of contaminant sources within the basin.

The City conducted further inline solids sampling in Basin 18 in 2004, in conjunction with routine stormwater line cleaning activities in the west-central subbasin, in the vicinity of Container Management Services and Wilhelm Trucking. Results of this investigation indicated elevated concentrations of PCBs, metals, phthalates, and PAHs in solids in the City stormwater lines in the vicinity of these two facilities (BES, 2006).

Based on contaminant concentrations in Willamette River sediment samples, Outfall 18 is within a river reach identified by EPA as an area of potential concern for PCBs, copper, lead, zinc, tributyltin, DDT, PAHs and phthalates (EPA, 2005), and by the LWG for PCBs, aldrin, and DDT (Integral, 2007). In 2009, EPA and LWG identified the inriver area in the vicinity of Outfall 18 as an area to be evaluated further in the forthcoming Portland Harbor Feasibility Study (EPA, 2009).

#### **Potential Sources**

Upland facilities identified as potential sources include DEQ Cleanup Program sites, as listed in DEQ's Environmental Cleanup Site Information (ECSI) database, and facilities permitted by DEQ under the NPDES industrial stormwater discharge permit (1200Z) program due to stormwater exposures to industrial operations. These potential sources are depicted on Figure 1 and listed by subbasin in Table 1. The City delineated subbasin boundaries based on available site drainage information; as potential sources complete stormwater pathway investigations, subbasin boundaries may need revision to reflect additional drainage pathways.

# **LWG Sampling Activities**

The LWG installed a series of sediment traps during 2007-08 in the 72-inch main trunk line, just downstream of manhole AMZ088 as shown on Figure 1. The sampling location was chosen because it is representative of a combination of heavy industrial and open space land uses, and locations closer to the outfall may have been compromised by river backup into the conveyance system. This sampling location includes all known discharges to the basin with the exception of discharges from the Burlington Northern Railroad Lake Yard (ECSI #100), Gunderson (ECSI #1155), and catch basins along NW Front Avenue.

The first set of sediment traps was deployed from March to June 2007 (Anchor and Integral, 2007, 2008a). Because the sample volume was not sufficient to conduct all desired analyses, the sample

was analyzed only for PCB congeners, organochlorine pesticides, PAHs, phthalates, total organic carbon (TOC), and total solids.

The LWG redeployed sediment traps, in the same location, during the fall and winter of 2007-08 to collect additional data for the stormwater loading evaluation and to evaluate whether trap bottle size influences stormwater solids accumulation in the traps (Anchor and Integral, 2008b). The traps included standard traps, as used in the first deployment, as well as traps using a shorter bottle size.<sup>1</sup> Sediment was collected from the traps and submitted for analysis on December 20, 2007 (primary and duplicate samples from the standard apparatus), January 31, 2008 (tall sample bottle apparatus), and February 1, 2008 (short bottle apparatus). The samples obtained during this second round of sampling were of sufficient volume for all proposed analyses, including PCB congeners, organochlorine pesticides, chlorinated herbicides, PAHs, phthalates, selected semivolatile organic compounds (SVOCs), metals, TOC, and total solids. Sediment trap deployments and subsequent analyses are summarized on Table 2.

## **City Sampling Activities**

The two sampling periods, Spring 2007 and Fall 2008 through Spring 2009, are described below. Photographs of the sediment traps and inline solids sampling activities are provided in Attachment B. Field notes taken during sediment trap installation, monitoring, removal, and sample processing activities and notes from the collection of the inline solids samples are provided in Attachment C.

#### Spring 2007

The City's spring 2007 sampling activities were completed in accordance with the sampling and analysis plan (SAP) submitted to DEQ in April 2007 (BES, 2007). The SAP identified four sediment trap locations selected to represent discharges from the four main subbasins up-the-pipe from the LWG sample location and was designed to mirror the sampling and analytical procedures being implemented by LWG at the manhole AMZ088 location. The City installed two sediment traps at each of the four locations on March 14 and 15, 2007, as shown on Figure 1 and summarized below.

Subbasin	Trap #	Manhole (MH)	Description
Western	ST3	AND535	Upstream of MH in 42″ line
West-Central	ST4	AAT466	Downstream of MH in 48" line
East-Central	ST2	AAT557	Upstream of MH in 42" line
Eastern	ST1	AAT565	At MH invert between 12" incoming and 12" outgoing lines

The sediment traps were inspected monthly, and accumulated sediments were removed on June 19, 2007. One inline solids grab sample was obtained from the incoming 42-inch-diameter line (i.e., same location as the traps) during trap removal at the east-central subbasin location (MH

<sup>&</sup>lt;sup>1</sup> The LWG evaluation of the effect of bottle size on solids accumulation was inconclusive due to a sample compositing error that precluded the ability to compare sediment chemistry data for the two bottle sizes for identical deployment periods (Anchor and Integral, 2008b).

AAT557) to help fill anticipated data gaps resulting from low sample volumes. Approximately 0.1 to 0.7 inches of solids had accumulated in the trap bottles at the time of removal. In accordance with the BES Standard Operating Procedure 5.01b, "Sampling Stormwater Solids Using Inline Sediment Traps," field personnel filtered sediment bottle contents at the City's Water Pollution Control Laboratory to generate solids samples for laboratory analysis.

Sample volume for most of the samples was limited. Therefore, in accordance with the SAP, chemical analysis of the samples generally followed the LWG analytical program developed to prioritize analyses of potential risk drivers within Portland Harbor. Specifically, where sediment volumes were insufficient to conduct all proposed analyses, tests were conducted as feasible in the following order of priority: PCBs, TOC, percent solids, organochlorine pesticides, PAHs, phthalates, metals, herbicides, SVOCs and grain size. Due to the sample volume required for PCB congener analysis, sufficient volumes were not available at all locations to conduct this analysis as specified by the SAP. A decision was made to submit all samples for PCB Aroclor analysis so that PCB results would be generated for all locations and to facilitate evaluation of additional target analytes at two of the four locations. A summary of samples collected from each subbasin and the analyses conducted is provided in Table 2.

#### Fall 2008 through Spring 2009

The City redeployed sediment traps in Basin 18 to fill data gaps in the earlier data set and to evaluate solids capture rates of different bottle sizes and trap designs. Work was conducted in accordance with the SAP for the Winter 2009 Inline Sediment Trap Pilot Study, submitted to DEQ on December 18, 2008 (BES, 2008). The pilot study involved the design and installation of a new sediment trap model, and variations of the standard sediment trap, to evaluate how variables such as sediment trap design, bottle shape, and bottle aperture affect trapped solids volume. Sediment traps were placed at the same sampling stations used in 2007 and at one additional location, in the upstream portion of the east-central subbasin ("ST5", located upstream of manhole AAX261, in the 36-inch-diameter storm line entering the manhole from the east), as shown on Figure 1.

Four sediment traps were installed at each of the following locations: ST2, ST3, ST4, and ST5. At these locations, four different bottle types were deployed to increase solids volume captured and to evaluate capture rates of different bottle shapes. Because the small pipe diameter (12") impeded standard trap solids collection at location ST1 during the 2007 deployment, crews deployed a new "filter sock" trap for this investigation. The new trap has a lower profile and is angled into the flow, making it more conducive to smaller lines. It substitutes a two-chambered flow-through round stainless steel canister for the standard sample bottle, and material is removed from both chambers to consolidate solids for analysis. A summary of the pilot study sampling activities and performance of the different types of sediment traps is included in Attachment A.

The City installed the sediment traps at the five Basin 18 locations between October 30, 2008 and February 4, 2009. The sediment traps were inspected periodically during January through May 2009 to remove debris accumulated around the traps and to archive sample volumes as needed during the deployment. Final accumulated sediments were removed from all of the traps between June 9 and June 11, 2009, filtered<sup>2</sup> in accordance with BES Field Operations Standard

<sup>&</sup>lt;sup>2</sup> Solids from ST1 were not filtered since the trap design allows water to pass through the trap, resulting in a sample with lower water content than the standard trap design.

Operating Procedure 5.01b "Sampling Stormwater Solids Using Inline Sediment Traps", and submitted for chemical analysis.

During trap removals at location ST5, the City collected one grab sample of inline solids from the 36-inch-diameter line, downstream of manhole AAX261 and the connections from two laterals discharging from the Wilhelm Trucking facility. Sediment traps could not be placed at this location due to debris accumulation in the line, and therefore were placed upstream of the manhole and the Wilhelm Trucking facility connections.

For some of the sample locations, accumulated sediment volume in the traps was insufficient to conduct all proposed analyses; in these cases, analyses were conducted as feasible in the order of priority for each location as established in the SAP (based on the results of the City's 2007 sediment sampling in Basin 18). The samples collected and analyses conducted on each sample are summarized in Table 2.

## Summary of Results

Tables 3 and 4 summarize the laboratory analytical results for the City and LWG solids samples and include the Portland Harbor Joint Source Control Strategy (JSCS) screening level values (SLVs) for Bioaccumulation and Toxicity (DEQ/EPA, 2005). The total PCBs, pesticides (total DDx<sup>3</sup>, total chlordanes, and heptachlor) and metals (cadmium, chromium, copper, lead, and zinc) concentrations are displayed on Figures 2 through 4. The laboratory reports and data review memoranda for the City samples are provided in Attachment D.

The chemical analytical results for the LWG and City samples are summarized as follows:

#### PCBs:

- PCBs were detected at concentrations exceeding JSCS Bioaccumulation and/or Toxicity SLVs in the 2007 and 2009 samples from the west- and east-central subbasins and the LWG sample location. A comparison of these concentrations from concurrent deployments indicates that upland contaminant discharges to the west- and east-central subbasins could account for concentrations observed in the LWG sample.
- PCBs were not detected in the western subbasin samples from 2007 and 2009. In the eastern subbasin, PCBs were not detected in the 2007 sample. There was insufficient volume to analyze PCBs in the 2009 sample.
- In the City samples, PCB Aroclors 1248 and 1260 were the primary Aroclors detected. The LWG samples were not analyzed for PCB Aroclors.

#### **Organochlorine Pesticides:**

• The City pesticide data for the 2007 samples indicated the presence of total DDx and other pesticides (including aldrin, total chlordane, and heptachlor) sources in the west- and east-central subbasins. A comparison of concentrations observed in these subbasins during the concurrent LWG sediment trap deployment in 2007 supports that upland contaminant discharges to these subbasins may account for concentrations observed in the LWG sample.

<sup>&</sup>lt;sup>3</sup> Total DDx is the sum of total DDD, DDE, and DDT.

- Pesticides were not analyzed in the 2007 City samples from the eastern and western subbasins. The 2009 City samples from the eastern and western subbasins had relatively low pesticide concentrations.
- Pesticide concentrations in the 2009 samples from the west- and east-central subbasins were similar to the concentrations in the spring 2007 samples from the same subbasins and exceed JSCS Toxicity and/or Bioaccumulation SLVs.
- Total DDx concentrations for the two locations sampled within the east-central subbasin were similar, while the downstream location had higher concentrations of total chlordane and heptachlor, indicating potential pesticides sources in the upper and lower portions of the subbasin.

#### **Metals:**

- Samples from the west- and east-central subbasins exceeded JSCS Toxicity SLVs for arsenic, cadmium, chromium, copper, lead, manganese, nickel, and zinc. Samples from the western subbasin did not exceed JSCS Toxicity SLVs for metals. There was insufficient volume to analyze for metals in the sample from the eastern subbasin.
- In the east-central subbasin, most metals concentrations were higher at the upgradient sample location indicating a potential source in the upper portion of the subbasin.
- While some metals results exceed SLVs, almost all were within an order-of-magnitude of SLVs.

#### PAHs:

- In the City samples, few individual PAHs were detected in excess of the JSCS SLVs, and detections were within one order-of-magnitude of the SLVs. While a JSCS screening level for total PAH does not exist, total PAH concentrations in all City samples collected from the western, west-central and east-central subbasins are considered low. There was insufficient volume to analyze for PAHs in the eastern subbasin samples.
- Concentrations of several individual PAHs exceeded JSCS SLVs in the LWG 2007 sample, but all were within an order-of-magnitude of JSCS SLVs, with the exception of indeno(1,2,3-cd)pyrene. No individual PAHs were detected in excess of the SLVs in the subsequent LWG samples. The total PAH concentration in the July 2007 sample was higher than in the subsequent LWG samples and similar to total PAH concentrations in LWG sediment trap samples from other industrial basins (BES, 2010a).

#### Phthalates:

• The only phthalate detected in any of the samples at somewhat elevated concentrations was bis(2-ethylhexyl)phthalate (BEHP). BEHP was detected at relatively comparable concentrations in the City samples from the west- and east-central subbasins and in the July 2007 LWG sample (concentrations in the subsequent LWG samples were lower). Although the BEHP concentrations in these samples are considered slightly elevated relative to SLVs, the data as a whole do not indicate the presence of significant uncontrolled BEHP sources within the basin.

Method reporting limits (MRLs) for some City and LWG samples exceeded JSCS Toxicity SLVs for individual phthalates.

#### Chlorinated Herbicides:

- One or more samples collected from the LWG sampling location and from the western, westcentral, and east-central subbasins were analyzed for herbicides. Herbicides were not detected in any of the analyzed samples.
- MRLs were elevated for herbicides analysis of the sample collected from the east-central subbasin.

## **Data Evaluation and Potential Sources**

Due to data gaps that resulted from the City's 2007 subbasin deployments, traps were redeployed in 2009. Where sample volume was sufficient, analyses run on subbasin samples in 2007 were repeated in 2009, allowing for a potential comparison of concentrations over time to evaluate whether contaminant sources have been controlled. However, available paired data are limited and clear trends are not apparent.

The primary objective of the City's sediment trap deployment in 2007 was to compare subbasin data to the data collected by the LWG from the broader drainage area in order to identify subbasins where further source tracing and/or control was needed for specific contaminants of interest. While the comparison of 2007 and 2009 subbasin data did not indicate whether contaminant sources are being controlled (given the limited availability of paired data), an evaluation of the collective data sets from each subbasin in the context of known potential sources (see Table 1) was conducted to identify areas where further work is needed by the City and/or DEQ to locate, characterize, or control additional sources, as discussed below.

#### Western Subbasin

Sediment trap concentrations for all contaminants were low. Three DEQ Cleanup sites are present in this subbasin. Two are in the process of evaluating contaminant discharges via the stormwater pathway (Christenson Oil – ECSI #2426 and Shell/Texaco Terminal – ECSI #169). The third, McWhorter Inc. (ECSI #135), did not evaluate the stormwater pathway but has been remediated under DEQ oversight. No further source tracing is needed in this subbasin at this time.

#### West-central Subbasin

The results indicate the presence of potentially significant uncontrolled sources of PCBs and pesticides in this subbasin. In 2004, the City conducted a source investigation in the west-central subbasin that identified two sites now in the DEQ Cleanup program (BES, 2006); Container Management Services (ECSI # 4784) and Wilhelm Trucking (ECSI #69) are both in the process of evaluating contaminant discharges via the stormwater pathway. The City removed contaminated solids from the storm system adjacent to these sites as part of the 2004 investigation. Elevated concentrations of PCBs and pesticides in the 2007 and 2009 sediment traps support that there are current sources in the subbasin.

A preliminary review of data collected by Container Management and provided by DEQ indicates that pesticides (including DDx and chlordanes) and PCBs are present in erodible soils and catch basin solids (DEQ, 2010). In addition, a small portion of the Univar site (Van Waters & Rogers; ECSI #330) discharges to this subbasin. Site COIs include lead and pesticides and a stormwater pathway evaluation has been initiated at this site under EPA oversight. Data

collected by all of these sites will be reviewed to determine whether additional source identification efforts are needed in this subbasin.

#### **East-central Subbasin**

Results from the east-central subbasin are similar to those from the west-central subbasin, with the exception of metals, which are generally higher in this subbasin. Concentrations indicate the presence of potentially significant uncontrolled sources of PCBs, pesticides, and metals. As part of the 2003 pilot study investigation, an inline solids sample was collected from this subbasin at the same location as the City sediment trap deployments. PCBs, pesticides, and metals concentrations were elevated and were the highest of the six locations sampled in Basin 18 (CH2M Hill, 2005). The subbasin may include historic or current contributions from sources in the adjacent west-central subbasin (e.g., Container Management) as a result of historic connections, drainage patterns, and offsite tracking of contaminants. There are also multiple known sources within the subbasin, as summarized below.

- ANRFS Holdings Inc./ABF Freight Systems, Inc. (ECSI #1820): Site contaminants of interest (COIs) include PCBs and metals. The site was evaluated by DEQ in 2007 during pilot site discovery efforts and was asked to clean out all site stormwater lines based on detections of PCBs and metals (DEQ, 2008a). Pesticides were not detected. The status of the requested line cleanout is unknown.
- Carson Oil (ECSI #1405): Site COIs include PCBs and metals. This site was evaluated during the 2007 DEQ site discovery efforts and requested to enter the Cleanup program based on detections of PCBs and phthalates (DEQ, 2008b). Pesticides were not detected. Carson Oil declined to enter the program but has informed DEQ that it is working independently to address stormwater concerns.
- Columbia American Plating (CAP; ECSI #29): Site COIs include PCBs and metals. A stormwater pathway evaluation is underway at this site under a Consent Decree between DEQ and the new property owner. Investigation of the pathway has included collection of solids samples in the onsite and adjacent City stormwater conveyance systems. Data confirm that the site is a source of PCBs and metals to the City system (O'Gara, 2009). Pesticides have not been detected in site samples to date, though some detection limits were elevated. A portion of the site drainage system has been disconnected from the City system and site redevelopment under the City Stormwater Manual, which requires stormwater treatment, is pending.
- Container Recovery Inc. (ECSI #4015): Site COIs include PCBs and metals. This site was
  evaluated during the 2007 DEQ site discovery efforts and requested to enter the Cleanup
  program based on detections of PCBs, metals, PAHs and phthalates (DEQ, 2008c). Pesticides
  were not detected. Container Recovery declined to enter the program but has informed DEQ
  that it is working independently to address stormwater concerns.
- Wilhelm Trucking (ECSI #69): Site COIs include lead. The site has entered the DEQ Cleanup program to evaluate the stormwater pathway but data are not yet available. Stormwater solids sample analyses will include PCBs, metals, and pesticides.
- Univar (Van Waters & Rogers; ECSI #330): Site COIs include lead and pesticides. A stormwater pathway evaluation has been initiated at this site under EPA oversight. Samples of stormwater and stormwater solids will be collected from the City system in the vicinity of the site to assess the potential for site discharges to be a source to Basin 18. The City provided

comments to EPA that proposed data collection should include sampling and analysis of site discharges (BES, 2010b). Data will be reviewed as they become available to inform the City's understanding of sources in this subbasin.

#### Eastern Subbasin

Sediment trap sample volumes in this subbasin were low, resulting in limited chemical analyses (PCBs and pesticides). PCBs were not detected and pesticides concentrations were low. An inline solids sample was collected by the City in 2003 that represented the eastern subbasin and a portion of drainage from NW Yeon (CH2M Hill, 2005). Though detection limits were elevated for some analyses, results did not indicate that significant sources were discharging to the subbasin.

The subbasin includes three inactive DEQ Cleanup sites: Ashland Chemical/Hill Investment (ECSI #1076), Owens Corning/Trumbull Asphalt (ECSI #1160), and Schnitzer Investment (ECSI #2424). DEQ evaluated catch basin solids samples collected from the Ashland Chemical and Owens Corning sites as part of the 2007 site discovery program. DEQ requested Ashland Chemical to clean out their storm system based on detected concentrations of PCBs, metals, and phthalates (DEQ, 2008d). Facility operations were relocated in 2008 and the system was cleaned before vacating the property. In response to detections of PCBs, metals, and PAHs at Owens Corning, DEQ requested that the site enter into a Cleanup agreement to conduct a stormwater evaluation (DEQ, 2008e). The site declined to enter the DEQ Voluntary Cleanup Program but has been working with the City Industrial Stormwater Program to continue evaluating and implementing BMPs under the NPDES 1200-Z permit.

## **Conclusions and Next Steps**

The analytical data for the inline solids samples collected by the City and the LWG indicate the potential presence of uncontrolled PCBs, pesticides, and metals sources within Basin 18. Specifically, the City investigations in subbasins upstream of the LWG sampling location indicate sources of these contaminants in the west-central and east-central subbasins. Consistent with the findings of the 2003 inline solids investigation conducted by the City in Basin 18, the 2007 – 2009 solids sampling results do not indicate that contaminated solids are being discharged to the western and eastern subbasins.

Known sources likely account for pollutant concentrations observed in the west-central and eastcentral subbasins. The City has identified the following next steps for site source identification and control in these areas.

#### West -Central Subbasin:

- 1. Coordinate with DEQ on the review of work plans and reports related to the stormwater pathway evaluations at the Container Management and Wilhelm sites. Evaluate data collected to characterize site discharges to determine whether additional source identification is needed in this subbasin.
- 2. Work with DEQ to ensure that the Container Management and Wilhelm sites evaluate and address known offsite migration of contaminants to the City stormwater conveyance system. The City last cleaned the adjacent lines in 2004; sediment trap data indicate that additional line cleaning may be warranted to remove contaminated solids.

3. Coordinate with EPA on the Univar stormwater pathway evaluation to review characterization data and source control concerns relevant to the west-central subbasin.

#### **East-Central Subbasin:**

- 1. Coordinate with DEQ and EPA on the review of work plans and reports related to the stormwater pathway evaluations at the CAP, Wilhelm, and Univar sites. Evaluate data collected to characterize site discharges to determine whether additional source identification is needed in this subbasin.
- 2. In 2009, the CAP site investigated and cleaned a portion of the City storm system in this subbasin. Results indicated the presence of contaminated solids in the system in the vicinity of the site. To identify the nature and extent of contaminated solids in the City line, the City collected and analyzed inline solids from a number of locations above and below CAP connections. Data have been provided to DEQ and the City has initiated line cleaning to remove contaminated solids. Further discussions are needed with DEQ and the current owner of CAP to evaluate respective responsibilities for line cleaning costs and additional monitoring in this subbasin.

Stormwater pathway evaluations either are in progress or are in the planning stages at numerous DEQ cleanup sites within Basin 18. Once source control evaluations and measures have been completed at identified cleanup sites, the City anticipates collecting additional data to determine the need for any further source tracing and/or source control activities in the basin.

## References

- Anchor and Integral. 2007. Round 3A Upland Stormwater Sampling Field Sampling Report. Prepared for the Lower Willamette Group by Anchor Environmental, LLC and Integral Consulting, Inc. November 30, 2007.
- Anchor and Integral. 2008a. Round 3B Upland Stormwater Sampling Field Sampling Report. Prepared for the Lower Willamette Group by Anchor Environmental, LLC and Integral Consulting, Inc. June 13, 2008.
- Anchor and Integral. 2008b. Round 3A and 3B Stormwater Data Report. Prepared for the Lower Willamette Group by Anchor Environmental, LLC and Integral Consulting, Inc. September 2008.
- BES. 2006. Inline Solids Sampling in the Vicinity of Container Management Services and Wilhelm Trucking Co. Technical Memorandum No. OF18-1. City of Portland, Bureau of Environmental Services. March 21, 2006.
- BES. 2007. City of Portland Outfalls Project, Additional City Inline Sediment Trap Sampling and Analysis Plan to Supplement the LWG Stormwater Sampling Program. Letter to Tom Roick (DEQ) from Dawn Sanders (BES). April 26, 2007.
- BES. 2008. City of Portland Outfalls Project, Winter 2009 Inline Sediment Trap Pilot Study Sampling and Analysis Plan. Letter to Karen Tarnow (DEQ) from Linda Scheffler (BES). December 18, 2008.
- BES. 2010a. City of Portland Outfall Project. ECSI No. 2425. Stormwater Evaluation Report. February 2010.

- BES. 2010b. City Comments on the Final Stormwater Pathway Investigation Work Plan (March 29, 2010) and the Video Survey and Line Cleaning Work Plan (April 2, 2010), Univar USA, Inc. Portland, Oregon. Letter to Holly Arrigoni (EPA) from Linda Scheffler (BES). April 28, 2010.
- CH2M Hill. 2004. Phase 1 Data Evaluation Report and Phase 2 Work Planning for City of Portland Outfall 18, Source Control Pilot Project. Prepared for the City of Portland, Bureau of Environmental Services. April 2004.
- CH2M Hill. 2005. Data Evaluation Report. Inline Solids in Basins M-1 and 18. Prepared for the City of Portland, Bureau of Environmental Services, Portland Harbor Source Control Project. December 2005.
- DEQ. 2008a. Catch Basin Sediment Sampling Results and Findings, ABF, ECSI #1820. Letter to Corey Athens (ABF Freight System, Inc.) from Keith Johnson (DEQ). May 14, 2008.
- DEQ. 2008b. Catch Basin Sediment Sampling Results and Findings, Carson Oil, ECSI #1405. Letter to Sandra Gaylord (Carson Oil Co., Inc.) from Keith Johnson (DEQ). May 14, 2008.
- DEQ. 2008c. Catch Basin Sediment Sampling Results and Findings, Container Recovery, ECSI #4015. Letter to John Fletcher (Container Recovery, Inc.) from Keith Johnson (DEQ). May 14, 2008.
- DEQ. 2008d. Catch Basin Sediment Sampling Results and Findings, Ashland Chemical, ECSI #1076. Letter to P.J. Sigler (Ashland Distribution Company) from Keith Johnson (DEQ). May 14, 2008.
- DEQ. 2008e. Catch Basin Sediment Sampling Results and Findings, Owens Corning Yeon, ECSI #1160. Letter to Devlin Gonor (Owens Corning) from Keith Johnson (DEQ). May 14, 2008.
- DEQ. 2010. Email from Jim Orr (DEQ) to Linda Scheffler (BES) re: Soil and Sediment Data from Container Management. April 1, 2010.
- DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005 (updated July 2007).
- EPA. 2005. Portland Harbor RI/FS, Identification of Round 3 Data Gaps. Letter from Chip Humphrey and Eric Blischke (EPA) to Jim McKenna (Port of Portland and Lower Willamette Group) and Robert Wyatt (Northwest Natural and Lower Willamette Group). December 2, 2005.
- 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.
- Integral. 2007. Portland Harbor RI/FS Comprehensive Round 2 Site Characterization Summary and Data Gaps Analysis Report. Prepared for the Lower Willamette Group. Prepared by Integral Consulting Inc. Windward Environmental LLC Kennedy/Jenks Consultants Anchor Environmental L.L.C. February 2007.

O'Gara. 2009. On-site stormwater sewer cleanout, former Columbia American Plating site. Letter from Tim O'Gara to Mark Pugh, DEQ. September 29, 2009.

#### Tables

- Table 1 Summary of Potential Upland Sources in Subbasins of Basin 18
- Table 2 Summary of Basin Inline Solids Sample Collection and Analysis
- Table 3 Summary of Chemical Analytical Results, Inline Solids Samples, Basin 18
- Table 4 Summary of Polychlorinated Biphenyl Congener Analytical Results, LWG Sediment Trap Solids Sample, Outfall Basin 18

#### Figures

Figure 1 – Outfall 18 Drainage Basin Overview

Figure 2 – Basin 18 Inline Solids – Total PCBs

Figure 3 – Basin 18 Inline Solids – Pesticides (Total DDx, Total Chlordane, and Heptachlor)

Figure 4 - Basin 18 Inline Solids - Metals (Cd, Cr, Cu, Pb, and Zn)

#### Attachments

Attachment A – City of Portland Outfalls Project Winter 2009 Inline Sediment Trap Pilot Study Summary Report

Attachment B – Field Photographs

Attachment C - Field Notes

Attachment D – Laboratory Results

#### Table 1. Summary of Potential Upland Sources in Subbasins of Basin 18

		Inf	ormation or	Potential Upland Sources (DEQ Cleanup Sites and NPDES 1200Z Permit Sites	s)	
Subbasin	Potential Upland Sources	DEQ Cleanup (ECSI) Site	NPDES 1200Z Permitted Site <sup>(1)</sup>	Site Contaminants of Interest <sup>(2)</sup>	DEQ Cleanup Program Status	Site Stormwater Pathway Evaluated Under DEQ Oversight?
	Christenson Oil (ECSI #2426)	Х	Х	Cadmium, copper, lead, mercury, zinc, PAHs, VOCs, TPH	Active	In process
Western	McWhorter Inc. (ECSI #135)	Х		VOCs, SVOCs, PAHs, TPH, phthalates	Active	In process
	Shell/Texaco Terminal (ECSI #169)	Х	Х	PAHs, VOCs, TPH	Active	In process
	Container Management Services (ECSI #4784)	Х	Х	PCBs, lead, mercury, zinc, PAHs, PCBs, TPH	Active	In process
West-Central	Wilhelm Trucking (ECSI #69)	Х	Х	Lead	Active	In process
	Univar (Van Waters & Rogers) (ECSI #330)	Х		Lead, pesticides, TPH, VOCs	Active (under EPA oversight)	In process
	ANRFS / ABF Freight Systems / ANRFS Holdings Inc. (ECSI #1820)	Х	Х	Arsenic, chromium, copper, zinc, PCBs, PAHs, BEHP	Inactive	No
	Carson Oil (ECSI #1405)	Х	Х	VOCs, PAHs, TPH, arsenic, chromium, copper, zinc, PCBs, BEHP	Inactive	No
	Columbia American Plating (ECSI #29)	Х		Lead, PCBs, VOCs, SVOCs	Active	In process
East-Central	Container Recovery Inc. (ECSI #4015)	Х	Х	Cadmium, lead, zinc, PAHs, PCBs, phthalates	Inactive	No
	Magnus / Wilhelm Trucking (ECSI #69)	Х	Х	Lead	Active	In process
	MRP Environmental <sup>(3)</sup>		Х	(Site not listed in Table 4.4-4 of Draft RI Report)	N/A	N/A
	Univar (Van Waters & Rogers) (ECSI #330)	Х		Lead, pesticides, TPH, VOCs	Active (under EPA oversight)	In process
	Ashland Chemical / Hill Investment (ECSI #1076)	Х		Arsenic, chromium, copper, zinc, PCBs, PAHs, BEHP	Inactive	No
Eastern	Owens Corning / Trumbull Asphalt (ECSI #1160)	Х	Х	PAHs, PCBs, phthalates, arsenic, chromium, copper, zinc	Inactive	No
	Schnitzer Investment (ECSI #2424)	Х		VOCs, SVOCs, metals	Inactive	No
0.1	Burlington Northern Railroad Lake Yard (ECSI #100) / Pacific Rail Services	Х	Х	Antimony, arsenic, cadmium, chromium, copper, mercury, selenium, zinc, PAHs, PCBs, phenols, TPH, VOCs, sodium cyanide, ethylene glycol, creosote	Active	In process
Other	Gunderson LLC (ECSI #1155)	Х	Х	TPH, butyltins, PCBs, phthalates, arsenic, copper, chromium, zinc	Active	In process
	Texaco/Equilon Pipeline (ECSI #2117) <sup>(4)</sup>	Х		PAHs, VOCs, TPH	Inactive	N/A

Notes:

N/A = not applicable.

<sup>(1)</sup> Except as noted, reference for NPDES 1200Z permit holders is *BES Industrial Stormwater, Portland Harbor Permits – Sorted by Outfall, Report Date: 10/23/09.* NPDES 1200Z permits allow discharges of permitted analytes up to the designated benchmark concentrations. NPDES 1200Z permit analytes and benchmarks include copper (100 ug/L), lead (400 ug/L), and zinc (600 ug/L).

<sup>(2)</sup> Contaminants of interest (COI) for DEQ ECSI sites identified in Table 4.4-4 of the *Portland Harbor RI/FS Remedial investigation Report Draft* (Integral Consulting and others, 2009). The listing of "TPH" as a COI implies that PAHs are COIs because TPH consists of PAHs in addition to other compounds.

<sup>(3)</sup> Company vacated the premises in March 2010.

<sup>(4)</sup> This site is underground (i.e., consists of a pipeline) and had no stormwater pathway other than potential infiltration from the pipeline to subsurface utilities.

Table 2. Summary of Basin 18 Inline Solids Sample Collection and Analyse	s
--	---

Data Source	Loca	tion	Sample Date	Sedimer Deploy	-				An	alytical Tes	ting <sup>(1)</sup>			
	Subbasin	Manhole ID#	Date	Season	Period (Days)	PCB Congeners	Total Solids	тос	Pesticides	SVOCs	PAHs & Phthalates	Metals	Herbicides	PCB Aroclors
			07/02/07	Mar – Jul	109	Х	Х	X	X		Х			
LWG Round 3A and	Downstream/		12/20/07	Nov – Dec	38 (3)	Х	Х	X	Х		Х	Х	Х	
3B Stormwater	Main Trunk	AMZ088	12/20/07	Nov – Dec	38 (3)	Х	Х	X	X		Х	X	Х	
Sampling <sup>(2)</sup>	Line		01/31/08	Nov – Jan	80 (3)	Х	Х	X	X		Х	X	Х	
			02/01/08	Nov – Feb	81 (3)	Х	Х	X	X		Х	X	Х	
	Western	AND535 (ST3)	06/20/07	Mar – Jun	97		Х	X						Х
	Western	AND335 (513)	06/09/09	Dec – Jun	182		Х	X	X		Х	X	Х	Х
	West-Central	AAT466 (ST4)	06/20/07	Mar – Jun	97		Х	X	X	Х	Х	X		Х
	west-Central	AA1400 (514)	06/10/09	Dec – June	183		Х	X	X		Х	X	Х	Х
			06/19/07	Mar – Jun	96		Х	X	X	Х	Х			Х
City Inline Solids Source		AAT557 (ST2)	06/19/07 (Inline Grab)	NA	NA		Х	x	Х	Х	Х	X	Х	Х
Investigations	East-Central		06/09/09	Oct – Jun	222		Х	X	X		Х	X		Х
		AAX261 (ST5)	06/04/09 (Inline Grab)	NA	NA		Х	х	X	Х	Х	X	Х	Х
			06/10/09	Dec – Jun	183		Х	X	Х		Х	X		Х
	Eastern	AAT565 (ST1)	06/19/07	Mar – Jun	97		Х	X						Х
		AA1303 (311)	06/11/09	Feb – Jun	127		Х	X	Х					

Notes:

NA = not applicable (inline grab samples)

(1) PCBs = polychlorinated biphenyls; TOC = total organic carbon; pesticides = organochlorine pesticides, SVOCs = semivolatile organic compounds; PAHs = polycyclic aromatic hydrocarbons; herbicides = chlorinated herbicides

(2) Refer to Anchor and Integral, 2008b. Round 3A and 3B Stormwater Data Report.

(3) Deployment period calculated based on a sediment trap deployment date of 11/12/07, as indicated in the Round 3B Upland Stormwater Sampling Field Sampling Report (Anchor and Integral, 2008a).

#### Table 3 Summary of Chemical Analytical Results Inline Solids Samples Outfall Basin 18

Outfall Basin 18				LWG Samples <sup>(1)</sup>			1						City Samples							
			1	W Yeon Trunk Lin	10			Western Subbasin		West-Centr	al Subbasin			East-Central Subbas	in		Eastern Su	bbasin		
		Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Inline Solids Grab	Sediment Trap Solids	Sediment Trap Solids	Inline Solids Grab	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		ISCS <sup>(2)</sup>
				Manhole AMZ088			ST3: FO070808 Manhole AND535	ST3: FO095694 Manhole AND535	ST3: FO095697 Manhole AND535	ST4: FO070809 Manhole AAT466	ST4: FO095695 Manhole AAT466	ST5: FO095671 Manhole AAX261	ST5: FO095696 Manhole AAX261	ST2: FO070806 Manhole AAT557	ST2: FO070807 Manhole AAT557	ST2: FO095693 manhole AAT557	ST1: FO070805 Manhole AAT565	ST1: FO095692 Manhole AAT565		ISCS <sup>(3)</sup> ng Level Value
		Manhole AMZ088	Manhole AMZ088	Field Duplicate	Manhole AMZ088	Manhole AMZ088	Upstream of manhole in 42" line	Upstream of manhole in 42" line	Field Duplicate	Downstream of manhole in 48" line	Downstream of manhole in 48" line	Downstream of manhole in 42" line	Upstream of manhole in 36" line	eUpstream of manhole in 42" line	Upstream of manhole in 42" line	<ul> <li>Upstream of Manhole in 42" line</li> </ul>	In manhole, adjacent to catch basin lateral	1 Upstream of manhole in 12" line		
Class Analyte	Units	7/2/2007	12/20/2007	12/20/2007	1/31/2008	2/1/2008	6/20/2007	6/9/2009	6/9/2009	6/20/2007	6/10/2009	6/4/2009	6/10/2009	6/19/2007	6/19/2007	6/9/2009	6/19/2007	6/11/2009	(Toxicity)	(Bioaccumulation
Total Organic Carbon (ASTM D4129-82M) TOC	%	3.72	3.71	4.19	6.47	4.66	3.56	1.37	1.98	5.61	4	0.0786	9.06	10.6	9.11	5.22	NA	16.9		
Total Solids (EPA 160.3M)																				
TS	%	39.5	54.7 T	50.5	45	54.1	59.1	56.5	NA	66.3	65.9	63.5	59.7	54	7.18	45.9	54.7	39.2		
Grain Size (ASTM D421/422)																				
Gravel (>4750 μm) Coarse Sand (4750-2000 μm)	Fract % Fract %	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	0.7	1.1 3.0	NA NA	0.1 0.3	6.2	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		
Medium Sand (2000-425 μm)	Fract %	NA	NA	NA	NA	NA	NA	8.3	7.4	NA	9.0	21.3	NA	NA	NA	NA	NA	NA		
Fine Sand (425-75 μm) Silt (3.2-75 μm)	Fract % Fract %	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	23.6 58.1	23.6 56.5	NA NA	32.2 47.3	61.7 5.0	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		
Clay (<3.2 µm)	Fract %	NA	NA	NA	NA	NA	NA	6.8	8.5	NA	11.1	4.6	NA	NA	NA	NA	NA	NA		
Metals (EPA 6020)																				
Aluminum (EPA 6010B) Antimony	mg/Kg mg/Kg	NA NA	10,000 0.72 J	9,320 0.67 J	10,300 T 1.24 JT	10,500 0.64 J	NA NA	NA NA	NA NA	11300 1.68	NA NA	0.16	NA NA	NA NA	13800	NA NA	NA NA	NA NA	64	
Arsenic	mg/Kg	NA	3.56	2.89	2.45 T	2.36	NA	2.01	2.06	2.8	2.85	2.14	3.54	NA	114	4.75	NA	NA	33	7
Cadmium Chromium	mg/Kg mg/Kg	NA NA	0.624 37.5	0.619 40.8	0.653 T 25.9 T	0.548	NA NA	0.20 24.3	0.21 24.9	1.3 62.4	1.01 60.5	91.5 0.17	24.9 142	NA NA	8.4 33.9	0.34 43.8	NA NA	NA NA	4.98 111	
Copper	mg/Kg	NA	38	49.2	37.9 T	32.3	NA	15.2	14.6	82.1	67.8	16.5	192	NA	79.8	46.9	NA	NA	149	
Lead Manganese (EPA 6010B)	mg/Kg	NA NA	78.9	67.6 NA	58.3 T NA	46.5 NA	NA NA	12.6 901	12.1 874	<b>220</b> 509	164 548	6.11 347	285 367	NA NA	128 111,000	<b>22.6</b> 754	NA NA	NA NA	128 1100	17
Manganese (EPA 6010B) Mercury (EPA 7471A)	mg/Kg mg/Kg	NA	NA 0.161 J	0.062 J	0.113 JT	0.082 J	NA	0.033	0.031	0.36	0.305	0.018	0.299	NA	0.12	0.260	NA	NA	1.06	0.07
Nickel	mg/Kg	NA	16.5	17.8	17.3 T	13.9	NA	13.8	13.4	22.8	25.5	19.2	73.3	NA	36	30.2	NA	NA	48.6	
Selenium Silver	mg/Kg mg/Kg	NA NA	0.4 J 0.117 J	0.7 J 0.12 J	0.6 JT 0.233 JT	0.3 U 0.125 J	NA NA	0.10 U	0.10 U	0.25	0.14 NA	0.10 U	NA 1.60	NA NA	0.35 NA	0.24 NA	NA NA	NA NA	5	
Zinc (EPA 6010B)	mg/Kg	NA	1,020	280	289 T	229	NA	79.5	75.0	584	436	58.9	897	NA	2,470	172	NA	NA	459	
Organochlorine Pesticides (EPA 8081A																				
2,4'-DDD 2.4'-DDE	ug/Kg ug/Kg	47 NJ 0.92 U	7.1 NJ 0.79 U	9.5 NJ 1.2 U	9.9 NJ 1.7 NJ	5.7 NJ 0.82 U	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		NA NA	NA NA		
2,4-DDE 2,4-DDT	ug/Kg	17	2.8 J	5	4 J	2.6 NJ	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA		
4,4'-DDD <sup>(3)</sup>	ug/Kg	47 J	5.8	11	8.2	<b>4.8</b> J	NA	1.0 U	1.2 U	49	72	0.70 JP	45	69	19	55	NA	5.9 U	28	0.33
4,4'-DDE <sup>(3)</sup> 4,4'-DDT <sup>(3)</sup>	ug/Kg	66 J 32 U	9.3 6.5	13 9.5	12 J	7.3 J 3 U	NA	1.5	1.3	57	61 22 U	0.97	68 05 D	100	26	66 23 U	NA	3.4 JP	31.3	0.33
Estimated Total DD	ug/Kg Dx <sup>(4)</sup> ug/Kg	32 U 177 NJ	6.5 31.5 NJ	9.5 48 NJ	11 J 46.8 NJ	20.4 J	NA NA	1.1 U 1.5	1.2 U 1.3	33 U 106	33 U 133	0.46 JP 2.13 JP	95 P 208 P	44 U 169	17 62	121	NA NA	19 U 3.4 JP	62.9	0.33
Aldrin	ug/Kg	21 J	2.5	9.5	4.1 U	0.78 U	NA	0.66 J	0.94 J	17	24	0.54 JP	29 U	16	3.5 U	78	NA	5.7 U	40	
alpha-BHC (α-BHC) beta-BHC (β-BHC)	ug/Kg ug/Kg	2 U 11 U	0.19 U 1.3 U	0.22 U 1.7 U	0.23 U 1.9 U	0.19 U 2.1 U	NA NA	1.0 U 1.0 U	1.2 U 1.2 U	7.6 U 13 U	0.52 JP 1.9 U	0.79 U 0.79 U	8.9 U 3.7 U	9.3 U 9.3 U	3.7 U 4.2 U	2.2 U 2.2 U	NA NA	5.7 U 5.7 U		
delta-BHC (δ-BHC)	ug/Kg	2.5 U	0.18 U	0.22 U	0.85 U	0.16 U	NA	1.0 U	1.2 U	7.6 U	2.9 U	0.79 U	3.7 U	9.3 U	90 U	4.8 U	NA	5.7 U		
gamma-BHC (γ-BHC, Lindane) alpha-Chlordane <sup>(5)</sup>	ug/Kg	3.7 J 19	0.79 U 3 J	0.93 U 3.8 J	0.97 U 5.8	0.78 U 4.3	NA NA	1.0 U 0.24 J	1.2 U 0.55 JP	7.6 U 20	12 P 21	0.79 U 0.15 JP	12 U 23 U	9.3 U 34	4.8 U 11	7.9 U 52	NA NA	12 P 11 U	4.99	
beta-Chlordane <sup>(5)</sup>	ug/Kg ug/Kg	51 J	6.2	8.1	24	4.3	NA	1.0 U	0.33 JP 0.34 JP	31	21	0.15 JP	25 U	87	52	350	NA	20		
Total Chlordan		<b>70</b> J	9.2 J	<b>11.9</b> J	29.8	25.3	NA	0.24 J	0.89 JP	51	50	0.34 JP	ND	121	63	402		20	17.6	0.37
Oxychlordane cis-Nonachlor	ug/Kg ug/Kg	3.9 U 12	0.84 U 2.6 U	0.92 U 3.8 U	0.99 U 4.9 U	0.78 U 1.8 U	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		
trans-Nonachlor	ug/Kg	12	1.3 J	2 U	3.6 J	2.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dieldrin Endemilien	ug/Kg	13 U	2.9	3.6	2.6 J	1.3 J	NA	1.0 U	1.2 U	18 P	24 9.1	0.79 U	13 U 8.4	40 P	4.4 P 8.8	3.8 P	NA	5.7 U 9.3 U	61.8	0.0081
Endosulfan I Endosulfan II	ug/Kg ug/Kg	5.9 U 0.62 U	0.84 NJ 1.2 NJ	1.1 NJ 1.5 NJ	0.97 U 1.2	0.78 U 0.98 U	NA NA	0.083 JP 1.0 U	0.21 JP 1.2 U	14 P 7.6 U	9.1 5.6 U	0.13 JP 0.79 U	8.4 20 U	22 P 16 P	8.8 3.5 U	5.2 U 18 U	NA NA	9.3 U 5.7 U		
Endosulfan sulfate	ug/Kg	7.8 U	0.79 U	1.3 U	0.97 U	0.96 U	NA	1.0 U	1.2 U	36	2.4 P	0.79 U	4 P	15 U	3.5 U	2.4	NA	5.7 U		
Endrin Endrin aldehyde	ug/Kg ug/Kg	4.1 U 4 U	0.19 U 0.19 U	0.93 U 0.22 U	0.23 U 0.98 U	0.18 U 0.19 U	NA NA	1.0 U 1.0 U	1.2 U 1.2 U	7.6 U 7.6 U	1.9 U 1.9 U	0.79 U 0.79 U	3.7 U 3.7 U	9.3 U 9.3 U	3.5 U 3.5 U	3.2 U 3.6 U	NA NA	5.7 U 5.7 U	207	
Endrin ketone	ug/Kg	4 U	0.79 U	0.93 U	0.97 U	0.79 U	NA	1.0 U	1.2 U	7.6 U	12 P	0.79 U	3.7 U	9.3 U	7.1 U	8.8 P	NA	5.7 U		
Heptachlor Heptachlor epoxide	ug/Kg ug/Kg	20 NJ 6.7 U	1.5 J 0.79 U	2 0.93 U	24 1.8 J	24 0.95 NJ	NA NA	1.0 U 1.0 U	1.2 U 0.13 JP	7.6 U 7.6 U	26 1.9 U	0.79 U 0.79 U	12 P 8.6 U	66 16 P	31 3.6 P	300 6.3 U	NA NA	9.4 P 5.7 U	10	
Methoxychlor	ug/Kg	1.5 U	1.9	1.1 NJ	1.3 J	1 J	NA	3.7	1.2 U	7.6 U	1.9 U	0.79 U	4.0 U	15 U	3.5 U	3.7 U	NA	14		
Mirex Toxaphene	ug/Kg ug/Kg	2.4 U 870 U	0.2 U 85 U	0.23 U 190 U	0.24 U 160 U	0.29 J 86 U	NA NA	NA 50 U	NA 58 U	NA 510 Ui	NA 470 Ui	40 U	NA 970 U	NA 1,600 U	NA 240 U	NA 790 Ui	NA NA	NA 370 Ui		
Chlorinated Herbicides (EPA 8151A	46/11E	5,6 6	05 0		200 0	00 0		200	200	510 01		10 0	210 0	2,000 0	210 0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1111	570 01		
2,4,5-T	ug/Kg	NA	61 U	71 U	76 U	77 U	NA	142 U	142 U	NA	607 U	31.3 U	NA	NA	3500 U	NA	NA	NA		
2,4,5-TP (Silvex) 2,4-D	ug/Kg	NA NA	55 U 56 U	64 U 66 U	69 U 71 U	69 U 71 U	NA NA	142 U 142 U	142 U 142 U	NA NA	607 U 607 U	31.3 U 31.3 U	NA NA	NA NA	3500 U 3500 U	NA NA	NA NA	NA NA		
2,4-DB	ug/Kg ug/Kg	NA	110 U	130 U	140 U	140 U	NA	142 U	142 U	NA	607 U	31.3 U	NA	NA	7200 P	NA	NA	NA		
Dalapon	ug/Kg	NA	470 U	550 U	590 U	600 U	NA	142 U	142 U	NA	607 U	31.3 U	NA	NA	120,000 U	NA	NA	NA		
Dicamba Dichlorprop	ug/Kg ug/Kg	NA NA	53 U 46 U	62 U 53 U	67 U 57 U	67 U 58 U	NA NA	142 U 142 U	142 U 142 U	NA NA	607 U 607 U	31.3 U 31.3 U	NA NA	NA NA	3500 U 3500 U	NA NA	NA NA	NA NA		
Dinoseb	ug/Kg	NA	96 U	120 U	120 U	130 U	NA	142 U	142 U	NA	607 U	31.3 U	NA	NA	3500 U	NA	NA	NA		
MCPA MCPP	ug/Kg ug/Kg	NA NA	7,600 U 3,800 U	8,900 U 4,500 U	9,500 U 4,800 U	9,600 U 4,800 U	NA NA	14,200 U 14,200 U	14,200 U 14,200 U	NA NA	60,700 U 60,700 U	3,130 U 3,130 U	NA NA	NA NA	700,000 U 700,000 U	NA NA	NA NA	NA NA		
110.11	ug/ng	114	5,000 0	ч,J00 U	4,000 0	4,000 0	inn	17,200 0	14,200 0	inA	00,700 0	5,150 0	11/4	11/4	700,000 0	na	NA	INA	-	

#### Table 3 Summary of Chemical Analytical Results Inline Solids Samples Outfall Basin 18

Outfall Basin 18				(1)			T.													
				LWG Samples <sup>(1)</sup> W Yeon Trunk Lir	20			Western Subbasin		West Cont	ral Subbasin		City Samples	East-Central Subbas	-in		Eastern Sul	hharin	-	ľ
		a. 11 17.							a. 11 17.						sin		Lastern Su		-	
		Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Inline Solids Grab	Sediment Trap Solids	Sediment Trap Solids	Inline Solids Grab	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		JSCS <sup>(2)</sup>
				Manhole AMZ088			ST3: FO070808	ST3: FO095694	ST3: FO095697	ST4: FO070809	ST4: FO095695	ST5: FO095671	ST5: FO095696	ST2: FO070806	ST2: FO070807	ST2: FO095693	ST1: FO070805	ST1: FO095692	Screenir	ng Level Value
		Manhole AMZ088	Manhole AMZ088		Manhole AMZ088	Manhole AMZ088	Manhole AND535 Upstream of manhole		Manhole AND535 Field Duplicate	Manhole AAT466 Downstream of	Manhole AAT466 Downstream of		*	Manhole AAT557 Upstream of manhole			In manhole, adjacent to catch		e	ſ
Class Analyte	Units	7/2/2007	12/20/2007	12/20/2007	1/31/2008	2/1/2008	in 42" line 6/20/2007	manhole in 42" line 6/9/2009	6/9/2009	manhole in 48" line 6/20/2007	manhole in 48" line 6/10/2009	manhole in 42" line 6/4/2009	in 36" line 6/10/2009	in 42" line 6/19/2007	in 42" line 6/19/2007	Manhole in 42" line 6/9/2009	e basin lateral 6/19/2007	in 12" line 6/11/2009	(Toxicity)	(Bioaccumulation)
Polychlorinated Biphenyls Aroclors (PCBs) (EPA																	·		(101110)	(
Aroclor 1016	ug/Kg	NA	NA	NA	NA	NA	16 U	10 U	10 U	7.6 U	10 U	10 U	10 U	93 U	67 U	20 U	53 U	NA	530	
Aroclor 1221 Aroclor 1232	ug/Kg	NA NA	NA NA	NA NA	NA NA	NA NA	31 U 16 U	20 U 10 U	20 U 10 U	16 U 7.6 U	20 U 10 U	20 U 10 U	20 U 10 U	190 U 93 U	93 U 190 U	40 U 20 U	140 U 100 U	NA NA		
Aroclor 1232 Aroclor 1242	ug/Kg ug/Kg	NA	NA	NA	NA	NA	16 U	10 U	10 U	7.6 U	10 U	10 U	10 U	93 U	190 U	20 U	70 U	NA		
Aroclor 1248	ug/Kg	NA	NA	NA	NA	NA	16 U	10 U	10 U	190	100 U	10 U	100 U	800	86 U	40 U	53 U	NA	1500	
Aroclor 1254	ug/Kg	NA	NA	NA	NA	NA	16 U	10 U	10 U	7.6 U	90	10 U	70	93 U	250	20 U	95 U	NA	300	
Aroclor 1260	ug/Kg	NA	NA	NA	NA	NA	16 U	10 U	10 U	210	61	10 U	37	400	93	20 U	78 U	NA	200	
Aroclor 1262 Aroclor 1268	ug/Kg ug/Kg	NA NA	NA NA	NA NA	NA NA	NA NA	16 U 16 U	10 U 10 U	10 U 10 U	7.6 U 8.6 U	10 U 10 U	10 U 10 U	10 U 10 U	93 U 180 P	62 U 35 U	20 U 20 U	110 U 68 U	NA NA		
Total PCBs <sup>(7)</sup>	ug/Kg	NA	NA	NA	NA	NA	ND	ND	ND	400	151	ND	10 0	1,380 P	343	ND	ND	NA	676	0.39
Polychlorinated Biphenyl Congeners (EPA 1668A																				
Total PCBs <sup>(8)</sup>	A)	<b>696</b> J	85.2 J	74.5 J	140 J	109 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	676	0.39
Polycyclic Aromatic Hydrocarbons (EPA 8270-SI	SIM)																			
2-Methylnaphthalene	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	49	NA	NA	NA	99	18 U	NA	NA	NA	200	
Acenaphthene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	51	203 U	20.8 U	223 U	38 U	18 U	146 U	NA	NA	300	
Acenaphthylen	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	50	203 U	20.8 U	223 U	58	18 U	146 U	NA	NA	200	
Anthracene Benzo(a)anthracene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	150	203 U	20.8 U 31.3	223 U	110	18 U	247	NA	NA	845	
Benzo(a)pyrene	ug/Kg ug/Kg	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	23.6 U 23.6 U	23.5 U 23.5 U	520 570	429 390	23.7	267 284	340 410	18 U 18 U	163 186	NA NA	NA NA	1050 1450	
Benzo(b)fluoranthene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	820	393	20.8 U	360	570	18 U	235	NA	NA		
Benzo(g,h,i)perylend	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	720	372	20.8 U	451	750	24	267	NA	NA	300	
Benzo(k)fluoranthene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	240	372	20.8 U	257	160	18 U	164	NA	NA	13000	
Chrysene	ug/Kg	NA	NA	NA	NA	NA	NA	29.0	23.5 U	840	568	35.3	706	450	18 U	426	NA	NA	1290	
Dibenzo(a,h)anthracene Dibenzofuran	ug/Kg ug/Kg	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	23.6 U NA	23.5 U NA	150 40	203 U NA	20.8 U NA	223 U NA	180 45	18 U 18 U	146 U NA	NA NA	NA NA	1300	
Fluoranthene	ug/Kg	NA	NA	NA	NA	NA	NA	33.6	23.5 U	1,600	1,070	49.7	934	900	18 U	491	NA	NA	2230	37000
Fluorene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	50	203 U	20.8 U	447 U	87	18 U	146 U	NA	NA	536	
Indeno(1,2,3-cd)pyrene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	700	295	20.8 U	223 U	510	18 U	150	NA	NA	100	
Naphthalene	ug/Kg	NA	NA	NA	NA	NA	NA	23.6 U	23.5 U	240	203	20.8 U	223 U	680	18 U	146	NA	NA	561	
Phenanthrene Pyrene	ug/Kg ug/Kg	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	23.6 U 25.1	23.5 U 23.5 U	690 1.300	611 781	71.9 55.4	1,250	520 1100	18 U 62	463	NA	NA NA	1170	1900
Total PAHs <sup>(7)</sup>	ug/Kg	NA	NA	NA	NA	NA	NA	87.7	ND	8,780	5,484	267.3	5,719	6,969	86	3,524	NA	NA		
Polycyclic Aromatic Hydrocarbons (PAHs) (EPA	A 8270C																			
2-Methylnaphthalene	ug/Kg	300 U	44 U	51 U	56 U	41 U	NA	NA	NA	310 U	NA	7.9 U	NA	NA	NA	NA	NA	NA	200	
Acenaphthene	ug/Kg	260 J	31 J	32 U	36 U	30 J	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA	300	
Acenaphthylen	ug/Kg	440 J	24 U	28 U	31 U	22 U	NA	NA	NA	310 U	NA	3.7 J	NA	610 U	70 U	NA	NA	NA	200	
Anthracene Benzo(a)anthracene	ug/Kg ug/Kg	370 J 1200 J	140 J 310	37 U 54 J	82 J 180 J	100 J 190	NA NA	NA NA	NA NA	310 U 530	NA NA	8.8 27	NA NA	610 U 610 U	70 U 70 U	NA	NA NA	NA NA	845 1050	
Benzo(a)pyrene	ug/Kg	1200 3	260	54 J	150 J	190 170 J	NA	NA	NA	640	NA	26	NA	610 U	70 U	NA	NA	NA	1450	
Benzo(b)fluoranthene	ug/Kg	2100	330	75 J	230 J	250	NA	NA	NA	930	NA	27	NA	610 U	70 U	NA	NA	NA		
Benzo(g,h,i)perylend	ug/Kg	2400	230	85 J	180 J	200	NA	NA	NA	660	NA	17	NA	610 U	70 U	NA	NA	NA	300	
Benzo(k)fluoranthene	ug/Kg	590 J	130 J	32 J	81 J	94 J	NA	NA	NA	310 U	NA	11	NA	610 U	70 U	NA	NA	NA	13000	
Chrysene Dihanza(a h)anthracene	ug/Kg	1800	330	82 J	260 J	270	NA	NA	NA	830	NA	31	NA	670	70 U	NA	NA	NA	1290	
Dibenzo(a,h)anthracene Dibenzofuran	ug/Kg	210 U 170 U	52 J 28 J	35 U 28 U	40 J 31 U	44 27 J	NA NA	NA NA	NA NA	310 U 310 U	NA NA	4.1 J 7.9 U	NA NA	610 U NA	70 U NA	NA NA	NA NA	NA NA	1300	
Fluoranthene	ug/Kg ug/Kg	2200	680	120 J	460	580	NA	NA	NA	1200	NA	46	NA	640	70 U	NA	NA	NA	2230	37000
Fluorene	ug/Kg	150 U	46 U	26 U	400 49 U	64 U	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA	536	
Indeno(1,2,3-cd)pyrene	ug/Kg	1400 J	240	51 J	110 J	180 J	NA	NA	NA	310 U	NA	15	NA	610 U	70 U	NA	NA	NA	100	
Naphthalene	ug/Kg	320 U	46 U	53 U	59 U	43 U	NA	NA	NA	310 U	NA	3.3 J	NA	610 U	70 U	NA	NA	NA	561	
Phenanthrene	ug/Kg	1300 J	590	130 U	380	540	NA	NA	NA	620	NA	23	NA	610 U	70 U	NA	NA	NA	1170	
Pyrene Total PAH	ug/Kg H <sup>(7)</sup> ug/Kg	2900 18,560 J	540 3,891 J	110 U 553 J	490 2,643 J	450 3,125 J	NA NA	NA NA	NA NA	6,810	NA	5.0 J 247.9	NA NA	1200 2,510	70 U ND	NA	NA NA	NA NA	1520	1900
Phthalates (EPA 8270-SIM)	ug/11g	10,500 5	5,671 5	5555	2,045 5	5,125 5	Int	1011	IWI	0,010		247.9	Int	2,510	ND					
Phthalates (EPA 82/0-SIM) Bis(2-ethylhexyl) phthalate (BEHP	ug/Kg	NA	NA	NA	NA	NA	NA	256	211	NA	7,430	68.9	27,700	NA	NA	26,900	NA	NA	800	330
Butyl Benzyl Phthalate	ug/Kg	NA	NA	NA	NA	NA	NA	54.7	48.1	NA	2,030 U	41.7 U	2,230 U	NA	NA	2,910 U	NA	NA		
Diethyl phthalate	ug/Kg	NA	NA	NA	NA	NA	NA	47.1 U	47 U	NA	2,030 U	41.7 U	2,230 U	NA	NA	2,910 U	NA	NA	600	
Dimethyl phthalate	ug/Kg	NA	NA	NA	NA	NA	NA	47.1 U	47 U	NA	2,030 U	41.7 U	2,230 U	NA	NA	2,910 U	NA	NA		
Di-n-butyl phthalate	ug/Kg	NA	NA	NA	NA	NA	NA	47.1 U 70.7 U	47 U 47 U	NA	2,030 U 2.030 U	41.7 U 41.7 U	2,230 U 2,230 U	NA NA	NA	2,910 U 4,370 U	NA	NA	100	60
Di-n-octyl phthalate	ug/Kg	NA	NA	NA	NA	NA	NA	/0./ U	47 U	NA	2,030 U	41./ U	2,230 U	NA	NA	4,370 U	NA	NA		
Phthalates (EPA8270C)						2 500	NA	NA	NA	16.000	NA	42.1	NA	29,000	1,600	NA	NA			330
	uø/Kø	27,000	890 J	2,200 J	5,400	3,500				10,000		45.1						NA	800	
Bis(2-ethylhexyl) phthalate (BEHP Butyl Benzyl Phthalate	ug/Kg ug/Kg	<b>27,000</b> 2200	890 J 64 U	2,200 J 1,300	<b>5,400</b> 640	3,500 520	NA	NA	NA	16,000 1600	NA	43 J 7.9 U	NA	960	70 U	NA		NA NA	800	
Bis(2-ethylhexyl) phthalate (BEHP Butyl Benzyl Phthalate Diethyl phthalate		2200 180 U	64 U 26 U	1,300 30 U	640 33 U	520 24 U	NA NA	NA NA	NA NA	1600 310 U	NA NA	7.9 U 7.9 U	NA NA	960 610 U	70 U 70 U	NA NA	NA NA	NA NA	800  600	
Bis(2-ethylhexyl) phthalate (BEHP Butyl Benzyl Phthalate Diethyl phthalate Dimethyl phthalate	ug/Kg ug/Kg ug/Kg	2200 180 U 270 J	64 U 26 U 20 U	1,300 30 U 23 U	640 33 U 26 U	520 24 U 19 U	NA NA NA	NA NA NA	NA NA NA	1600 310 U 310 U	NA NA NA	7.9 U 7.9 U 7.9 U	NA NA NA	960 610 U 610 U	70 U 70 U 70 U	NA NA NA	NA NA NA	NA NA NA	 600 	
Bis(2-ethylhexyl) phthalate (BEHP Butyl Benzyl Phthalate Diethyl phthalate	ug/Kg ug/Kg	2200 180 U	64 U 26 U	1,300 30 U	640 33 U	520 24 U	NA NA	NA NA	NA NA	1600 310 U	NA NA	7.9 U 7.9 U	NA NA	960 610 U	70 U 70 U	NA NA	NA NA NA NA	NA NA	600	

## Table 3 Summary of Chemical Analytical Results Inline Solids Samples Outfall Basin 18

all Basin 18		[		LWG Samples <sup>(1)</sup>	1								City Samples							
				NW Yeon Trunk Li	ine			Western Subbasin		West-Cent	ral Subbasin			East-Central Subbas	sin		Eastern Sul	basin		
		Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Inline Solids Grab	Sediment Trap Solids	Sediment Trap Solids	Inline Solids Grab	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		JSCS <sup>(2)</sup>
		Manhole AMZ088	Manhole AMZ088	Manhole AMZ088 8 Field Duplicate	8 Manhole AMZ088	3 Manhole AMZ088	ST3: FO070808 Manhole AND535 Upstream of manhole in 42" line	ST3: FO095694 Manhole AND535 e Upstream of manhole in 42" line	ST3: FO095697 Manhole AND535 Field Duplicate	ST4: FO070809 Manhole AAT466 Downstream of manhole in 48" line	ST4: FO095695 Manhole AAT466 Downstream of manhole in 48" line	ST5: FO095671 Manhole AAX261 Downstream of manhole in 42" line	ST5: FO095696 Manhole AAX261 Upstream of manhole in 36" line	ST2: FO070806 Manhole AAT557 Upstream of manhole in 42" line	ST2: FO070807 Manhole AAT557 e Upstream of manhole in 42" line	ST2: FO095693 manhole AAT557 Upstream of Manhole in 42" line	ST1: FO070805 Manhole AAT565 In manhole, adjacent to catch basin lateral	ST1: FO095692 Manhole AAT565 Upstream of manhole in 12" line	Screen	ing Level Value
s Analyte	Units	7/2/2007	12/20/2007	12/20/2007	1/31/2008	2/1/2008	6/20/2007	6/9/2009	6/9/2009	6/20/2007	6/10/2009	6/4/2009	6/10/2009	6/19/2007	6/19/2007	6/9/2009	6/19/2007	6/11/2009	(Toxicity)	(B)
-Volatile Organic Compounds (EPA8270C	Units	112/2007	12/20/2007	12/20/2007	1/51/2008	2/1/2008	0/20/2007	0/9/2009	0/9/2009	0/20/2007	0/10/2009	0/4/2009	0/10/2009	0/19/2007	0/19/2007	0/9/2009	0/19/2007	0/11/2009	(Toxicity)	(Bioaccumulati
1.2.4-Trichlorobenzene		NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA	9200	
1,2,4-Thenlorobenzene 1,2-Dichlorobenzene	ug/Kg										NA	7.9 U			70 U	NA			9200	
1.3-Dichlorobenzen	ug/Kg	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA	310 U 310 U	NA	7.9 U	NA NA	610 U 610 U	70 U	NA	NA NA	NA NA	300	
1,3-Dichlorobenzen	ug/Kg	NA	NA	NA	NA	NA	NA	NA		310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA	300	
	ug/Kg	NA		NA	NA		NA		NA	310 U	NA	7.9 U		610 U	70 0	NA				
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol	ug/Kg	NA	NA NA	NA	NA	NA NA	NA	NA NA	NA NA	310 U 310 U	NA	7.9 U	NA NA	610 U 610 U	78 70 U	NA	NA NA	NA NA		
2,4,6-1 richlorophenol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U 70 U	NA	NA	NA		
2,4-Direthylpheno	ug/Kg ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	1600 U	NA	40 U	NA	3100 U	350 U	NA	NA	NA		
2.4-Dinitrophenol		NA	NA	NA	NA	NA	NA	NA	NA	6100 U	NA	40 U 160 U	NA	13000 U	1400 U	NA	NA	NA		
2,4-Dinitrophenol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
2,4-Dinitrotoluene	ug/Kg				NA	NA	NA	NA	NA	310 U 310 U	NA	7.9 U	NA	610 U	70 U	NA		NA		
2-Chloronaphthalenc	ug/Kg	NA NA	NA NA	NA NA	NA	NA	NA			310 U	NA	7.9 U 7.9 U		610 U	70 U	NA	NA			
	ug/Kg							NA	NA				NA				NA	NA		
2-Chlorophenol	ug/Kg		NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
2-Methyl-4,6-dinitropheno	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	3100 U	NA	7.9 U	NA	6100 U	700 U	NA	NA	NA		
2-Methylphenol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
2-Nitroaniline	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	610 U	NA	16 U	NA	1300 U	140 U	NA	NA	NA		
2-Nitrophenol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
3,3'-Dichlorobenzidine	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	3100 U	NA	79 U	NA	6100 U	700 U	NA	NA	NA		
3-Nitroaniline	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	610 U	NA	16 U	NA	1300 U	140 U	NA	NA	NA		
4-Bromophenylphenyl ethe	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
4-Chloro-3-methylpheno	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
4-Chloroaniline	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
4-Chlorophenyl phenyl ethe	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
4-Methylphenof <sup>9)</sup>	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
4-Nitroaniline	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	610 U	NA	16 U	NA	1300 U	140 U	NA	NA	NA		
4-Nitrophenol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	3100 U	NA	79 U	NA	6100 U	700 U	NA	NA	NA		
Benzoic acid	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	6100 U	NA	99 J	NA	13000 U	1400 U	NA	NA	NA		
Benzyl alcohol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	610 U	NA	16 U	NA	1300 U	140 U	NA	NA	NA		
Bis(2-chloroethoxy) methand	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
Bis(2-chloroethyl) ether	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
Bis(2-chloroisopropyl) ethe	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
Hexachlorobenzen	ug/Kg	2.7 U	0.48 U	0.93 U	2.3	1.6	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA	100	19
Hexachlorobutadiene	ug/Kg	2.8 U	0.26 U	0.51 J	0.32 U	0.26 U	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA	600	
Hexachlorocyclopentadien	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	1600 U	NA	40 U	NA	3100 U	410 U	NA	NA	NA	400	
Hexachloroethane	ug/Kg	3.2 U	0.32 U	0.37 U	0.39 U	0.31 U	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
Isophorone	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
Nitrobenzene	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
N-Nitrosodi-n-propylamine	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
N-Nitrosodiphenylamine	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	310 U	NA	7.9 U	NA	610 U	70 U	NA	NA	NA		
Pentachloropheno	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	3100 U	NA	79 U	NA	6100 U	700 U	NA	NA	NA	1000	250
Phenol	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	910 U	NA	5.0 J	NA	1900 U	210 U	NA	NA	NA	50	

Notes:

N = Presumptive evidence of compound

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

T = Value is an average or selected result

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

J = The analyte was detected at a concentration between the method detection limit and the method reporting limit

NA = Not analyzed

ND = Not detected

-- = No JSCS screening level available

ug/Kg = Micrograms per kilogram

mg/Kg = Milligrams per kilogram (1) Refer to Anchor and Integral, 2007, 2008a, and 2008b.

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

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

<sup>(4)</sup> Estimated Total DDx is the sum of DDE, DDD and DDT

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

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

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

(8) Individual congener results are summarized in Table 3

<sup>(9)</sup>This analyte cannot be separated from 3-Methylphenol

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

Summary of Polychlorinated Biphenyl Congener Analytical Results LWG Sediment Trap Solids Sample

Outfall Basin 18

Outiali Basin 18					LWG Sample <sup>(1)</sup>				
					NW Yeon Trunk Line				
			Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		JSCS <sup>(2)</sup>
			•	•	-	•	•	Concor	JSCS <sup>2</sup> ing Level Value
			Manhole AMZ088	Manhole AMZ088	Manhole AMZ088 Field Duplicate	Manhole AMZ088	Manhole AMZ088	Screet	ling Level value
IUPAC Number <sup>(3)</sup>	Chemical Name	Units	7/2/2007	12/20/2007	12/20/2007	1/31/2008	2/1/2008	(Toxicity)	(Bioaccumulation)
	Congeners (EPA 1668A)		0.407	0.050	0.0000	0.0445 T	0.0000		
PCB 1 PCB 2	2-MoCB 3-MoCB	ug/Kg ug/Kg	0.197 0.0537	0.253 0.0702	0.0263 0.0117 J	0.0415 T 0.0166 JT	0.0288 0.0122 J		
PCB 3	4-MoCB	ug/Kg	0.0337	0.475	0.0254	0.0426 T	0.0345		
PCB 4/10	2,2'-DiCB + 2,6-DiCB	ug/Kg	0.856	0.160	0.0877	0.111 UJT	0.217		
PCB 5/8	2,3-DiCB + 2,4'-DiCB	ug/Kg	1.73	0.281	0.160	0.355 T	0.450		
PCB 6	2,3'-DiCB	ug/Kg	0.336	0.0678	0.0493 U	0.0709 T	0.0952		
PCB 7/9	2,4-DiCB + 2,5-DiCB	ug/Kg	0.157	0.0509 U	0.0493 U	0.0554 UT	0.0491 U		-
PCB 11	3,3'-DiCB	ug/Kg	1.79	0.204	0.217	0.671 T	0.444		
PCB 12/13	3,4-DiCB + 3,4'-DiCB	ug/Kg	0.0967 U	0.0509 U	0.0493 U	0.0554 UT	0.0491 U		
PCB 14	3,5-DiCB	ug/Kg	0.0967 U	0.0509 U	0.0493 U	0.0554 UT	0.0491 U		
PCB 15 PCB 16/32	4,4'-DiCB 2,2',3-TriCB + 2,4',6-TriCB	ug/Kg	2.34 6.89	0.320	0.233 0.541	0.451 T 0.973 T	0.597		
PCB 16/32 PCB 17	2,2,3-11/CB + 2,4,6-11/CB	ug/Kg ug/Kg	3.57	0.362	0.242	0.406 T	0.507		
PCB 18	2,2',5-TriCB	ug/Kg	10.6	1.12	0.737	1.25 T	1.37		
PCB 19	2,2',6-TriCB	ug/Kg	1.34	0.185	0.148	0.279 T	0.221		-
PCB 20/21/33	2,3,3'-TriCB + 2,3,4-TriCB + 2',3,4-TriCB	ug/Kg	4.59	0.501	0.420	0.747 T	0.737		
PCB 22	2,3,4'-TriCB	ug/Kg	3.73	0.368	0.305	0.500 T	0.543		
PCB 23	2,3,5-TriCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		-
PCB 24/27	2,3,6-TriCB + 2,3',6-TriCB	ug/Kg	0.830	0.105	0.0795	0.153 T	0.148		
PCB 25	2,3',4-TriCB	ug/Kg	0.691	0.0655	0.0603	0.0920 T	0.122		
PCB 26	2,3',5-TriCB	ug/Kg	1.61	0.161	0.128	0.224 T	0.273		
PCB 28	2,4,4'-TriCB	ug/Kg	12.7	1.19	0.990	1.52 T	1.78		
PCB 29 PCB 30	2,4,5-TriCB 2,4,6-TriCB	ug/Kg ug/Kg	0.0484 U 0.0484 U	0.0255 U 0.0255 U	0.00601 J 0.0246 U	0.00787 JT 0.0277 UT	0.00873 J 0.0246 U		
PCB 31	2,4',5-TriCB	ug/Kg	9.36	1.02	0.786	1.31 T	1.52		
PCB 34	2',3,5-TriCB	ug/Kg	0.0455 J	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		-
PCB 35	3,3',4-TriCB	ug/Kg	0.155	0.0222 J	0.0189 J	0.0394 T	0.0341		
PCB 36	3,3',5-TriCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 37	3,4,4'-TriCB	ug/Kg	3.53	0.381	0.304	0.587 T	0.547		-
PCB 38	3,4,5-TriCB	ug/Kg	0.117	0.0197 J	0.0171 J	0.0370 T	0.0222 J		
PCB 39	3,4',5-TriCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 40	2,2',3,3'-TeCB	ug/Kg	6.02	0.627	0.513	1.03 T	0.745		-
PCB 41/64/71/72	2,2',3,4-TeCB + 2,3,4',6-TeCB + 2,3',4',6-TeCB + 2,3',5,5'-TeCB	ug/Kg	19.6	2.21	1.64	3.30 T	2.51		
PCB 42/59 PCB 43/49	2,2',3,4'-TeCB + 2,3,3',6-TeCB 2,2',3,5-TeCB + 2,2',4,5'-TeCB	ug/Kg ug/Kg	8.81 18.9	0.957	0.766	1.59 T 3.23 T	1.14 2.40		
PCB 44	2,2',3,5'TeCB	ug/Kg	29.9	2.91	2.24	5.02 T	3.58		
PCB 45	2,2',3,6-TeCB	ug/Kg	6.05	0.715	0.576	1.09 T	0.774		
PCB 46	2,2',3,6'-TeCB	ug/Kg	2.58	0.329	0.255	0.468 T	0.352		
PCB 47	2,2',4,4'-TeCB	ug/Kg	7.02	0.732	0.597	1.22 T	0.861		
PCB 48/75	2,2',4,5-TeCB + 2,4,4',6-TeCB	ug/Kg	4.71	0.454	0.300	0.616 T	0.467		
PCB 50	2,2',4,6-TeCB	ug/Kg	0.086	0.0113 J	0.0102 J	0.0201 JT	0.0127 J		
PCB 51	2,2',4,6'-TeCB	ug/Kg	1.64	0.213	0.166	0.316 T	0.226		
PCB 52/69	2,2',5,5'-TeCB + 2,3',4,6-TeCB	ug/Kg	29.8	3.18	2.42	5.27 T	3.84		-
PCB 53 PCB 54	2,2',5,6'-TeCB	ug/Kg	5.60 0.0685	0.712 0.0104 J	0.571 0.00909 J	1.05 T 0.0164 JT	0.733 0.0124 J		
PCB 54 PCB 55	2,2',6,6'-TeCB 2,3,3',4-TeCB	ug/Kg	0.0685	0.0104 J 0.0365	0.00909 J	0.0164 JT 0.0597 T	0.0124 J 0.0475		
PCB 55/60	2,3,3,4-TeCB 2,3,3',4'-TeCB + 2,3,4,4'-TeCB	ug/Kg ug/Kg	12.8	1.32	0.0304	1.60 T	1.32		
PCB 57	2,3,3,5-TeCB	ug/Kg	0.0844	0.0107 J	0.00562 J	0.0130 JT	0.0103 J		
PCB 58	2,3,3,5'TeCB	ug/Kg	0.0444 U	0.00883 J	0.00598 J	0.0132 JT	0.00746 J		
PCB 61/70	2,3,4,5-TeCB + 2,3',4',5-TeCB	ug/Kg	26.9	2.42	1.67	3.66 T	2.77		
PCB 62	2,3,4,6-TeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 63	2,3,4',5-TeCB	ug/Kg	0.705	0.0669	0.0437	0.0756 T	0.0610		
PCB 65	2,3,5,6-TeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 66/76	2,3',4,4'-TeCB + 2',3,4,5-TeCB	ug/Kg	22.5	2.01	1.44	2.98 T	2.19		-
PCB 67	2,3',4,5-TeCB	ug/Kg	0.543	0.0507	0.0376	0.0613 T	0.0528		

Summary of Polychlorinated Biphenyl Congener Analytical Results LWG Sediment Trap Solids Sample

Outfall Basin 18

					LWG Sample <sup>(1)</sup>				
					NW Yeon Trunk Line				
			Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		JSCS <sup>(2)</sup>
			Manhole AMZ088	Manhole AMZ088	Manhole AMZ088 Field Duplicate	Manhole AMZ088	Manhole AMZ088	Screen	ing Level Value
IUPAC Number <sup>(3)</sup>	Chemical Name	Units	7/2/2007	12/20/2007	12/20/2007	1/31/2008	2/1/2008	(Toxicity)	(Bioaccumulation)
PCB 68	2,3',4,5'-TeCB	ug/Kg	0.0484 U	0.0132 J	0.0122 J	0.0201 JT	0.0128 J		
PCB 73	2,3',5',6-TeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 74	2,4,4',5-TeCB	ug/Kg	9.56	0.893	0.566	1.03 T	0.831		
PCB 77	3,3',4,4'-TeCB	ug/Kg	1.77	0.220	0.168	<b>0.343</b> ⊤	0.262		0.052
PCB 78	3,3',4,5-TeCB	ug/Kg	0.0819	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 79	3,3',4,5'-TeCB	ug/Kg	0.264	0.0395	0.0340	0.0690 T	0.0462		
PCB 80	3,3',5,5'-TeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 81	3,4,4',5-TeCB	ug/Kg	0.391	0.00423 J	0.00667 J	<b>0.0187</b> JT	0.0124 J		0.017
PCB 82	2,2',3,3',4-PeCB	ug/Kg	6.41	0.625	0.585	1.10 T	0.808		
PCB 83	2,2',3,3',5-PeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 84/92	2,2',3,3',6-PeCB + 2,2',3,5,5'-PeCB	ug/Kg	13.7	1.77	1.68	3.14 T	2.22		
PCB 85/116	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB	ug/Kg	5.39	0.789	0.767	1.39 T	0.971		
PCB 86	2,2',3,4,5-PeCB	ug/Kg	0.0484 U	0.0467	0.0359	0.0545 T	0.0411		
PCB 87/117/125	2,2',3,4,5'-PeCB + 2,3,4',5,6-PeCB + 2',3,4,5,6'-PeCB	ug/Kg	11.1	1.36	1.27	2.64 T	1.85		
PCB 88/91	2,2',3,4,6-PeCB + 2,2',3,4',6-PeCB	ug/Kg	5.05	0.708	0.665	1.17 T	0.799		
PCB 89	2,2',3,4,6'-PeCB	ug/Kg	0.907	0.0966	0.0919	0.164 T	0.131		
PCB 90/101	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB	ug/Kg	28.3	3.47	3.19	6.50 T	4.44		
PCB 93	2,2',3,5,6-PeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 94	2,2',3,5,6'-PeCB	ug/Kg	0.200	0.0309	0.0292	0.0471 T	0.0356		
PCB 95/98/102	2,2',3,5',6-PeCB + 2,2',3',4,6-PeCB + 2,2',4,5,6'-PeCB	ug/Kg	25.3	3.54	3.27	6.01 T	4.06		
PCB 96	2,2',3,6,6'-PeCB	ug/Kg	0.399	0.0596	0.0532	0.101 T	0.0688		
PCB 97	2,2',3',4,5-PeCB	ug/Kg	9.95	1.18	1.07	2.14 T	1.52		
PCB 99	2,2',4,4',5-PeCB	ug/Kg	13.6	1.55	1.46	2.87 T	1.97		
PCB 100	2,2',4,4',6-PeCB	ug/Kg	0.0839	0.0127 J	0.0114 J	0.0207 JT	0.0151 J		
PCB 103	2,2',4,5',6-PeCB	ug/Kg	0.164	0.0279	0.0246 J	0.0434 T	0.0302		
PCB 104	2,2',4,6,6'-PeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 105	2,3,3',4,4'-PeCB	ug/Kg	9.39	0.901	0.735	1.58 T	1.20		0.17
PCB 106/118	2,3,3',4,5-PeCB + 2,3',4,4',5-PeCB	ug/Kg	21.1	2.34	2.00	<b>4.37</b> ⊤	3.20		0.12
PCB 107/109	2,3,3',4',5-PeCB + 2,3,3',4,6-PeCB	ug/Kg	1.30	0.162	0.143	0.296 T	0.222		
PCB 108/112	2,3,3',4,5'-PeCB + 2,3,3',5,6-PeCB	ug/Kg	1.55	0.199	0.193	0.353 T	0.243		
PCB 110	2,3,3',4',6-PeCB	ug/Kg	33.8	4.52	4.34	7.88 T	5.54		
PCB 111/115	2,3,3',5,5'-PeCB + 2,3,4,4',6-PeCB	ug/Kg	0.798	0.0685	0.0550	0.122 T	0.102		
PCB 113	2,3,3',5',6-PeCB	ug/Kg	0.0484 U	0.0272	0.0249	0.0231 JT	0.0218 J		
PCB 114	2,3,4,4',5-PeCB	ug/Kg	0.521	0.0537	0.0351	0.0833 T	0.0588		0.17
PCB 119	2,3',4,4',6-PeCB	ug/Kg	0.474	0.0626	0.0545	0.108 T	0.0759		
PCB 120	2,3',4,5,5'-PeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0154 JT	0.0151 J		
PCB 121	2,3',4,5',6-PeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 122	2',3,3',4,5-PeCB	ug/Kg	0.544	0.0525	0.0462	0.0897 T	0.0588		
PCB 123	2',3,4,4',5-PeCB	ug/Kg	0.523	0.0702	0.0622	0.124 T	0.0934		0.21
PCB 124	2',3,4,5,5'-PeCB	ug/Kg	1.09	0.132	0.127	0.256 T	0.187		
PCB 126	3,3',4,4',5-PeCB	ug/Kg	0.135 UJ	0.0212 J	0.0168 J	0.0376 T	0.0327		0.00005
PCB 127	3,3',4,5,5'-PeCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		

# Summary of Polychlorinated Biphenyl Congener Analytical Results LWG Sediment Trap Solids Sample

Outfall Basin 18

Outian Dasin 10					LWG Sample <sup>(1)</sup>				
					NW Yeon Trunk Line				
			Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		JSCS <sup>(2)</sup>
			Manhole AMZ088	Manhole AMZ088	Manhole AMZ088	Manhole AMZ088	Manhole AMZ088	Screen	ing Level Value
IUPAC Number <sup>(3)</sup>			7/2/2007	12/20/2007	Field Duplicate 12/20/2007	1/31/2008	2/1/2008	(T	( <b>Di i</b> - <b>i</b> )
PCB 128/162	Chemical Name 2,2',3,3',4,4'-HxCB + 2,3,3',4',5,5'-HxCB	Units				0.925 T		(Toxicity)	(Bioaccumulation)
PCB 128/162 PCB 129	2,2',3,3',4,4'-HXCB + 2,3,3',4',5,5'-HXCB 2,2',3,3',4,5-HXCB	ug/Kg ug/Kg	4.00	0.504 0.154	0.503	0.925 T	0.647		
PCB 130	2,2',3,3',4,5'HxCB	ug/Kg	1.13	0.209	0.214	0.391 T	0.281		
PCB 131	2,2',3,3',4,6-HxCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 132/161	2,2',3,3',4,6'-HxCB + 2,3,3',4,5',6-HxCB	ug/Kg	7.45	1.05	1.03	1.79 T	1.27		
PCB 133/142	2,2',3,3',5,5'-HxCB + 2,2',3,4,5,6-HxCB	ug/Kg	0.773	0.0904	0.0891	0.169 T	0.118		
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	ug/Kg	1.42	0.182	0.175	0.326 T	0.226		-
PCB 135	2,2',3,3',5,6'-HxCB	ug/Kg	3.31	0.523	0.528	0.809 T	0.591		
PCB 136	2,2',3,3',6,6'-HxCB	ug/Kg	3.55	0.527	0.522	0.866 T	0.615		
PCB 137	2,2',3,4,4',5-HxCB	ug/Kg	1.37	0.162	0.158	0.289 T	0.183		-
PCB 138/163/164	2,2',3,4,4',5'-HxCB + 2,3,3',4',5,6-HxCB + 2,3,3',4',5',6-HxCB	ug/Kg	23.5	3.61	3.63	6.30 T	4.38		
PCB 139/149 PCB 140	2,2',3,4,4',6-HxCB + 2,2',3,4',5',6-HxCB 2,2',3,4,4',6'-HxCB	ug/Kg	17.8 0.105	3.40 0.0218 J	3.32 0.0200 J	5.25 T 0.0351 T	3.83 0.0314		
PCB 140 PCB 141	2,2',3,4,4,6'-FIXCB 2,2',3,4,5,5'-HxCB	ug/Kg ug/Kg	6.43	0.0218 J	0.0200 J	1.34 T	0.0314		
PCB 144	2,2',3,4,5',6-HxCB	ug/Kg	1.09	0.210	0.211	0.358 T	0.925		
PCB 145	2,2',3,4,6,6'-HxCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 146/165	2,2',3,4',5,5'-HxCB + 2,3,3',5,5',6-HxCB	ug/Kg	3.13	0.462	0.466	0.799 T	0.552		
PCB 147	2,2',3,4',5,6-HxCB	ug/Kg	0.347	0.0644	0.0708	0.120 T	0.0904		
PCB 148	2,2',3,4',5,6'-HxCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 150	2,2',3,4',6,6'-HxCB	ug/Kg	0.0202 J	0.0255 U	0.0246 U	0.0069 JT	0.0246 U		
PCB 151	2,2',3,5,5',6-HxCB	ug/Kg	5.87	1.01	0.967	1.54 T	1.10		
PCB 152	2,2',3,5,6,6'-HxCB	ug/Kg	0.0219 J	0.0255 U	0.0246 U	0.0277 UT	0.00559 J		
PCB 153	2,2',4,4',5,5'-HxCB	ug/Kg	25.8	3.42	3.30	5.69 T	3.98		
PCB 154	2,2',4,4',5,6'-HxCB	ug/Kg	0.161	0.0306	0.0274	0.0480 T	0.0374		
PCB 155	2,2',4,4',6,6'-HxCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		-
PCB 156	2,3,3',4,4',5-HxCB	ug/Kg	2.39	0.266	0.249	0.501 T	0.358		0.21
PCB 157	2,3,3',4,4',5'-HxCB	ug/Kg	0.572	0.0672	0.0752	0.133 T	0.0922		0.21
PCB 158/160	2,3,3',4,4',6-HxCB + 2,3,3',4,5,6-HxCB	ug/Kg	3.00	0.425	0.426	0.728 T	0.523		-
PCB 159	2,3,3',4,5,5'-HxCB	ug/Kg	0.228	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		-
PCB 166	2,3,4,4',5,6-HxCB	ug/Kg	0.130	0.0116 J	0.0138	0.0241 JT	0.0169 J		
PCB 167	2,3',4,4',5,5'-HxCB	ug/Kg	1.03	0.132	0.137	0.242 T	0.175		0.21
PCB 168 PCB 169	2,3',4,4',5',6-HxCB 3,3',4,4',5,5'-HxCB	ug/Kg ug/Kg	0.0484 U 0.0825 UJ	0.0255 U 0.00659 U	0.0246 U 0.00505 U	0.0277 UT 0.00738 UT	0.0246 U 0.00509 U		0.00021
PCB 170	2,2',3,3',4,4',5-HpCB		7.53	1.06	1.04	1.62 T	1.19		0.00021
PCB 171	2,2',3,3',4,4',6-HpCB	ug/Kg ug/Kg	2.00	0.285	0.284	0.440 T	0.319		
PCB 172	2,2',3,3',4,5,5'-HpCB	ug/Kg	1.25	0.285	0.284	0.297 T	0.214		
PCB 173	2,2',3,3',4,5,6-HpCB	ug/Kg	0.208	0.0294	0.0292	0.0439 T	0.0335		
PCB 174	2,2',3,3',4,5,6'-HpCB	ug/Kg	9.29	1.28	1.26	2.01 T	1.52		
PCB 175	2,2',3,3',4,5',6-HpCB	ug/Kg	0.0484 U	0.0614	0.0631	0.0897 T	0.0722		
PCB 176	2,2',3,3',4,6,6'-HpCB	ug/Kg	1.12	0.171	0.164	0.255 T	0.198		
PCB 177	2,2',3,3',4',5,6-HpCB	ug/Kg	5.24	0.673	0.677	1.07 T	0.786		
PCB 178	2,2',3,3',5,5',6-HpCB	ug/Kg	1.67	0.253	0.252	0.408 T	0.312		
PCB 179	2,2',3,3',5,6,6'-HpCB	ug/Kg	4.03	0.582	0.550	0.876 T	0.680		
PCB 180	2,2',3,4,4',5,5'-HpCB	ug/Kg	19.9	2.70	2.69	4.42 T	3.46		
PCB 181	2,2',3,4,4',5,6-HpCB	ug/Kg	0.0484 U	0.0116 J	0.0139 J	0.0239 JT	0.0135 J		
PCB 182/187	2,2',3,4,4',5,6'-HpCB + 2,2',3,4',5,5',6-HpCB	ug/Kg	11.4	1.65	1.59	2.73 T	2.27		-
PCB 183	2,2',3,4,4',5',6-HpCB	ug/Kg	5.09	0.727	0.703	1.13 T	0.867		
PCB 184	2,2',3,4,4',6,6'-HpCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 185	2,2',3,4,5,5',6-HpCB	ug/Kg	1.07	0.145	0.146	0.240 T	0.186		
PCB 186	2,2',3,4,5,6,6'-HpCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		-
PCB 188	2,2',3,4',5,6,6'-HpCB	ug/Kg	0.0109 J	0.0255 U 0.0369	0.0246 U	0.0277 UT	0.0246 U		
PCB 189 PCB 190	2,3,3',4,4',5,5'-HpCB 2,3,3',4,4',5,6-HpCB	ug/Kg	0.277	0.0369	0.0411 0.236	0.0617 T 0.379 T	0.0489 0.267		1.2
PCB 190	2,3,3,4,4,5,6-HpCB	ug/Kg ug/Kg	0.296	0.253	0.236	0.379 T 0.0756 T	0.0555		
PCB 192	2,3,3',4,5,5',6-HpCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 192	2,3,3',4',5,5',6-HpCB	ug/Kg	0.860	0.126	0.122	0.214 T	0.152		
		~9/179	0.000	0.120	0.722	VIE 17 1	0.102		

#### Summary of Polychlorinated Biphenyl Congener Analytical Results

LWG Sediment Trap Solids Sample

**Outfall Basin 18** 

					LWG Sample <sup>(1)</sup>				
					NW Yeon Trunk Line				
			Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids	Sediment Trap Solids		JSCS <sup>(2)</sup>
			Manhole AMZ088	Manhole AMZ088	Manhole AMZ088 Field Duplicate	Manhole AMZ088	Manhole AMZ088	Screer	ning Level Value
IUPAC Number <sup>(3)</sup>	Chemical Name	Units	7/2/2007	12/20/2007	12/20/2007	1/31/2008	2/1/2008	(Toxicity)	(Bioaccumulation)
PCB 194	2,2',3,3',4,4',5,5'-OcCB	ug/Kg	5.59	0.588	0.583	1.21 T	1.29		
PCB 195	2,2',3,3',4,4',5,6-OcCB	ug/Kg	2.19	0.232	0.233	0.429 T	0.324		
PCB 196/203	2,2',3,3',4,4',5,6'-OcCB + 2,2',3,4,4',5,5',6-OcCB	ug/Kg	6.13	0.868	0.832	1.95 T	2.22		
PCB 197	2,2',3,3',4,4',6,6'-OcCB	ug/Kg	0.184	0.0258	0.0240 J	0.0441 T	0.0382		
PCB 198	2,2',3,3',4,5,5',6-OcCB	ug/Kg	0.466	0.0432	0.0309	0.0538 T	0.0621		
PCB 199	2,2',3,3',4,5,5',6'-OcCB	ug/Kg	6.68	0.810	0.809	1.99 T	2.35		
PCB 200	2,2',3,3',4,5,6,6'-OcCB	ug/Kg	0.750	0.105	0.101	0.208 T	0.217		
PCB 201	2,2',3,3',4,5',6,6'-OcCB	ug/Kg	0.877	0.0915	0.0881	0.200 T	0.211		
PCB 202	2,2',3,3',5,5',6,6'-OcCB	ug/Kg	1.41	0.148	0.158	0.376 T	0.459		
PCB 204	2,2',3,4,4',5,6,6'-OcCB	ug/Kg	0.0484 U	0.0255 U	0.0246 U	0.0277 UT	0.0246 U		
PCB 205	2,3,3',4,4',5,5',6-OcCB	ug/Kg	0.161	0.0300	0.0296	0.0531 T	0.0388		
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	ug/Kg	4.23	0.292	0.272	1.15 T	1.88		
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	ug/Kg	0.452	0.0407	0.0387	0.122 T	0.205		
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	ug/Kg	1.06	0.0765	0.0805	0.287 T	0.462		
PCB 209	Decachlorobiphenyl	ug/Kg	0.832	0.0800	0.0602	0.223 T	0.284		
	Total Monochlorobiphenyls	ug/Kg	0.468	0.798	0.0634	0.101	0.0755		
	Total Dichlorobiphenyls	ug/Kg	7.21	1.03	0.698	1.66	1.80		
	Total Trichlorobiphenyls	ug/Kg	59.8	6.26	4.78	8.13	8.87		
	Total Tetrachlorobiphenyls	ug/Kg	217	22.1	16.4	34.2	25.3		
	Total Pentachlorobiphenyls	ug/Kg	192	23.9	22.0	42.7	30.0		
	Total Hexachlorobiphenyls	ug/Kg	116	17.3	17.1	29.0	20.5		
	Total Heptachlorobiphenyls	ug/Kg	72.8	10.3	10.1	16.4	12.6		
	Total Octachlorobiphenyls	ug/Kg	24.4	2.94	2.89	6.51	7.21		
	Total Nonachlorobiphenyls	ug/Kg	5.74	0.409	0.391	1.56	2.55		
	Total Decachlorobiphenyls	ug/Kg	0.832	0.0800	0.0602	0.223	0.284		
	Total PCBs	ug/Kg	696 J	85.2 J	74.5 J	140 J	109 J	676	0.39

Notes:

MoCB = Monochlorobiphenyl

DiCB = Dichlorobiphenyl

TriCB = Trichlorobiphenyl

TeCB = Tetrachlorobiphenyl

PeCB = Pentachlorobiphenyl

HeCB = Hexachlorobiphenyl

HpCB = Heptachlorobiphenyl

OcCB = Octachlorobiphenyl

NoCB = Nonachlorobiphenyl

J = Estimated Result

T = Value is an average or selected result (see data rules).

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

-- No JSCS screening level available.

ug/Kg = Micrograms per kilogram.

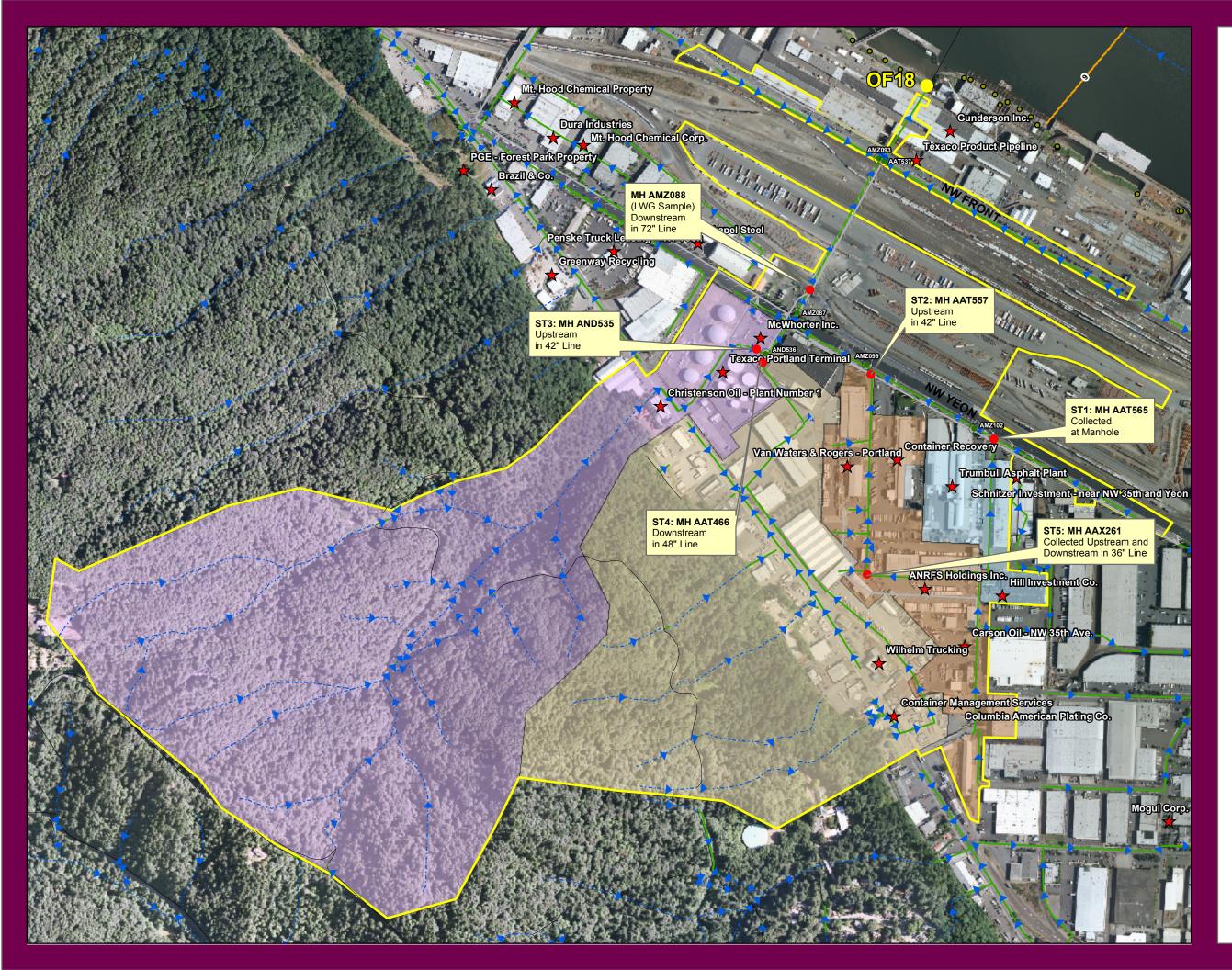
<sup>(1)</sup>Refer to Anchor and Integral, 2007, 2008a, and 2008b.

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

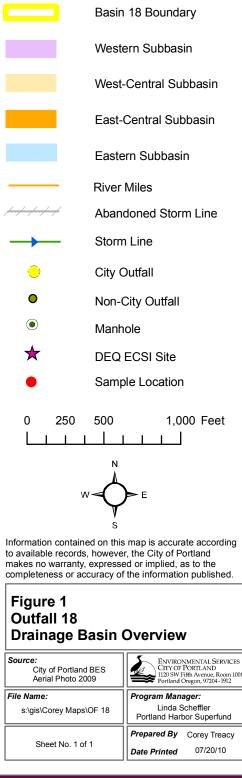
(3)IUPAC - International Union of Pure and Applied Chemistry

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

= concentration exceeds JSCS Toxicity Screening Level Value

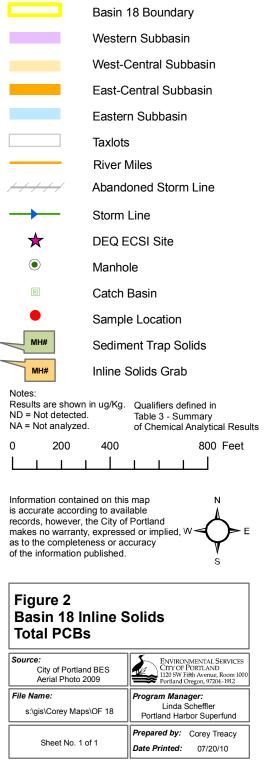














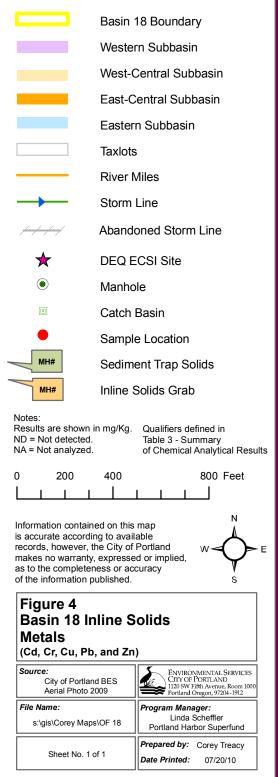


-		
	Basin	18 Boundary
	Weste	rn Subbasin
	West-0	Central Subbasin
	East-C	Central Subbasin
	Easter	n Subbasin
	Taxlots	3
	River I	Viles
	Aband	oned Storm Line
<b>—</b>	Storm	Line
*	DEQ E	CSI Site
۲	Manho	le
	Catch	Basin
•	Sampl	e Location
MH#	Sedim	ent Trap Solids
MH#	Inline	Solids Grab
Notes: Results are shown ND = Not detected. IA = Not analyzed. D 200	400 	
is accurate accord records, however, makes no warranty as to the complete of the information	the City of y, expresse ness or ac	Portland ed or implied, W
Figure 3 Basin 18 Ir Pesticides		Olids rdane, and Heptachlor)
Source: City of Portlar Aerial Photo 2		ENVIRONMENTAL SERVICES CITY OF PORILAND 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204.1912
<i>Source:</i> City of Portlar	2009	ENVIRONMENTAL SERVICES CITY OF PORTLAND 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912 Program Manager: Linda Scheffler Portland Harbor Superfund

States of the			*		1	ediment Trap)			al gran	7	101410			The second		13,	Con C
5.5	Star 1	Greenway	Recycling	07/02/07 Cd NA	12/20/07 0.624	12/20/07 DUP 0.619	01/31/08 0.653 T	02/01/08 0.548		A series and		THUR ST	2: MH AAT557			Quanta a	State of
ST3	: MH AND535		S	Cr NA	37.5	40.8	25.9 T	22		1994	Mining		d 8.4	4			AL SEAL
34515 JANON	20/07 06/09/09 0	06/09/09 DUP		Cu NA Pb NA	38 78.9	49.2 67.6	37.9 T	32.3 46.5			744 . ""		r <u>33.9</u> u 79.8				
100 1 10	NA 0.20	0.21		Pb NA Zn NA	1,020	280	58.3 T 289 T	46.5 229				Pt		1 James			
	NA 24.3 NA 15.2	24.9 14.6		V	1.11		Del 7	1			I III IIII	Zr		Mary Harnes	37 13		
Pb N	NA 12.6	12.1			Ar th	100	1. 10		orter Inc.		MANT IN	A the	ST2: M	H AAT557	1111		
Zn N	NA 79.5	75.0			11/2	1011 0		×				ATT THE REAL	06/19/	06/09/09			
and the			1		all b		Torrado	ortland Te	rminal			11111	Cd NA Cr NA	0.34 43.8			
	Charles M				1 A				miner			121 2	Cu NA	46.9	25	and a second	
	A CONTRACT	E L	3			-1/2				All		1	Pb NA Zn NA	22.6	ST1: M	IH AAT565	
20183		100	A. S.	Charles of	Christ	enson Oll - Pla	antflumbe	r1		AT					06/19/	5.000	Im
A all the	Sec. 19			1 de	*		10							Con +	Cd NA Cr NA	NA NA	
	and an		11	184						1	1.1				Cu NA	NA NA	118:00
- 10 - S			///				~			The second					Pb NA	NA	2. <u>}</u>
		6-/0	11		115 1	X	~			0		ontainer Recov	ZELTAY		Zn NA	NA	
		1 7	/	1			3	2	Van V	Vaters & Roge	rs-Portland						
			///			N.							Trumbull	Asphalt Plant		stment - near N	V 35th and Yeon
Cher Hay						100					1	1 EP 7					
		$\mathbb{N}/\mathbb{N}$		ST4: MH AAT	466	K X /						Auto	<b>学士社</b>				
	Start -	$\mathcal{H}$	Cd	06/20/07 06/ 1.3	/10/09				-			2				E Starter and	
1/2	- the	1 10	Cr		60.5	Var V			00				and a				
1412	5. 8 Mar	<b>↑</b> (	Cu		67.8 164		1º					44107	8. C	• <mark>///</mark> /			
	and the second	/_ N	Pb Zn		436	Statistics of	1						and the second second				
				St MAR	Sector St			SU		X			XXX				
H. S. Fr		<u> </u>	to				ST	5: MH AAX26	1			ANRES	Holdings				1. 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
1 ( 🗙 1	7-7-1	//		2012			3.5	06/04/09			0/14				vestment Co.		terr -
100	1. S. S. A.		$\langle \rangle$	ALC: N		1/2 2	Cd Cr			ST5: MH AAX26				AL THE OF COMMON			
	2. 1	X			()	15 5	Cu		1.5	06/19/07 Cd 24.9							
14. /h				10.00		36 5 40	Pb		( 1 P.	Cr 142		W W	Cars	n Oil - NW35	th/Ave		county -
	S.M		/	····*	A CA		Zn			Cu 192			*				
			2209	1.6/0	b/c/	例4T了。	¥***		1 miles	Pb         285           Zn         897		Trucking	- Jun N	· ·	win to		
5. 11/2	1.3.10	1	110%	Same.		See 1	1.						ñ H			3/	
		6. 15.19			64	2	1.		1 1 1 1	14 17				A STREET		/ <u>//  </u> -	1-1-1
1. 4-Y	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	155			~~~	-5- /			1 64	5 1 m	E	462		<b>ia American F</b>	lating Co.	0	0
a Xee Lo	and from	CALLER.	An go	N all	Sec.	A.K.S.			1	A Star		ntainer Manag	ement Servi	Ces	7		and the second
3. 19 XX	A BAR	18 1/2	S. S.	10.3	120	to the sec	1.500		1	N/M		- O	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			4. 3
	4.4	B/ A	1995	1151	12.1/	and the second			-	1 see		62	and a				-
		13587	2. 5.3	a la se	40	ALC: N			Sto /		14 81.	1		1910-			A CALCERS
P.,	A EVAN	1353		1.1.1.1		AN 23	SPACE.	18 3	A second	N				1. 1550	C.	121	
Sea .	XAP	23.24	1.100			1.18 - 41		1	100	C) (KA)	A BE	X			and the	SI III	Tradition of Street, or
14. 3.2	100 10 10	PAR IS	SALE REAL	Chais -			Xasa		( the set	100	12211	-				0	
12 5 2 /c	a starter of			1 2 3	S.S.	TA BUD	2327	/ 03			ACAL						
Brief Kar	1.00	100 2	143	100 St	48/5						AFI			-	1		1 1 5 7
- 0 38 A	A. 6. 2.9 1.	Co.A.S. V	1 de la		374	P IN PAR			2.3		TALLA.	AC P			M 1		







Attachment A 2009 Inline Sediment Trap Basin 18 R&D Pilot Study

6

 $\langle \uparrow \rangle$ 



Water Pollution Control Laboratory

6543 N. Burlington Avenue, Bldg 217, Portland, Oregon 97203 • Dan Saltzman, Commissioner • Dean Marriott, Director

# City of Portland Outfall Project Winter 2009 Inline Sediment Trap Pilot Study Summary Report

TO:	Linda Scheffler, Bureau of Environmental Services (BES)
FROM:	Jeremiah Bawden, BES
COPIES:	Randy Belston, BES Peter Abrams, BES
DATE:	July 20, 2010
SUBJECT:	Portland Harbor – Inline Sediment Trap Basin 18 R&D Pilot Study

# **Objectives**

Inline sediment traps were redeployed during the fall and winter of Fiscal Year 2008-09 (FY 08/09) in Basin 18 to address the source investigation data gaps that resulted from the limited sample volumes recovered during the City's initial 2007 sediment trap deployment. The objectives of the City's continued source investigations in Basin 18 were to both identify potential source areas for contaminants detected at elevated concentrations in the Lower Willamette Group (LWG) sediment traps from the 2007 deployment, and to conduct a pilot study of different trap designs and bottle shapes to evaluate stormwater solids capture rates.

This technical memorandum summarizes the results of the sediment trap equipment pilot study. Three primary objectives were identified by BES Field Operations (FO) for assessment during this pilot work in Basin 18:

- 1. Compare volume capture rates from the FY 08/09 deployments to volume capture rates at the same sampling locations in FY 06/07 to conduct a temporal evaluation of sediment trap performance.
- 2. Compare volume capture rates for different bottle types deployed at each station to evaluate whether one bottle type outperformed the others during the study period.
- 3. Design and implement a new style of sediment trap and evaluate trap performance.

# Background

Inline sediment traps are one of many sampling tools utilized by the City of Portland Outfall Project for investigating contaminant sources to the City stormwater conveyance system. The BES Portland Harbor Group tasked FO to install sediment traps in a variety of locations within the stormwater conveyance system during the 2007-08 and 2008-09 wet seasons in support of these efforts. In 2007 the LWG installed sediment traps in a number of stormwater conveyance systems discharging to Portland Harbor, including locations in the City stormwater conveyance system. To assist with interpreting data collected by the LWG from City systems, FO was requested to follow the LWG standard operating procedure (SOP) and to install

Ph: 503-823-5600 Fax: 503-823-5656 • www.cleanriverspdx.org • Using recycled paper. • An Equal Opportunity Employer. For disability accommodation requests call 503-823-7740, Oregon Relay Service at 1-800-735-2900, or TDD 503-823-6868.

additional sediment traps further upstream in selected outfall basins. Since then, FO has developed an SOP  $(SOP \ 5.01b - Sampling \ Stormwater \ Solids \ Using \ Inline \ Sediment \ Traps)$  for stormwater solids sample collection with inline sediment traps, and has deployed sediment traps in a number of locations to support outfall basin source investigation efforts.

The standard sediment trap design consists of a stainless steel bracket and cylinder that houses a 1-liter (L), high-density polyethylene (HDPE) sample bottle. The trap itself is mounted in-situ to the bottom of a pipe, or to the wall of a manhole vault, via stainless steel concrete anchor bolts. The installed trap bottle height, with the bracket in place, is ~9.5 inches (in.), which can impede capture of smaller storm flows and makes installation in small pipe diameters impracticable.

The majority of the inline sediment trap deployments to date have captured insufficient volumes of stormwater solids to meet all analytical objectives for this project, so a pilot study was conducted by FO in Basin 18 in 2009 to evaluate how variables such as trap design, bottle shape, and bottle aperture affect captured stormwater solids volumes (*City of Portland Outfalls Project Winter 2009 Inline Sediment Trap Pilot Study Sampling and Analysis Plan*). This summary report will only discuss the results of this pilot study, which lasted from October 2008 until June 2009.

# Basin 18 Pilot Study

Alternate sediment trap designs and different bottle types that were tested during this study included:

- 1 standard 1-L HDPE round, narrow-mouth bottle (bottle type used for current standard sediment trap design)
  - o Inside diameter (ID) neck aperture: 27 millimeters (mm)/1.0625 in.
  - $\circ$  Bottle height with polypropylene screw closure: 216 mm/8.5 in.
  - o Outside diameter (OD) of bottle: 91 mm/3.625 in.
- 1 standard 1-L HDPE round, wide-mouth bottle
  - ID neck aperture: 53 mm/2.0625 in.
  - Bottle height with polypropylene screw closure: 199 mm/7.875 in.
  - OD of bottle: 91 mm/3.625 in.
- 1 low-profile rectangular 1-L HDPE, wide-mouth bottle
  - ID neck aperture: 44 mm/1.75 in.
  - o Bottle dimensions (H x W x D): 180 mm/7 in. x 125 mm/5 in. x 71mm/2.75 in.
- 1 low-profile square 1-L HDPE, wide-mouth bottle
  - o ID neck aperture: 53mm/2.0625 in.
  - o Bottle dimensions (H x W x D): 181 mm/7 in. x 95mm/3.5 in. x 95 mm/3.5 in.

Additionally, an alternative sediment trap prototype, designed by FO, was also tested and evaluated in conjunction with these different trap designs and bottles during this study (see Photo 1). The Screened Inline Flow-through (SIFT) sediment trap prototype consists of two bracketed, stainless steel cylinders. The upstream, primary chamber had an attached 1.5-in.-high stainless weir, and a stamped, 18-gauge stainless steel mesh back plate [~1270 micrometers ( $\mu$ m) – medium sands]. The downstream, secondary chamber had a stainless, fine mesh screen (~228  $\mu$ m – fine sands/silts) which was backed by a stamped 18-gauge stainless steel mesh back plate.

# **Basin 18 Sampling Locations**

FO installed a selection of standard and alternative sediment trap designs at four locations and the SIFT prototype at one location in the Basin 18 stormwater conveyance system. The sample locations are described below and shown on the attached Figure 1.

**18\_ST1 - Manhole AAT565:** SIFT sediment trap prototype was installed upstream of the manhole and catch basin laterals in 12-inch diameter main inlet pipe.



Photo 1: SIFT sediment trap prototype in-situ at location 18\_ST1.

**18\_ST2** - **Manhole AAT557:** one standard, narrow-mouth trap (NM), along with three alternate trap designs were installed upstream of the manhole in the 42-in diameter main inlet pipe: standard wide-mouth (WM); rectangular wide-mouth (RECT); square wide-mouth (SQ).

**18\_ST3 - Manhole AND535:** one NM trap, along with three alternate traps (WM, RECT, and SQ) were installed upstream of the manhole in the 42-in diameter main inlet pipe.

**18\_ST4 - Manhole AAT466:** one NM trap, along with three alternate traps (WM, RECT, and SQ) were installed downstream of the manhole in the 48-in diameter main outlet pipe.

**18\_ST5**<sup>1</sup> - **Manhole AAX261:** one NM trap, along with three alternate traps (WM, RECT, and SQ) were installed upstream of the manhole in the 36-in diameter main inlet pipe.

<sup>&</sup>lt;sup>1</sup> This location was not sampled during the 2007 Basin 18 sediment trap deployments.

Standard inline sediment traps were installed at all of the sites except for 18\_ST5 during the initial 2007 Basin 18 sediment trap deployments. When stormwater pipe diameters allow, FO makes it a standard practice to install a pair of standard sediment traps side-by-side in an attempt to capture the greatest volume of stormwater solids to meet all analytical objectives.

During this 2009 pilot study, FO field crews installed sediment trap pairs (standard and/or alternative design traps) at or as close as possible to the original 2007 trap locations. Extending upstream from these sediment trap pairs, two more traps (standard or alternative design traps) were then installed in the collection system to be tested and evaluated concurrently with the paired traps. Photo 2 depicts the typical pilot study inline sediment trap arrangement.



Photo 2: Trap orientation at location 18\_ST2; the trap at the top of the photo is the furthest upstream.

# **Field Activities**

Alternative sediment traps and bottle types were installed in the Basin 18 stormwater conveyance system between October 30, 2008 and February 4, 2009. Periodic field visits were conducted in accordance with FO *SOP 5.01b* to ensure that traps were intact and to clear debris from trap openings, to evaluate trap performance, and to archive accumulated sediments as needed.

At location ST1, FO conducted more frequent field visits to collect captured stormwater solids from the SIFT sediment trap chambers to minimize captured solids loss during subsequent storm events. Solids were removed from the SIFT chamber with stainless steel spatulas that were decontaminated according to FO *SOP 7.01a – Decontamination of Sampling Equipment*. All removed solids from the SIFT were placed into an amber sediment jar, archived and stored in a laboratory fridge at the Water Pollution Control Laboratory (WPCL) throughout the deployment period.

All four sediment trap bottles at location ST3 were removed from the sediment traps on January 14, 2009 and archived, due to large volumes of captured stormwater solids in the trap bottles and to prevent resuspension and loss of captured solids through scouring. New bottles were installed at ST3 for the remainder of the deployment period in Basin 18.

At the conclusion of the deployment period (June 4, 2009), all trap solids were removed and processed for analyses. Solids from locations ST2 through ST5 were filtered per the SOP. Solids from ST1 were thoroughly homogenized in the archived jar using a decontaminated stainless steel spatula at the WPCL field lab at the completion of the deployment period and submitted for analyses.

# Results

Table 1 summarizes the deployment periods for both the 2007 and 2008-09 wet seasons, the total rainfall during these two periods, and the total volume of stormwater solids captured at each of the locations in Basin 18 during these consecutive deployments. Table 2 summarizes the performance of the different sediment trap bottles tested during this study. This section presents an evaluation of how results support the three primary objectives of this study.

## Comparison of 2007 and 2009 Trapped Sediment Volumes

The volumes of captured solids from the 2009 deployment were significantly greater than the volumes captured at the same sampling locations from  $2007^2$ . This dissimilarity in captured volumes can be attributed to several factors.

First, multiple bottle sets were deployed at ST2-ST4 during this study, compared to just two-standard sediment traps being deployed in 2007 at each location. In addition, the 2009 sediment traps were installed and maintained for a longer deployment period and were subjected to greater total rainfall (and storm flow). The average number of total days of deployment in 2009 (ST2-ST4) was 173 days, compared to approximately 96 days in 2007. Similarly, the total rainfall in inches during the 2009 deployment was two to four times greater than that measured in 2007 (see Table1).

Lastly, seasonality may have affected capture volumes. During this study, the deployment duration encompassed the more intense fall and winter storm periods, which typically have a higher frequency of storm events with longer durations of active precipitation. The 2007 deployment period encompassed only the intense and flashy spring storm period, which at times can have a high frequency of storm events with shorter durations of measurable precipitation.

## Comparison of Trapped Sediment Volumes by Bottle Type

Throughout the duration of this study, field crews observed variable stormwater solids capture rates per trap at all four sites.<sup>3</sup> Initially, this was thought to be a correlation between bottle aperture and/or bottle shape or an indication that the sediment trap alignments may have altered the flow regimes at each of the sites. Based on both field observations and an analysis of the solids accumulation data in Table 2, there appeared to be a spatial component to these solids capture rates (i.e., bottle order in relation to flow may have influenced solids accumulation).

<sup>&</sup>lt;sup>2</sup> Solids capture data for site ST5 in Table 1, which was not originally a location in 2007, has been omitted from this comparison.

<sup>&</sup>lt;sup>3</sup> Field notes documenting observations of solids accumulation during the deployment period are included in Attachment C of *Outfall Basin 18 Inline Solids Investigation, Technical Memorandum No. OF 18-2, Prepared by the City of Portland Bureau of Environmental Services. July 20, 2010.* 

This spatial pattern primarily consisted of the furthest upstream and furthest downstream traps exhibiting the greatest solids accumulation at sites ST2, ST3, and ST4. However, this spatial pattern was not observed at sites ST5 and ST3 (after the different bottle types were subsequently archived on 1/14/2009). Due to the limited size of this study, additional data would be needed in order to determine whether a spatial pattern does indeed exist.

The data listed in Table 2 also illustrate the variability in the different bottle shapes and/or apertures attributed to the greatest and the second greatest total solids accumulations. This may reflect the combination of uncontrolled variables during this study (e.g., differences in catchment areas, land use, pipe slope, pipe size and orientation, and flow regimes). For example, the furthest downstream trap at location ST2, which was a standard, narrow-mouth bottle, captured the greatest volume of solids. The furthest upstream trap at location ST2, which was a low-profile, rectangular wide-mouth bottle, captured the second greatest volume of solids. In contrast, at location ST5, the two furthest upstream traps, which were deployed with low-profile, square wide-mouth and rectangular wide-mouth bottles, captured the most solids at this location.

The variability in the bottle types and/or aperture that captured the most solids during this study, and the small study size, do not allow for a conclusive decision to be made at this time as to which bottle type is preferred to maximize solids capture for future deployment. Nonetheless, the standard narrow-mouth bottles and rectangular wide-mouth bottles combined collected an average of 80% of the total solids captured at each location, indicating that these two bottle types may be more likely to trap solids than the other two bottle types evaluated during this study.

## Evaluation of New Flow-through Trap Design

The performance of the SIFT sediment trap prototype during this study shows some promise for future applications. Table 1 summarizes the captured stormwater solids data at location ST1 for this prototype and the previous standard sediment trap deployment in 2007. The SIFT captured 41.5 g; in 2007, two standard sediment traps, both equipped with standard narrow-mouth bottles, captured a total of 10.8 g. Approximately four times more stormwater solids were captured by the SIFT sediment trap prototype compared to the solids captured by the two standard inline sediment trap bottles.

The deployment period for the SIFT began in February as opposed to March; the former typically constitutes a wetter portion of the overall storm season. For example, during this study there was approximately 11.01-in of total rainfall that occurred throughout the deployment of the SIFT prototype, compared to approximately 5.83-in of total measurable rainfall in 2007. Another factor influencing the capture rate of the SIFT prototype is in the trap's design itself. The low flow-through profile of the SIFT increases the likelihood that the trap will capture solids during a wider range of storm events, especially during smaller storms. In contrast, the standard sediment trap opening is at a height of ~9.5-in and will only sample suspended solids during storm flows that crest over the top of the bottle. Spring rain events tend to taper down in size as the wet season ends, so the SIFT likely captured more low-flow events than the standard traps.

There are appear to be several advantages to using the SIFT prototype over the standard inline sediment trap for certain applications. One of these advantages is that the SIFT prototype was confirmed to capture a measurable portion of the stormwater solids fraction from a discrete smaller storm event, potentially resulting in an integrated solids sample over the duration of a wet season. This was confirmed after FO removed and archived captured solids from the prototype during an interim visit on the morning of May 18, 2009, before a subsequent storm event in which ~1.3 g of new solids were captured by the SIFT prototype during an approximate 0.36-in storm event [Yeon Raingage 121 (5/18/09-5/19/09)]. This is noteworthy because it is currently unclear how standard sediment traps perform (e.g., whether the trapped solids represent just larger storm events or an integrated sample from a range of flow conditions). The low-

profile trap design allows for trap installation in smaller lines and the use of both cotter pins and scissorjack bands allow the prototype to be easily installed and maintained in multiple pipe diameters.

Disadvantages to the new trap design may include loss of finer solids fractions from scouring during successive storm events. Sufficient solids volume was not available during the pilot of the new design to analyze grain size, but further evaluation of the solids trapped by this design would help to determine whether the trap design introduces analytical bias (e.g., contaminants associated with finer fraction may be underrepresented by sample collected from this trap) and to define applications for future use. Also, the percent solids result for the SIFT prototype was only 39.2%, compared to the standard sediment trap percent solids result for SIFT samples are consistently lower than sediment trap solid, more sample volumes may be needed from SIFTs than from standard trap to meet analytical goals.

# **Conclusions and Recommendations**

Based on the results of this pilot study, FO recommends the actions described below for future sediment trap investigations and additional evaluation of trap design and performance.

1. Perform no further testing of the different apertures and bottle types evaluated under this study.

*Rationale:* There was neither a definitive bottle type, nor an alternate sediment trap design, that clearly out-performed all of the other traps or bottles tested. A number of variables, such as the small sample size, the limited deployment (only one storm season), and the effects of flow variables discussed in the previous section limit the conclusivity of this study. Much more analysis, in which variables are isolated and controlled, would be needed to state definitively whether one bottle type performs consistently better than the others. While time and budget do not allow for comprehensive studies, the pilot study did determine that the standard bottle design (narrow-mouth, 1-liter HDPE) and the low-profile rectangular wide-mouth (1-liter HDPE) bottles accounted for an average of 80% of the solids volumes captured at each location. The majority of available equipment is designed to hold a standard narrow-mouth bottle. Future standard trap applications will rely on the narrow-mouth and low-profile rectangular bottles.

2. Where possible, employ the standard inline sediment trap design for pipe diameters greater than 30 inches and the SIFT design for pipe diameters less than 30 inches.

*Rationale:* The standard trap design is difficult to install in small pipe diameters and that FO currently has a multitude of these traps in long-term storage, which would allow for a rapid deployment into multiple basins, while also reducing additional costs associated with future research and development of new sediment trap designs. However, if time and cost are an issue, SIFTs should be considered as they do not require labor-intensive sample processing and filtration.

3. Use same trap design when conducting contaminant concentration comparisons within or between basins.

*Rationale*: The analytical comparability of solids trapped by SIFT vs. solids trapped by standard traps is not known; using one trap design for a specific investigation would allow for greater comparability between trap locations.

4. Conduct further testing and evaluation on the performance of the SIFT sediment trap prototype.

*Rationale*: More information is needed to support future installation of trap(s) in small and largediameter stormwater pipes. The flexibility of the SIFT trap to be installed in different diameters, the ability to capture low-flow storm events, the ease of installation and removal, and the reduction in sample processing times as witnessed during this study, represent clear advantages over the standard sediment trap. Further evaluation of potential analytical biases associated with this trap versus the standard trap is needed to refine future applications.

5. Continue to research and identify alternative sediment trap designs, which are being evaluated by other municipalities.

*Rationale*: This action would allow for the most promising alternative trap designs to be tested and evaluated for future use on this and other BES projects.

#### Tables

- Table 1 Basin 18 Sediment Trap Deployment Summary (2007-2009)
- Table 1 Basin 18 Sediment Trap Performance Summary (2008-2009)

#### Figure

Figure 1 – Basin 18 Inline Sediment Trap Pilot Study Locations



#### Table 1: Basin 18 Sediment Trap Deployment Summary (2007-2009)

#### 2007 Sediment Traps

								Rainfall During		# of	
Sample Pt			Pipe Size	Sample		Removal	Laboratory	Deployment	Days	Bottles	Volume of Sediment
Code	Location	Hansen ID	(in.)	ID	Installation Date	Date	Submittal Date	(in.)	Deployed	Deployed	Collected (g)
18_ST1	4927 NW Front Ave	AAT565	12	FO070805	3/14/2007	6/18/2007	6/21/2007	5.83	96	2	10.8
18_ST2	3950 NW Yeon Ave	AAT557	42	FO070806	3/15/2007	6/18/2007	6/21/2007	5.83	95	2	44.5
18_ST3	4033 NW Yeon Ave - 42 in. Line	AND535	42	FO070808	3/14/2007	6/19/2007	6/21/2007	5.83	97	2	15.8
18_ST4	4033 NW Yeon Ave - 48 in. line	AAT466	48	FO070809	3/14/2007	6/19/2007	6/21/2007	5.83	97	2	73.1

#### 2008-09 Sediment Traps

								Rainfall During	I		
Sample Pt			Pipe Size	Sample		Removal	Laboratory	Deployment	Days		Volume of Sediment
Code	Location	Hansen ID	(in.)	ID	Installation Date	Date	Submittal Date	(in.)	Deployed		Collected (g)
18_ST1	4927 NW Front Ave	AAT565	12	FO095692	2/4/2009	6/4/2009	6/11/2009	11.01	120	1 SIFT	43.1
18_ST2	3950 NW Yeon Ave	AAT557	42	FO095693	10/30/2008	6/4/2009	6/11/2009	26.86	217	4	223.3
18_ST3	4033 NW Yeon Ave - 42 in. Line	AND535	42	FO095694	12/9/2008	6/4/2009	6/11/2009	20.31	177	4	4152.7
18_ST4	4033 NW Yeon Ave - 48 in. line	AAT466	48	FO095695	12/9/2008	6/4/2009	6/11/2009	20.31	177	4	492.1
18_ST5	3250 NW St Helens Rd - 36 in. line	AAX261	36	FO095696	12/4/2008	6/4/2009	6/11/2009	20.44	182	4	163.4



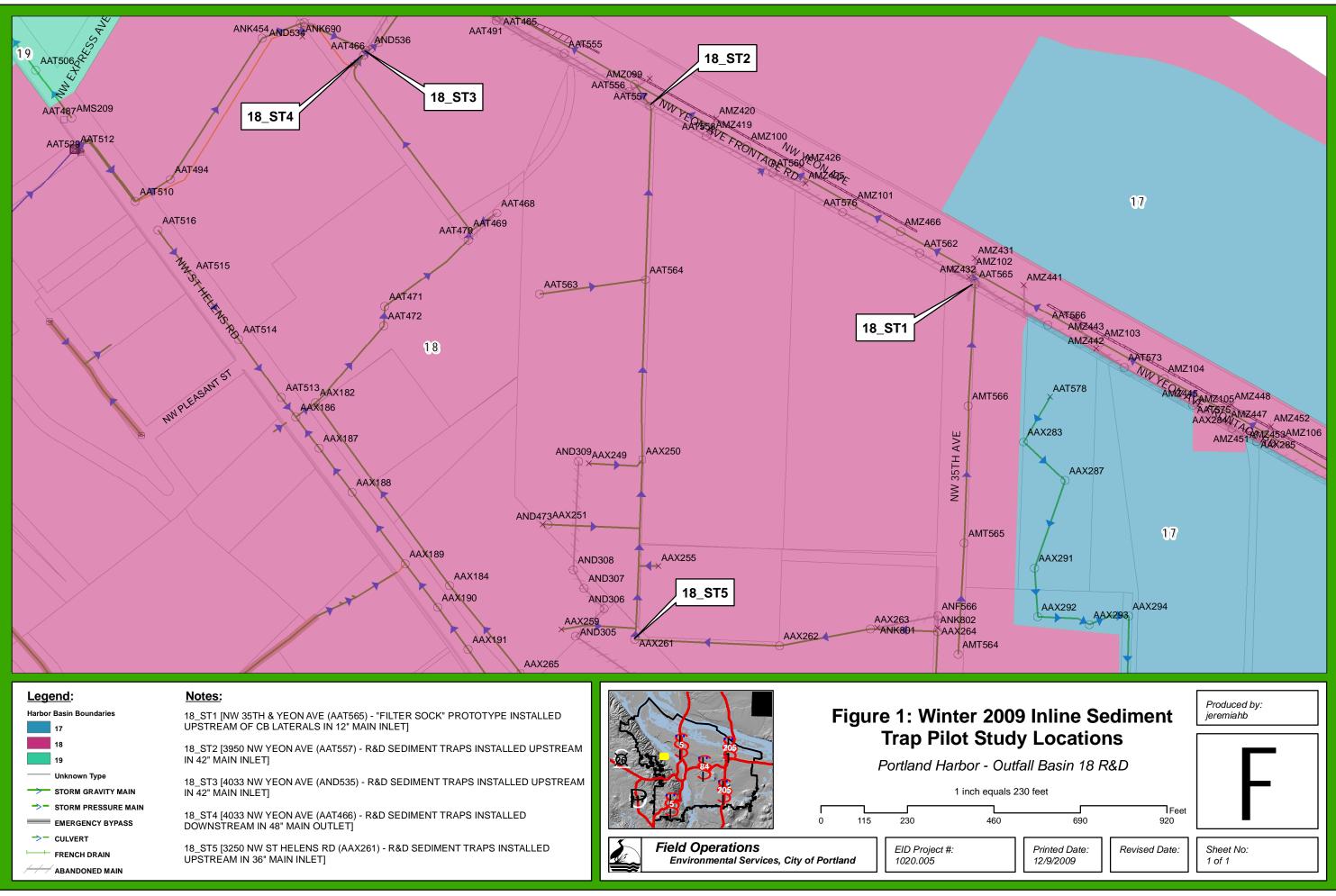
 Table 2: Basin 18 Sediment Trap Performance Summary (2008-2009)

	Rainfall During		Volume of Sediment
Sediment Trap Code	Deployment (in.)	Days Deployed	Collected (g)
Primary Cylinder (SIFT)	11.01	120	23.7
Secondary Cylinder (SIFT)	11.01	120	19.4
18_ST2_RECT	26.86	217	73.1
18_ST2_SQ	26.86	217	18.8
18_ST2_WM	26.86	217	9
18_ST2_NM	26.86	217	122.4
18_ST3_SQ	8.91	36	280.1
18_ST3_RECT	8.91	36	365.1
18_ST3_WM	8.91	36	141.5
18_ST3_NM	8.91	36	61.5
18_ST3_SQ	11.4	141	931
18_ST3_RECT	11.4	141	542.2
18_ST3_WM	11.4	141	692.7
18_ST3_NM	11.4	141	1138.6
18_ST4_RECT	20.31	177	360.3
18_ST4_WM	20.31	177	15.3
18_ST4_SQ	20.31	177	3.5
18_ST4_NM	20.31	177	113
18_ST5_RECT	20.44	182	113.6
18_ST5_SQ	20.44	182	24.6
 18_ST5_WM	20.44	182	1.4
18_ST5_NM	20.44	182	23.8

Greatest Stormwater Solids Accumulation

Sediment Trap Codes: NM = standard [1-liter (L)] HDPE round, narrow-mouth bottle (bottle type used for current sediment trap design); WM = standard (1-L) HDPE round, wide-mouth bottle; SQ = low-profile, square (1-L) HDPE, wide-mouth bottle; RECT = low-profile, rectangular (1-L) HDPE, wide-mouth bottle.

Sediment trap orientations are listed in an ascending order from furthest upstream to furthest downstream at a given node location within the stormwater conveyance system.



PROJECT FOLDER PATH: S:\EID\1000\1020.005 - Portland Harbor Stormwater Samp\Data&rep\Sed Trap Data\2009 Sed Trap Data\Basin 18 Sed Trap Pilot Data (6-9,10&11-09)

Attachment B Field Photographs

# 2007 Sediment Trap Deployments



Photo 1 (March 2007). Western Subbasin sampling location ("ST3", Manhole AND535).



**Photo 2 (June 2007).** Installed sediment traps at sampling location ST3.



Photo 3 (March 2007). West-Central Subbasin sampling location ("ST4", Manhole AAT466).



Photo 4 (June 2007). Installed sediment traps at sampling location ST4.



Photo 5 (March 2007). East-Central Subbasin sampling location ("ST2", Manhole AAT557).



Photo 6 (June 2007). Installed sediment traps at sampling location ST2.



Photo 7 (March 2007). Eastern Subbasin sampling location ("ST1", Manhole AAT565).



Photo 8 (June 2007). Installed sediment traps at sampling location ST1.

### 2008-09 Sediment Trap Deployments



**Photo 9 (December 2008)**. Western Subbasin sampling location ST3 (Manhole AND535) and installed sediment traps. The trap in the foreground is the furthest downstream.



**Photo 10 (December 2008).** West-Central Subbasin sampling location ST4 (Manhole AAT466) and installed sediment traps. The trap in the foreground is the furthest upstream.



**Photo 11 (October 2008).** East-Central Subbasin sampling location ST2 (Manhole AAT557) and installed sediment traps. The trap in the foreground is the furthest downstream.



Photo 12 (December 2008). East-Central Subbasin sampling location ("ST5", manhole AAX261).



**Photo 13 (December 2008).** East-Central Subbasin sampling location ST5 (Manhole AAX261) and installed sediment traps. The trap in the foreground is the furthest downstream.



**Photo 14.** Flow-through sediment trap during development, subsequently installed in eastern subbasin sampling location ST1 (Manhole AAT565).



**Photo 15 (February 2009).** Eastern subbasin sampling location ST1, with installed "SIFT" pilot study sediment trap.



**Photo 16 (June 2009).** East-central subbasin inline solids sample location. Solids sample was collected from the 36-inch-diameter line downstream of Manhole AAX261 and sediment trap sample location ST5.

TM 18-2\_ATTACHMENT B.DOC JULY 20, 2010



**Photo 17 (June 2009).** Homogenized inline solids sample collected from east-central subbasin downstream of sediment trap ST5.

Attachment C Field Notes

2007 Sediment Trap and Inline Solids

ſ <del></del>					
5			CITY OF PORTLAND	EC	ALL REAL
		SEDIMENT	TRAP FIELD DATA	SHEET	<b>x</b>
SECTIO	N 1 – INSTALLAT	ION INFORMAT	ΓΙΟΝ		
Project Na	me: Portland Har	hor SW.	Project No. 1020,005	Date: 3/14/07	- BY JXB/MJS
Site Addre			Describe Traffic Cont	rol and site access	s concerns: 9. Yeon Ave past ntage Road" a fter vein to manhole rateling Yeon Ave (b) 29. conce off area.
Pl Code	<u>18_571</u> Hansen		35thAve, Turn ri Dassive ZothA	ght onto "From	stage Road" after
	cation (pipe size, dist		using sidewall	e (south) par	raleling Yeon Avelo
Sed traps	s located = 2"E 6"	downstream of	inlet, sed traps It	early toot trat	fricg joggers wome.
due to e	stalled in MH + small diameter of	Amain pipe (	to CB lateral) 212"), May get influent in pipe, etc?	ve from later	ul for sed transfed
Flow cond	itions and depth at tim	ie of install, sedimer	nt in pipe, etc? 3 water (-0.25") at i	nlet of MH+	rouch cafew large
Metal ci	hunks in MH tr	rich during in	stallation.		<i>j</i>
	Sketch Map (Sketch maj		manhole, showing approx sed MH l	ocation, orient drawing	using the top of the page as
north):		1	The SED TRAPS		
	E	F >	500		
	i i				
8.			$\Lambda_{\pm}$		IN
		MI	+		IN
		E L	+ 601		IN
	MZ N N	CB TITIII Lawrence			IN
SEGTIO		CB IIIII France	TWLET 12" Main Live		IN IN
SECTIØ Date:	N2-MONTHLY	CB Former	IATION Sed depth per bottle (	· · · · · · · · · · · · · · · · · · ·	IN Bottles removed and replaced?
Date:	N2-MONTHLY 1/5/07	CHECK INFORM	$\frac{100}{100}$ $\frac{12^{11}}{12^{11}}$ MATION $\frac{100}{100}$ Sed depth per bottle (6) $\frac{100}{100}$ $\frac{100}{100}$	· · · · · · · · · · · · · · · · · · ·	IN Bottles removed and replaced?
Date: Commer	N2-MONTHLY 1/5/07	CHECK INFORM	$\frac{100}{1000}$ $\frac{1000}{1000}$ Sed depth per bottle (6) EAST = 2320 WEST - 2120 WATER		replaced? NO
Date:	N2-MONTHLY 1/5/07	CHECK INFORM	$\frac{100}{1000}$ $\frac{1000}{1000}$ Sed depth per bottle (6) EAST = 2320 WEST - 2120 WATER	%):	
Date: Commer	$\frac{3}{2}$ N.2-MONTHLY $\frac{1507}{1507}$ This: BOTH BOTTCO	CHECK INFORM BY DJH/JXB SFUL OF By JJJS, JXB	$\frac{100}{100}$ Sed depth per bottle (% EAST = 23% WEST 2 19% WATER Sed depth per bottle (% Sed depth per bottle (%	%):	Replaced?. No Bottles removed and replaced?: No
Date: Commer	$\frac{3}{2}$ $\frac{1}{1507}$ $\frac{1507}{1507}$ $\frac{1507}{100}$	CB CB CHECK INFORM BY DJH/JKB S FULL OF BY MJJS, JXB at nater, da By: IIIIIII	ATION Sed depth per bottle ( $S$ EAST = 23% WEST 21% WEST 21% WATER Sed depth per bottle ( $S$ Cast 2 23% WEST 21% EAST = 23% EAST = 23% WEST 21% EAST = 23% EAST = 23	%): m mest trej	Replaced?: No Bottles removed and replaced?: No A Bottles removed and
Date: Commer Date:	$\frac{2}{2}$ N 2 - MONTHLY $\frac{1507}{1507}$ This: BOTH BOTTLO $\frac{1407}{1407}$ This: both fall $\frac{1907}{1907}$	CHECK INFORM BY DJH/JKB S FULL OF BY MJS, JXB atnater, du	ATION Sed depth per bottle ( EAST = 23% WEST 2195 WEST 2195 WATER Sed depth per bottle ( East 23% WEST 2195 WEST 23% Sed depth per bottle ( East 23% WEST 23% Sed depth per bottle ( East 23% WEST 23%	%): <u>m mes 4 trej</u> %):	replaced?. No Bottles removed and replaced?: N2
Date: Commer Date: Date:	$\frac{2}{2}$ N 2 - MONTHLY $\frac{1507}{1507}$ This: BOTH BOTTLO $\frac{1407}{1407}$ This: both fall $\frac{1907}{1907}$	CHECK INFORM BY: DJH/JKB S FULL OF BY: JJJS, JXB of nater, du By: ECH MJ HEG WI	ATION Sed depth per bottle ( EAST = 23% WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 Sed depth per bottle ( East = 2.3% WEST = 2.3% WEST = 2.3% WEST = 2.3% WEST = 2.4% WEST = 2.4%	%): <u>m mes 4 froj</u> %):	replaced? No Bottles removed and replaced? No A Bottles removed and replaced? UMOVIO fo UMO of Scales V
Date: Commer Date: Date:	$\frac{2}{2}$ N 2 - MONTHLY $\frac{1507}{1507}$ This: BOTH BOTTLO $\frac{1407}{1407}$ This: both fall $\frac{1907}{1907}$	CB CB CHECK INFORM BY DJH/JKB S FULL OF BY MJJS, JXB at nater, da By: IIIIIII	ATION Sed depth per bottle ( $S$ EAST = 2.3% WEST 2.1% WATER Sed depth per bottle ( $S$ Cast - 2.3% WEST 2.1% Bast - 2.3% WEST - 2.3% WEST - 2.3% WEST - 2.3% Sed depth per bottle ( $S$ Cast - 2.3% WEST - 2.3% WEST - 2.3% WEST - 2.3% Sed depth per bottle ( $S$ Cast - 2.3% WEST - 2.3% WEST - 2.3% WEST - 2.4% Sed depth per bottle ( $S$ Cast - 2.3% WEST - 2.4% WEST - 2.4% WE	%): <u>n mest trej</u> %):	Replaced?: No Bottles removed and replaced?: No Bottles removed and replaced? Little vol fe
Date: Commer Date: Date: Commer	$\frac{2}{2}$ $\frac{1507}{1507}$ $\frac{1507}{1507}$ $\frac{1507}{1507}$ $\frac{1407}{1507}$ $\frac{1407}{1507}$ $\frac{1907}{1507}$ $\frac{1907}{1507}$	CHECK INFORM BY: DJH/JKB S FULL OF BY: JJJS, JXB of nater, du By: ECH MJ HEG WI	ATION Sed depth per bottle ( EAST = 23% WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 Sed depth per bottle ( East = 2.3% WEST = 2.3% WEST = 2.3% WEST = 2.3% WEST = 2.4% WEST = 2.4%	%): <u>n mest trej</u> %):	replaced? No Bottles removed and replaced? No Bottles removed and replaced? UMOVIO fo UMO of Scales V Bottles removed and
Date: Commer Date: Date: Commer Date:	$\frac{2}{2}$ $\frac{1507}{1507}$ $\frac{1507}{1507}$ $\frac{1507}{1507}$ $\frac{1407}{1507}$ $\frac{1407}{1507}$ $\frac{1907}{1507}$ $\frac{1907}{1507}$	CHECK INFORM BY: DJH/JKB S FULL OF BY: JJJS, JXB of nater, du By: ECH MJ HEG WI	ATION Sed depth per bottle ( EAST = 23% WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 WEST 2 195 Sed depth per bottle ( East = 2.3% WEST = 2.3% WEST = 2.3% WEST = 2.3% WEST = 2.4% WEST = 2.4%	%): <u>n west trej</u> %):	Replaced?: No Bottles removed and replaced?: No Bottles removed and replaced? CMOVID fo MODIFIENT Bottles removed and replaced?:
Date: Commer Date: Date: Commer Date: Commer	$\frac{2}{2}$ $\frac{1507}{1507}$ $\frac{1507}{1507}$ $\frac{1507}{1507}$ $\frac{1407}{1507}$ $\frac{1407}{1507}$ $\frac{1907}{1507}$ $\frac{1907}{1507}$	CHECK INFORM BY: DJH/JKG BY: DJH/JKG BY: DJH/JKG CHECK INFORM BY: BY: DJH/JKG CHECK INFORM DJH/JKG CHECK INFORM DJH/JKG CHECK INFORM DJH/JKG CHECK INFORM DJH/JKG CHECK INFORM DJH/JKG CHECK INFORM DJH/JKG DJH/JKG BY: DJH/JKG DJH/JKG BY: DJH/JKG DJH/JKG DJH/JKG BY: DJH/JKG DJH/JH/JKG DJH	ATION Sed depth per bottle ( $S$ EAST = $2360$ WEST $2195$ WATER Sed depth per bottle ( $S$ Sed depth per bottle ( $S$ S $2360WEST 2195WEST 2195Sed depth per bottle (SSed depth per bottle (SSed depth per bottle (SSed depth per bottle (SS$ $257S$ $2100S$ $21000S$ $21000S$ $21000$	%): ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Replaced?: No Bottles removed and replaced?: No Bottles removed and replaced? CMOVIO fo MODIFIENT Bottles removed and replaced?:

2) 3)

÷: ,

S:\FIELDOPS\FORM\$\Sediment Trap FDS.docSediment Trap FDS.doc

E.	

#### CITY OF PORTLAND ENVIRONMENTAL SERVICES FIELD OPERATIONS



## SEDIMENT TRAP FIELD DATA SHEET

#### SECTION 1 - INSTALLATION INFORMATION

Project Name Portland Harbor SW.	Project No. /Osc. cos	Date: 3/15/10->	BYJXBIJJM
Site Address: 3950 N.W. Yeon Ave	Describe Traffic Co Travel east bow	ntrol and site access co nd on NW, Yeon Avi colif & American St	ncerns: 2. Turn night cel. Set un UNA
Pt Code: 18-STR Hansen ID: AAT 557	Slow TC signs	along Frentage Pic	d, Pull entry van
Sed trap location (pipe size, distance from node Sed. Traps installed=3.243.6 Upstream of MHAPT 557 in 42" M Line, Bottle Mouths (Bottle Ø1 Upstra	Road and Unive		ic along travitage
Flow conditions and depth at time of install, sed		THERE CHAVENT	ar main pipe.
Active base flow in pipe upon a	rolled (21,5 fps). Dep	that flaw appr	UX. 54.0.75"
No. sediment in pipe during is	nstallation.	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
Sed Trap Sketch Map (Sketch map of the pipe(s) layo	out at manhole, showing approx sed MH	Hilocation, orient drawing using	the top of the page as
			AN.
	131		
B	181 [ 36'		Survey State Sta
SECTION 2-MONTHLY CHECK INFO	DRMATION		
Date: 4/5/07 By: DJ4/J	Sed depth per bottle $UP = \langle d^{2} \rangle_{UP}$ $O =  u ^{2} = \langle d^{2} \rangle_{UP}$		les removed and aced?:
Comments BOTH BOTTLES FULL OF WAT	ER FLOATING SED OR BIOF	LORGANIC PARACIES	NOR SED IN BOTTON
Date: 5/14/07 By MJ5/J		(%): Bott	les removed and aced?:
Comments: Both bottles full.	of water		
Date: 6/18/07 By ElH, 1	MJS Sed depth, per, bottle	repla	les removed and for aced?: Le Moved for Lo of gra 301
Comments L. M. bottles fill	of hister Bed		bettes
Date: By:	Sed depth per bottle	(%): Bott	les removed and aced?:
Comments:			
Date: By:	Sed depth per bottle		les removed and aced?:
Comments			

	ENVIRO	CITY OF PORTLAND	
		ELD OPERATIONS	
SECTION 1 – INSTA			
	Harbor Stormwater Sun		Elaz A TENTED
Site Address:		Describe Traffic Control and site	access concerns:
4033 MM Pt Code: 18_573 Ha	ansen ID: ANDSZS	Steel parking lot where par May cause a ccess issues	are located in an American rked vehicles over node
	e, distance from node, etc	)- 42" diameter	
τι τη της της της της της της της της της	A 0 B	Sedtaph ~ 1. Sedtaph ~ 1.	.5' upstream of node AND5. 2.0' upstream of node AND.
	n at time of install, sedimer		
base flow depth of 4.c	" wlavelocity of	- approximately Ifps	
Sed Trap Sketch Map (Sk		manhole, showing approx sed MH location, orient	drawing using the top of the
	48" . The fipe concrete fipe	A	
	Concrete		
		Sed. Traps	
	15	HUTH	$\langle \rangle$
	2.0	L Esquationorte	N
SECTION 2 – MONT			
Date: 4/5/07	By JKB/ DJH	Sed depth per bottle (%): BOTHE $1 \land < 1\%$ Bottle $1 \not B \land 1\%$	Bottles removed and replaced?: No
Comments Both boff	res full of water		21% - very clear water
Date:	By:	Sed depth per bottle (%):	Bottles removed and
3114107-	JYB/MJS	· upstream Bottie 1B - 396	replaced?: NO
Comments: Both bu		rwater with sed. in both	
Date:	By: MJS/ATA	Sed depth per bottle (%): $\beta_{a}$ the $A < 1\%$ $\beta_{a}$ the $\beta = 1\%$	Bottles (emoved and replaced? End of Piplo
Comments:		1 . San (c 0 - + 10	Study / En Of Seaso
Date:	By:	Sed depth per bottle (%):	Bottles removed and replaced?:
Commonto		<u> </u>	
Comments:	By	Sed depth per bottle (%):	Bottles removed and replaced?:
Date:			replaceur.
	18%		
Date:			

**(** 

CITY OF PORTLAND ENVIRONMENTAL SERVICES FIELD OPERATIONS SEDIMENT TRAP FIELD DATA SHEET SECTION 1 - INSTALLATION INFORMATION Partland Harbor Strmutr Date: 3 5 07 Project Name: Project No. /020,005 BY: TM TUB Describe Traffic Control and site access concerns Site Address: nulle AATA66 located in American Steel Parking lot. 4033 NW YOON May have parked vehicle covering node in future. Pt Code: 18\_574 Hansen ID: Sed trap location (pipe size, distance from node, etc.) - pipe dra. 48" Trap A 2 8.5 From node, Trap Ba 4.5 " Downstream ~ 401 A motivean Flow conditions and depth at time of install, sediment in pipe, etc? busetlow @ 1.5", approximately 1.0 fps Sed Trap Sketch Map (Sketch map of the pipe(s) layout at manhole, showing approx sed MH location, orient drawing using the top of the page as north): 45'1 4,0 pipe nown of bottles are 9. 42"CMP WOOD P P above inver-SECTION 2 - MONTHLY CHECK INFORMATION BY: JNB/DJH Sed depth per bottle (%): BOTTLE 1A 4110 Date: Bottles removed and replaced?: NO 415107 BOTTLE 1 R 6196 Comments: Both bothes full of clear water & trace amounts of sed 21% Date: By: Sed depth per bottle (%): Bottles removed and replaced?: No Bottle 1A 2300 Bottle 1B 230 5/14/07 JYB/MJS Comments: Full of clean water o 43% accumulated oth bottles Seld Sed depth per bottle (%): By: Bottles removed and Date MJS/AJA ottle 1B 10% 02 end stasor Comments Sed depth per bottle (%): Date: .By: Bottles removed and replaced?: Comments: Date: Sed depth per bottle (%): By: Bottles removed and replaced?: Comments

S:\FIELDOPS\FORMS\Sediment Trap FDS.docSediment Trap FDS.doc

Page \_\_\_\_\_ of \_\_ Project Portland Harbor Stormwater Samp. Project No. 1020.005 Location 18-ST2 Date 3/15/07 Subject Sed. Trap Installs By JXB/JJM 0920 PST - Left WPCL for 18-STZ 0940 - Annued on site @ 18-ST2. Newified location of J8-ST2 Jorm enters MH & commerces visual inspection of line. Approx. The of baseflow in pipe. Flow is moving Connetherm (=1.5 fps), - No observable sediment in pipe upstream - Baseflow not due to storm events - no significant rainfan during the past weet. 0950 - JUM installs Sed, Traps ~3,2/3.6 upstream of MH AATS57 in 42" diameter main line. Sed. Traps invented. parnalely to each other. Bottles were labled 18-ST2 Bottle 01 upstream & dannistream Setup to install sediment traps (4) at site adjucent to American Steel which is located at 4033 NW Yean. Шt First entry Into node AND 536 where convergence of 18-5T3 18-5T4 is ~ 15' from entry node. Field crewes and the concerned w/ safety, 1130 So second entry at node AND535 to assoc conditions as a suitable alternative. JXB comments on hydrocarbon odor coming from Upstream of node. Baseflow of 4" and approximately it fos is not due to stormadivity as Attachments



<u>2</u> of Page \_ Project Portland Harbor Stormut Samp. Project No. 1020,005 Location 4033 NW Year Date \_3/15/07 subject Sed. Trap Installation By JOM, TXB the weather has been mostly dry recently 18-573 1145 JXB decides to install sed, traps upstream of node AND535 and then move to node AAT 466 where the second set of traps (18-574) will be installed. JXB noted presence of slicks, woody debris and sediment accumulation glong invertt should er and above pipe collar which Is probably a result of surcharging during heavy flows. TRB took photos. 1346 After long, ardvous Install, TXB took photos and loaded traps. Traps are orvented in a parallel series w/ Trap A approximately 1,5' from nocle AND 535 and Trap B approximately 2.0' from node AND 535. Bottles were named Bottlel, 18-573, upstream of AND 535, sed. Trap A (or B respectively.) JAB captured photo of setup. Moved to AAT 466. TRB entered and noted presence of retired line 1403 and 42" CMP line converging in a 60" CMP/culvert/wault. TXB to Install traps 18-STA downstream of 6" lateral (draing American steel parking lot) in a 48" line, downstream of node RAT466 The traps are ortented pavallel w/ Trap A~ 3.5' dawnstream and Trap B ~ 4.5" downstream of maishole. The 48" line exting the 60" CMPlvault is concrete. Lateral ~ 6.0" upstream of Trapel, TNR comments of presence of sed. deposits upstream of 48" conarde line costing vault in corners and around reflired pipe inlet. Took phdes. Also, presence of rust and Iron bacteria in CMP vadt. Finished install, loaded bottles, took photos, loft site. 1540 Attachments





Project PORTLAND HARBOR STORMWTR Project No. 1020 005 Date 4/5/07 Location SIX SED DRAPS BY DJH/ JKR Subject FIRS CHECK OF SED DRAPS BACKGROUND - JYB DJH WILL PLEFORM FIRST CHECK OF SEDIMENT TRAPS M-1571 AA5994 ARRIVE 0830 0343- ATH enters M1-STI to assess sed, traps and bottles Bottles completly full with water from storm events upon inspection. Bottles full of orange-collered water 0855 - South bottle @ MI\_STI had < 20% sodiment dooth of North bottle ~ 5% sediment depth. Ditit reinstalled north of south bottles back into sed traps. Bottles not removed. 0905 - Left M1\_ST1 18\_ST1 AAT565- ARRIVE 0930. BSTH BOTTLES FULL OF WATER EAST DOTTLE & 42% SED WEST BOTTLE 22 MA K19, BOTTLES NOT REMOVED. 0950- OFFSITE 18\_ST) AAT 5517 ARRIVE AT 1000. JXB ENTERS, DOWNSTREAM BOTTLE = <190 - ADPEARS TO BE MOSTLY SUSPENDED SEDEMENT OR BLOFILM/ORGANICE MATORIALD, UPSTREAM <290 = SLIGHTLY MORE SED AT BOTTOM ALSO HAS FLOADAND PREANIC PARTICLES OFFICE Attachments Son TRAP FOX (6x)



Page \_\_\_\_ of Project PDX HARBOR STORM Project No., 1020 005 Location Six Sed Traps Subject 1st SUD TRAP CHECKS Date 4/5/07 By DJH/JKB 1028 - Annued at 18 ST3 AND 535 For monthing sed. Trap Juspection. Doit enters MH. Downstream bottle (Bottle A) full of water with trace amounts of sediment <1% upon inspection. apprease bottle (Bottle B) trace amounts of sediment <1% Bottles not remared. 1045 - Left 18\_5T3 AND 535 For 18\_5TY AAT466 on same site 1054 - OTH enters 18-STY AAT466. Both bottles full of water (clear water in bottles) Bottle 1B-trace amounts of seducent 21% bottle 1A-trace amounts of sedimont <1%. Bottles not removed. 1105- OFF SITE 19\_ST1 - ARRIVE 1/15, BOTH BOTTLES FILLES WITH WATER. BOTTLE I (SOUDIS 6290 SEEMERS W DOC. SUSPENDED SED. BOTTLE 2(NORTH) (19) TO TRACE SED. WOCC. SUSPENDED SED 1140 - OFFSITE Attachments

\_\_\_\_\_ of \_\_\_\_\_ Page Project Portland Harbor Starmater Project No. 1020.005 LOCATION SIX PROJECT LOCATIONS Date 5/14/0 subject Sed trap check NO.2 By MJS, JYR 3994 On site \$ 105 An 15T inspects sed trops + bott 12 all of water in pronge hottle. DA SCAPALP N 5 1/2 tall s The is der to sed ment reins yolles Full of water, w/ orange. Surface North 12:00 Bottle 15 all of dark sediment that appears to N5% OP love density + lasily resuspended by no Rematalled bottle in holder 1 - AATSLG : on site@ 11 Z trans 4 bitt insperts Sed Hles are sled w/ xter water dense, sedinent ark West sed tran 404410 voppedin i 13 not obstractore his pritol 1208 R JYB inspects sed trans + bittle. Poth hat half were and co leal ~ 3% Care Serlinen 7 16-514-MAT466 onsite@ 1240 MJS inspects sed traps & bottles Both bothes are full of water. Mostream bottle nect upstructed by tag. Removed rag. Both bottles contain 43% accumulated servicent on the bottom of the sample bottles Attachments

# DAILY FIELD REPORT



of

oject PORTLAND HARBOR STORMWATER Project No. 1020.005	
cation <u>SIX PROJECT LOCATIONS</u> Date <u>S/14/07</u>	
bject SED TO AP CHELK NO. 2 By MJS / JX3	-
8573-AND535-ON-site@ 1300 unable to access site due	
& semi-trude parked on top of MH. contacted American steel	
entact, cinay main (sp?). Truck to be moved within the hour Left	
te for 19-571	
1-571 on site @ 1313	
MJS TNSPECTS Sed traps & hottles	
Both bottles full of water and trace amounts of sedment?	3
(Bottle 1 (SOUTH) (20% sed. & BOTHE 1 (NOETH) (10% sed.) accumulated on	
bottom of sample bottles	
5-573_ANOS35 back on site @ 1345	
MJS enters mit to inspect sed Trays of bottles	
Both botthes full of choir water Upstream Bottle 1A contains	
C2 16 accumulated Sed. in bottle. Nowinstream Bottle IB contains	
- 2306 accumulated sec.	
	<u></u>
55 - LEFT 18-ST3-ANDS35 For WPCL	
에 있는 것은 것이 있는 것이다. 한국 같은 것이 같은 것이 같은 것이 있는 것이 있는 것이 있는 것이 같은 것이 있는 것이 있는 것이 있는 것이 있는 것이 같은 것이 있는 것	
가는 사람이 있는 것은 것을 하는 것은 것은 것을 하는 것은 것을 하는 것을 하는 것을 하는 것을 하는 것을 가지 않는 것을 하는 것을 하는 것을 하는 것을 하는 것을 하는 것을 가지 않는 것을 하는 같은 것은 것은 것은 것은 것은 것은 것을 하는 것은 것을 하는 것은 것을 것을 것을 것을 수 있는 것을	· · ·
사람은 이 가지 않는 것 같은 것이 있는 것이 있는 것이 있는 것이 같은 것이 같은 것이 같은 것은 것이 있는 것이 있다. 것은 것은 것이 있는 것이 같은 것이 있는 것이 있는 것이 있는 것이 있다. 같은 것이 같은 것이 같은 것이 같은 것이 같은 것이 있는 것이 같은 것이 같이 있다. 것이	
tachments こうかからそうとうというです。 うちからなんがいかい そういか かいしょうかいがく ちょうく たがったい	





3 Page \_\_\_\_ of Project Fortland Hasher SW Project No. 1020.005 Date 6/18/07 Location <u>MISTI</u> subject Sample bottle remaral for endst year By MJY, ELA 40 - on 5,4 e to Genald both Anll 123 p. 60 ano N10% W/ very Emp in tat ma son it is a ted whate E LUINA ina a tring the < hen 100 AT 1. 1 tralan what thereas 70 he 261720 NAR !! w M. 9\_ 50 andy -Daila AMAR IND YALSA CL 541 <0 Ol Clim ß 51 ep STI - bulled bo am rech ups tream C Ennie 1 Aut not tralh - 5poss lair 8AB SEN PAR to separate msite @ 19st3 - blocked by » nore a Foothersiters. MSite P 1430 to p 18 -51 layer of 5811 maren t RAICI Trens trads whome 50 1 almy had direte 460 AN Co H 6 to wash to till an 8-or, jar. flar - but 1. A. Was able Thene is more sedi is ostream

DAILY FIELD REPORT



Page \_\_\_\_\_ of Project No. 1020.005 Project Portland Harbor Stormwater Somp Location 4033 NW Yean Date 6/19/07 subject Sed. Trap removals By MIS, AJA P Capped + 0800 0 é 10% -110 hich ) eve way Som + ragh 7 leave y Sertiner The Ged accumulated trad houses but. alcumetated Sertimen 02 U 6 in the sed men 7 eru 1x Aily PS DepitAlta Nye 1 ma no real ~ d MAR Concert Attachments

, c			
	GHAPPE PORTAND RONMENTAL SE TYPE PROFILE CONTROL SCORE TYPE PORT OF THE PORT O		
	MENTESAMEDINETE	EDIDALIAS BEET	
Project Name: Port and Harbor	Infine Sed Sampling	Project Number 2070.0	05
Sampling Team: Date	Arrival Time:	Current Weather Conditions/La	st Rain:
1005 0011	101 1435 AT 557	Subbasin:	
Sampling Location Description/Address: 3950 NWYeon - 4			
STATION DE DI	RE-SAMPLING VISUAL O	DEEDWATION DEDODT	
Describe any flowing or standing water observed in the line?		TE LOWING OF TH	2 Fp5
Does river appear to back up to this location? Describe rate/color/odor of flow:	NO		
Are sediments observed in the line?	yes		
Are sample-able quantities of sediments present in the line?		and is very thin ad	fine
Describe lateral extent of sample-able sediments present in the line:	cinatural extends	apstream from mani 12, only local water 1	1
SITE DIAGRAM: Include street intersection	, r		
		· 南 1	
		•	
	51.	sht film of frine	material
HIP	60 50	of wanhole	up stream
TELL			
	X	$\mathbf{N}$	

SEC SEC	TIUNZ - SAN	MPLE COLLECTION REPORT Node: AAT 557			
Sampling Equipment:	b Stainless steel : D Other (Describe	spoon & stanless siderbucket directly into j'av			
Equipment Decontamination process:					
Sample date: Sample time: 실내왕 07 - 7년 35	Sample Identi	fication: (IL-XX-NNNNN-mmyy)			
Sample location description: (number of fi	eet from node of n_a_hal	f entry)			
Sample collection technique:	Sciafes	Pipe mol flat stimless trowel to trap water			
Describe Color of sample:		most of the solids into the flow day to fine patienticle 572			
Describe Texture/Particle size:	Very	Five			
Describe visual or olfactory evidence of co bulk sediment sample (odor, sheen, disco	ontamination in oration, etc.):	vone			
Describe depth of solids in area where sar	nple.collected:	× 13			
Describe amount and type of debris in san	nple:				
Amount and type of debris removed from f	inal sample:				
Compositing notes:	••				
Sample Jars Collected (number, size, full o	r partial)? Az	artially filled an B-oz per			
f not enough sample to fill all of the jars, lis collected and related analytes sampled (as analyte priority list in work order).	st jars				
ab ID FO070807	Duplicat	te sample collected? (N) Dupe ID			
Duplicate sample identification # on COC:					
ny deviations from standard procedures:					
SEC	<b>TION 3 - P</b>	HOTOGRAPH LOG			
Overview of node showing drainage area					
lan view of sediments inline					
	······································				
lomogenized sample (sediment in bowl)					



CITY OF PORTLAND ENVIRONMENTAL SERVICES Water Pollution Control Laboratory 6543 N. Burlington Ave. Portland, OR 97203-5452



#### INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

Project Name: PORTLAND HARE	KR STORMWATER	SAMP.	Project Nur	nber 1020,005
Sample Processing Conducted By:	Pt. Code:	Removal Dat	i	Processing Date
JXB/AJA	18-ST1	6/1810	7	6/19/07@1025
Basin: BASIN-18	Hansen ID: AAT 56	5	Subbasin:	

Sediment Trap Location Description/Address:

NW 35th & YEON ( US OF CB INLET ATMH)

	SEDIMENT TRAP PROCI	ESSING/FILTRATION NO	TES			
Filter Equipment/Method	ter Equipment/Method 90 mm stailess steel filter support "/conical glass microfiltration assembly & negative air pressure (suction/vacuum).					
Filter Size & Type:	Fisher Brand, Qualita	rive P5, Cellulose 110n	nm (5-10mm) Filter			
Sediment Trap Bottle ID: 18.	ST1_BOTTLE1-WEST	Sediment Trap Bottle ID: 1्र	3_ST1_BOOTLE1_East			
Total Depth of Accumulated Se	ed in bottle (inches): $\mathcal{O}_{1} \mathcal{Z}^{\prime\prime}$	Total Depth of Accumulated S	ed in bottle (inches): ∽₀, y <sup>11</sup>			
Sample Processing Start Time: ノクス5	Sample Processing End Time: // 25	Sample Processing Start Time: 7133	Sample Processing End Time: 1145			
Number of Filters Used: 8	filters	Number of Filters Used: 3 Filters				
Number of Ultra Pure DI Rinses/est. total volume in mL):	3 rinses/12200 mi	Number of Ultra Pure DI Rinses/est. total volume in 2 mmses/ 2100 ml mL):				
Dewatered/Filtered Sed. Weigl	nt (grams): 8,59	Dewatered/Filtered Sed. Weight (grams): 2, 39				
Sample Processing Notes/Con	nments:	Sample Processing Notes/Comments:				
Substantial Organic in Sed. Distinct petroleum. Sed		Substantial organic present in sed w/ d Sheen present.	, component istinct petrolenm			

Composite Time:	Total Dewatered/Filtered Sed. Weigh	t: Sample Jars Collected (number, size, full or partial): /-802 partially filled amber see. jar
ab ID:	Duplicate sample col	
Duplicate sample identification # o	n COC: No deviation	s from SOP.



CITY OF PORTLAND ENVIRONMENTAL SERVICES Water Pollution Control Laboratory 6543 N. Burlington Ave., Portland, OR 97203-5452



### INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

Project Name: PORTLAND HARBOR STORMWATER SAMP.				Project Number: 1020,005		
Sample Processing Conducted By:	Pt. Code:	Removal Dat	e	Processing Date:		
JX8/AJA	18-ST2	6/18/07		6/19/07@1229		
Basin: BASIAU-18	Hansen ID: AAT 557		Subbasin:			

Sediment Trap Location Description/Address:

3950 NW YEON AVE. (US OF MH)

SEDIMENT TRAP PROCESSING/FILTRATION NOTES				
Filter Equipment/Method	90 mm Strinless Steel	le filter support -/ conical glass microfiltration		
	ussembly and nego	stive pressur	e (suctio	- raenum)
Filter Size & Type:	Fisher Brand, qual Filter	Stative P5, co	allalous 1	10mm (5-10em)
Sediment Trap Bottle ID: 18_ST2-BOTTLE1-US		Sediment Trap Bottle ID: 18-ST2-BOTTLE1-05		
Total Depth of Accumulated Sec	In bottle (inches): $^{\sim}O$ , $3^{\ell\prime}$	Total Depth of A	ccumulated S	ed in bottle (inches) <b>6</b> , 3 ·
Sample Processing Start	Sample Processing End	Sample Process	ing Start	Sample Processing End
Time: 1229	<sup>Fime:</sup> 1450	Time: 145:	5	Time: 1600
Number of Filters Used: 11	Eleven!	Number of Filter	s Used:	14
Number of Ultra Pure DI Rinses/est. total volume in 1 raise / 2001, mL):		Number of Ultra Pure DI Rinses/est. total volume in 1 r.h.se/200ml mL):		
Dewatered/Filtered Sed. Weight (grams): 29.0		Dewatered/Filtered Sed. Weight (grams): 15.5.		
Sample Processing Notes/Comments: Suspended Very fine silty/sludgy particles, in all Farts of the Sample. Some small/file organics. Distinct sheen & very strong febroleum odor.		Sample Processing Notes/Comments: Same as the first bottle. Very fine silt/sludge suspended in all parts of sample. Sheen and strong odor present.		
Composite Time:	Total Dewatered/Filtered S	Sed. Weight:	Sample Jars	Collected (number, size, full or

	Total Dewater	ed/Filtered Sed. Weight:	Sample Jars Collected (number, size, full or partial):
Lab ID:		Duplicate sample collected?	Y Dupe ID
Duplicate sample identification # c	on COC:		
Any deviations from standard proc	edures: $\Lambda$	<i>l</i> o.	

····				
	ENVIRONME Water Pollu 0543 N	DF PORTLAND INTAL SER Lion Control Laboratory I. Burlington Ave., d, OR 97203-5452	VICES	
INLINE S	EDIMENT TRAP SA	MPLE PROCE	SSING DA	TA SHEET
Project Name: Portland Har	bor Stormwater Samp.		Project Numb	per: 1020.005
Sample Processing Conduct	ed By: Pt. Code: /8_ST3	Removal Da 6/19/0		Processing Date.
Basin: BASIN-18	Hansen ID: AN	0535	Subbasin:	
Sediment Trap Location Des	cription/Address:			
4033 Nu	J YEON AVE., 42	"LINE (US O	FMH)	
	SEDIMENT TRAP PR			
Filter Equipment/Method	90 mm stainless steel filter s pressure (suction/vacuum).	upport w/ conical glas	s microfiltration.	assembly and negative a
Filter Size & Type:	Fisher brand, qualitative P5	Celulose 110mm (5-1	0 micron) filter.	· · · · · · · · · · · · · · · · · · ·
	<u> </u>			TO DOVIER (
Sediment Trap Bottle ID: 1	8_ST3_BOTTLE1_A(PO			ST3_BOTTLE1_L
Total Depth of Accumulated	Sed in bottle (inches): <i>40,10</i> <sup>in</sup>	Total Depth of	Accumulated S	ed in bottle (inches):
Sample Processing Start Time: 0810	Sample Processing End Time: 0845	Sample Proce Time: 085	7	Sample Processing Time: 0908
Number of Filters Used. 3	Filters	Number of Filt		filters
Number of Ultra Pure DI Rinses/est. total volume in mL):	Irinse/ adoml	Number of Ult Rinses/est: tot mL):	ra Pure DI al volume in	2 vinses 1=7
Dewatered/Filtered Sed. We	ight (grams): /, g g	Dewatered/Fil	tered Sed. Weig	ght (grams); [3.9.
Sample Processing Notes/C in Suspension. alevmention	omments: Low see Viry little ch bottom of	Sample Proce	ssing Notes/Co	mments:
Dottic.				
Composite Time:	Total Dewatered/Filter	ed Sed. Weight:	Sample Jar partial):	s Collected (number, s Ket par tially-
Lab ID:	Duplic	ate sample collected	I? YA Dup	e D AMAC
Duplicate sample identification	on # on COC;			
Any deviations from standard				· · · · · · · · · · · · · · · · · · ·
my deviations nom standard	i procedures: Nø			

------



# CITY OF PORTLAND ENVIRONMENTAL SERVICES Water Pollution Control Laboratory 6543 N. Burlington Ave., Portland, OR 97203-5452



#### INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

Project Name: Portland Harbor Stormwater Samp.				Project Number: 1020.005		
Sample Processing Conducted By:	Pt. Code:	Removal Dat	le:	Processing Date:		
JXB/ECH	18-5T4	6/1910	7	6/20/07@ 1010		
Basin: BASIN-18	Hansen ID: AAT 466	, ,	Subbasin:	· · · · · · · · · · · · · · · · · · ·		

Sediment Trap Location Description/Address:

4033 NW YEONAVE, 48"LENE (DS OF MANHOLE)

	SEDIMENT TRAP PROCI	ESSING/FILTR	ATION NO	TES	
Filter Equipment/Method	90 mm stainless steel filter support w/ conical glass microfiltration assembly and negative air pressure (suction/vacuum).				
Filter Size & Type:	Fisher brand, qualitative P5, Cel	ulose 110mm (5-10	micron) filter.		······································
Sediment Trap Bottle ID: /8-	STY_BOTTLEI_A (USPT	Sediment Trap Bottle ID: 18_ST4_BOTTLE1-B(BO			
Total Depth of Accumulated S	ed in bottle (inches): $\mathcal{O}, \mathcal{F}^{\prime\prime}$	Total Depth of Accumulated Sed in bottle (inches): 0,5"			
Sample Processing Start Time: IOLO	Sample Processing End	Sample Process Time: ၂ㅣ坮ㅋ		Sample Processin Time: 125 G	
Number of Filters Used: 1	Number of Filters Used: 12 filters				
Number of Ultra Pure DI Rinses/est. total volume in $U_{VinSUS} = 700 \text{ m}$ mL):		Number of Ultra Pure DI Rinses/est. total volume in 3 rinses 12 500 mmL):			
Dewatered/Filtered Sed. Weight (grams): 42.2-8		Dewatered/Filtered Sed. Weight (grams): $38.9_{\%}$			
Sample Processing Notes/Comments: Orstinct petroleum sheen present.		Sample Process	ing Notes/Cor	nments	0
					· · ·
Composite Time: 1258	Total Dewatered/Filtered S 子ろ.し	ied. Weight. C	Sample Jars	SOLIECTED (number,	size full or
Lah ID	Dunlicate s	ample collected?	VN Dupe		

Duplicate sample identification # on COC:	
Any deviations from standard procedures:	Jo

2009 Sediment Traps

	· · ·		
		· ·	
Спу о	PORTLAND		
	MIALESERVIC:	<b>-S</b>	
A CONSISTENCY AND A CONSISTENCE OF A	Operations Burrington Aye		
Constant in the second se	Burington Ave OR 97203:5452		
INLINE SEDIMENT TH	NPELEINAAA		
Project Name:	Project No.:	Date:	By:
Britand Harbor Stormwater Samp.	1020.005	2/4/09	JXB/MJ5
Site Address: NW 35th & Yeon Ave	Sample Pt Code:	Basin:	Hansen ID.
L 1010 W + 1Eon Ave	18-STI	18	AAT565
			A CONTRACTOR OF
	ALLATION INFORMA		
Traffic control and/or site access concerns:	Describe flow condition	s and depth and/or a	ny standing
· Park in northwest corner of parling lot C 3506 NW 35th Ave (Flooring material warehouse).	water at time of install ( line intermittently?):	does river appear to	back up into this
Back entry van up to site. Cone-off sidewalk	· River does not a	pear to back up	ointosite
around manhole. Little to no pedestrian	· No base flow; how		
. If there are no parking spots, crews will need		out for	
• If there are no parking spots, crews will need to back entry vehicle up to site using sidewalk, which	parallels RXR spir (watch	"infustructure)"Filter	Sack" Prototype
Describe sediments in pipe if present (depth, sampleable que Do sampleable Sediments present in Main li	antities, lateral extent, etc.)	ids neveral se	
17 total 12" diamaper marginal of inter molecular	MOTILE AT EARLY		talled on 2.5 3 <i>/V/ic</i> q
Sediment trap location(s) (pipe size, distance from center of Front of filter sock weir is facing us to cap Front of filter sock is located ~6.0" US of Verete, 12" diameter inlet (main line). Filter	node, proximity to laterals,	etc.)	e diameter statu
Front of filtor sock well is taking us to cap	and of all the all	metersolids m	ches)) ////
Verete, 12" diameter inlet (main line). Filte	Socie was installed	datan	Lancemon.Witte
Parigie (upward angle) of approx. 15 degrees on the s	scissor-juck bandtis	1 0' US from	
SED TRAP SITE DIAGRAM		CB met.	
(Sketch map of the lateral(s) and layout of manhole, showing approx sed. the	ap location, manhole elevation an	d inline sediment if preser	nt. Orient drawing
using the top of the page as north):	lic	Height from pipe	
	us Q	A	5" to 5.0" w/
	the second		P
		were C	
		100	
	$   = \langle \cdot \rangle$	0000	000
		AATS65	
		/	
		· · ·	
m la co			
3	10. 1	,	
2	100 11 2	- 06/07	Original
		-> Standard	Original
		Boits	
July Solids			
			·
	Inlino Till	x Sarl Pundade	na inchina
	on 12" scisso	r-jack band. L	15 face of
1-12	= 1/ filter sock (wei	r-jack Prototy r-jack band, u r) angled upn	lards off of
S.\FIELDOPS\FORMS\Inline Sediment Trap FDS.doc	the bandel pi	peinvert ~15	degrees
CB A	)		ane lof 4

SECTION 2 WONTHLY FIELD CHECK INFORMATION AT SC Estimated sed. depth per bothe (% by Bottles removed/replaced? volume & inches): Dackend (smaller, micros) 'Frontend' (carger m DS Bottle - trace ¥/NJ СŲ If removed which one(s)? Archived ID Bvl Bottle Wale Bottle - TVall Final Removal? Y/N fi Her Soek has trace amounts of 5x3 Comments: TV out end ofdepris and pebbles, Back end ovenuic 1tel Holding Sell-has Sticker trace, aggevints softvery fine -r., ment trace amount at fines tom wall off theke endasmen von frontend of sook in ed; men OW 14 Dactive Sediw 1.4 TOR SORA 12 Sau CXAC NOW ittures taken up top back end and Photos Taken? YM б Trent Describe: end Side the side Solids Date: 3-18-09 Estimated sed. depth per bottle (% by hamber) Bottles removed/replaced? //N Front end' w/ stamped If removed which one(s)? Front end' w/ stamped If removed which one(s)? Front end' w/ stamped If removed which one(s)? Front end' w/ stamped If removed captured stormwater star Form of Bottles - 1-2mm of Bottles - of home Final Removal 2 V/N Date: If removed which one(s)? Removed captured stormwater solids (fines) along il small organic particles from born Chambers Final Removal? VID solids in Sample justor subsequent archivin Archived10 ottle 0.5mm -Bottle, JXB/MJS Comments: Leaves of organic cebris adhered to front of prototype trap, and on face of weir: substantial stormwater solids & organics 13.512 Coposited in the first chamber of the trap, with significant Bottle fine particles deposited & retained within the second chamber of the trup. 214108-31190 US Bottle-0924 PSI ŪXS Second chamber of the trap appears to have a tone low enough energy 140 prevent resuspension of accumulated scan DS Boitle 18-STI Sciend material; reducing 1055 of solids. Chamber 3/18/09 Prinary chamber collected ~ 3. 59 of solds Photos Taken? KAN 5×0 Soundary chamber collected ~ A. Fg of solidspre Leaves Organic debn's adhered to front of trap of face of weir, captures sounds/Aneparticle ranged large particle range)-archived subsamples Describe: 1 Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N 3/30/09 volume & inches): If removed which one(s)? Second Chamber: **Tchived** By: US Bottle -AMM DS Bottle - emm AJA/JX3 -Bottle truck **Boftle** Final Removal? Y/N Pipe is dry upon arrival. Some arganics + plastics on Comments: Band. Trap is intacted Checked trap -> no sample alice solids Holding times. Starting to accumulate in 2nd chambler Sticker US Bottle Replaced 15° angle: Larger Stormwater prices organics leaf particles, woody particles DS Bottle , Lg. seds ) Starting accumulate in Ist Chamber again. tos Taken? Y/N/ Describe:

S:\FIELDOPS\FORMS\Inline Sediment Trap FDS.doc

SECTION 2. MONTHLY FIELD CHECK NEORMATION 5/18/09 Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N volume & inches): If removed which one(s)? To tai solids Archived ID Bottle Secondar ber grosses NA Βy: Primary = 22.44 SAB Final Removal? Y/N JB ATB Secondary= 19.29 Comments: five wetted by no active the with sed trap intact. Face of trap ~ 80% clogged and ferroved in order to reach codder pin. Secondary chamber has very strong as phalt edor. Sediment accumulated of bottom of Secondary Bottle Schamber Gereen is 98% clogged with accretionstalong bottom 43 of cylinder (wheen) In deepest part of secondary chamber sediment accountated up to lam. Medium 1029 Sands to fines. Course particles effectively excluded thanker to remove sediment from screen them previously. Primary chamber has a 35mm at its deepest accumulation, larger particle gizes and organics. Some sheen and a decomposing organics odor. 31181 Photos Taken Ty) White of sed trap together apart and individually the primary tsecond chambers. 5472 Hotos of close-up secondary chambers and of 1025 Describe: Sample on scoop. Phylo of primary chamber sel accomulation & of sediment Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N If removed which one(s)? 5/20/09 volume & inches): Secondary chamber Anchived ID: USBottle -By: '<del>DS-Bottle</del> Collected to date Bottle trace Bottle -trace MOS, DYB Final Removal? Y/N Comments: Trace amount of pooled water in the Ploor of the Pipe with very little debrig collected around the housing. There amount of sediment in both chambers - scroped out and added to appropriate composite )Bettle d Primary chamber - trace amonto of sedement, mainly larger organic particles Totalarinica 50125 =1104 DS-Bottle - Secondary Chamber - trace amounts of section t. Fine, clay Sized particles 18-51 Secondary Cylinder Stelly Cylinder Stelly St20109 1957 Photos Taken (Y)N Describe: Photo of trap after removal, Two photos afeach chamber showing amount and To tall a renived nature of sedimet. 601105=01:20 Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? ///N volume & inches): Pomory cylinder US Bottle 614109 Secondary cylinder Endof 08109 Pilot Study If removed which one(s)? Archived ID: By: DS Bottle Bottle\_trave \_Bottle\_ trace to JXAIPTR Final Removal?/Y/N Comments: Trap was in tacked. Minimal amount of organic debris adhered to prototype. Pipewas dry no baseflow. Trace to minor amonuts of 18.51 5-20-04 10 solids inside cylinders of filler screens. 614104 US Bottle - Primary cylinder had minor solids captured (" C 091315 sg), primanly in Primary cylinder the fine silt to clay particle range. DS-Bottle - Secondary Cylinder had trace solids captured (~ (05g) 18-571 primarily in the fine silt to clay particle range. 5/20/09+0 614104 Photos Taken? N/N Q813157 pribe: prototype in situ prior to removaly disassembled trup of inside of each cylinder secondary cy (xB) 718/09 Total solids captured during deployment period ! Primary Cylinder=23,70 S: VFIELDOPS/FORMS/Inline Sediment Trap FDS. doc - 19.5 9 Page 3 of 4

	TU SECTI	ON 2-MONTE	LYNEEDG	HECKINEORM	ATION	Hansen ID
Date:	Estimated sed. depth pe volume & inches):	r bottle (% by	Bottles ren	noved/replaced? Y	/N	
By:		DS Bottle	If removed	which one(s)?		Archiver.ID
	Bottle -	Bottle -	Final Remo	oval? Y/N	معمد المراجع ا	
Comments:		· · ·				
· .					· · ·	Holding
US Bottle -			· •		· ·	Sticker
DS Bottle -						
· · · · · · ·		•				
Photos Taken?	 Y/N	· · · ·				4 ,
• • •		/				
Describe:				· ·		2
Date:	Estimated sed. depth per volume & inches):	bottle (% by	Bottles rem	oved/replaced? Y/ which one(s)?	N	
By:		S Bottle	a removed			Archived ID
	Bottle -	Primary Cypins	lar 1	3-571		
Comments:	and the second	3/18/01 ~3,	54		<u> </u>	
		5/18/07 18,9	3	· · · ·		(Holding Sticker
Bottle -	the second second second	22.1	49	$\geq$		
		5/2010; + 1.0		3.79	·	· · .
DS Bottle -	in for the	23.4 6/4/09 6.3			4. 19. A	
		23.7	Fa			· ·
hotos Taken? ۲	Y/N (	Secondary Cylin	ter Total	1.49		
Describe:		3/18/09 12,59			•	
		5/18/09 + 6179	6/4/0 Trace	to no souds		
Pl Code		5/20109 19:22	Ĵ			
		~ 19.59				uttensen ID
Sample ID:		Duplicate sample	collected at	DUPLICATE ID:		
affix FO numbe	FO095692	this site? Y/R	· · · ·	BOI LIOATE ID.	•	
				· · ·		
Duplicate Samp	le ID on COC:	Any deviations fro	om standard op	erating procedures	? YAP	· · ·
affix FO number stic	ker	Describe:	. •		· · ·	
Comments:	Spo Indino C.I.	i Traci	ois Prairie			
	See Inline Sedin	ieur map sar	MIR Traces	sing Narash	CET	

S D. 🖌 👘 👔		Сіту	OF PORTLAND		
	E	NMRONME	ENTAL SERVI	CES	
		6543	eld Operations N-Burlington Ave Id, OR 97203-5452		
	INLIN	esedimente	IRAP FIELD DAT		
Project Name:			Project No.:	Date:	By:
	RBOR STORMU	NATER SAMP	1020.005	10/30/08	JXB/AJA
Site Address:	NYEON AVE		Sample Pt Code:	Basin:	Hansen ID:
L	<u>- /1_0/</u>		1.4-0-018		HAI.557
		SECTION	TALLATIONINEOR	MATION	
Traffic control ar	d/or site access con	cerns:	Describe flow cond	itions and depth and/or	any standing
	s Frontage rad		Children total in the company	tall (does river appear to	
leon AVE.	orte is located	in drive way	line intermittently?)		0,5" \$ 0.4
location, av	d heavy dell	Very St mucha	- River dres no	topozor to have u	ainto site
Semi use on	frantage raid	-set up entry	ite - Buseflow du - River does no umatsion signs on	- giperte de la como - g	
Describe sedime	nts in pipe if present	(depth, sampleable)	quantities lateral extent	trentage read just	editablottles
approx. 0.3-0	2.4" of biofilm	(priminity consist	quantities, lateral extent, ing of decomposing of	rganics, sediment	istalled on
Sediment trap lo	etc. Jeposited	<u>through out 17</u>	<u>re entire extent c</u>	sf the main line.	10/30/08
Installed for	r different se	diment trap de	of node, proximity to later	manhoie in 42"	lpe diameter
diameter pipe	just off of pi	oe nvert. Stan	dard sed trap pair pair (wide-mon fer of manhole cho	histalled	Istance from MH
(Juin) instal	led approx, 5.0	'us from cen	erof manhole cho	mber / - 3.0	ode (feet)
BE ENGENEND	1				
US from EON	. Low-nrofile Ma	p(square) installed. W-pragine trap(r	150 US from atom		51/1 - P
SED TRAP SITE (Sketch map of the la	<u>י בסט-סרסדוס אים אס</u> DIAGRAM and io teral(s) and layout of mar	plan united inited led. W-prafile trap(r thole, showing approxised	25.0' US from stall Petrangular) installe I. trap location, manhole elevati		51/1 - P
US from EON	<u>י בסט-סרסדוס אים אס</u> DIAGRAM and io teral(s) and layout of mar	p/square/installed	150 US from atom		51/1 - P
SED TRAP SITE (Sketch map of the la	<u>י בסט-סרסדוס אים אס</u> DIAGRAM and io teral(s) and layout of mar	<u>p/squarelin:talled</u> w-prafile trap(r nole, showing approx sed	150 US from atom		51/1 - P
SED TRAP SITE (Sketch map of the la using the top of the p	<u>י בסט-סרסדוס אים אס</u> DIAGRAM and io teral(s) and layout of mar	$\frac{p(sq.uarel installed}{prafile}$ installed w-prafile trap(r mole, showing approxised	150 US from atom		51/1 - P
SED TRAP SITE (Sketch map of the la	<u>י בסט-סרסדוס אים אס</u> DIAGRAM and io teral(s) and layout of mar	$\frac{p(39, uarel in: tailed}{w - prafine trap(p)}$	150 US from atom		51/1 - P
SED TRAP SITE (Sketch map of the la using the top of the p	Low-profile the DIAGRAM and le teral(s) and layout of mar age as north):	p/sq.uarel in: tailed w-prafile trap(f mole, showing approx sed $1 - 42'' - 1$	150 US from atom		5 / L - / L
SED TRAP SITE (Sketch map of the la using the top of the p	Low-profile the DIAGRAM and le teral(s) and layout of mar age as north):	<u>m/se warel i hita llea</u> w-prafike trap(f mole, showing approxised	150 US from atom		51/1 - P
SED TRAP SITE (Sketch map of the la using the top of the p 42	Low-profile the DIAGRAM and le teral(s) and layout of mar age as north):	$p/sq.uarel_installed w-prafile trap(p hole, showing approx sed 1 - 42' - 1$	250' US from stav Ectangular) installe I. trap location, manhole elevation		51/1 - P
SED TRAP SITE (Sketch map of the la using the top of the p	Low-profile tra DIAGRAM and le teral(s) and layout of mar age as north):	w-prafile trap(r w-prafile trap(r hole, showing approx sed	15.0° US Aron stan Betanqular) installe I. trap location, manhole elevation	dard troops d ~ fg78/0.0' US A on and inline sediment if pres	51/1 - P
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF	DIAGRAM and le teral(s) and layout of mar age as north):	w-prafile trap(f hole, showing approx sed	Gazo' US Arem star ectangular) installed trap location, manhole elevation AAAT557 AAAT557	1 d ~ for all of us A on and inline sediment if pres 1,0" drameter provide ated	51/1 - P
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trap	Low-profile the DIAGRAM and le teral(s) and layout of mar age as north):	w-prafile trap(f mole, showing approx sed	4 (AAAT 557 1. Trap location, manhole elevation (AAAT 557 1. Trap 1000000000000000000000000000000000000	1 0" diameter 0" diameter 0" diameter 0" diameter 0" diameter 0" diameter 0" diameter 0" diameter	renn Stanzya sent. Orient drawing
SED TRAP SITE (Sketch map of the la using the top of the p 4.2 EOF NM Trap	DIAGRAM and is DIAGRAM and is teral(s) and layout of mar age as north):	w-prafile trap(r hole, showing approx sed	Antisst Antis Antisst Antisst Antisst Antisst Antis Antisst Antis Antisst Antis Antisst Antiss	1 0" diameter 0" diameter 0" diameter 0" chiameter 0"	renn Stanzya sent. Orient drawing
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trap	DIAGRAM and is DIAGRAM and is teral(s) and layout of mar age as north): US Pipe JA Stand Sta	W-prafile trap(f hole, showing approx sed 1-42"-1 	Grangular) installe changular) installe trap location, manhole elevation AAAT557 AAAAT557 AAAT557 AAAT557 AAAT557 AAAT557 AAAT557 AAAT557 AAAT557 AAAT557 AAAT557 AAAAT557 AAAT557 AAAAT557 AAAT557 AAAT557 AAAT557 AAAAT557 AAAAT557 AAAT557 AAAAT557 AAAAT557 AAAAT557 AAAAT557	1 0" diameter 0"	ron orgnærd sent. Orient drawing Ms graves
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trap	DIAGRAM and is teral(s) and layout of mar age as north): US Pipe J.D. Existing Stand	U-prafile trap(r hole, showing approx sed 1-42"-1 dury cap 2-62-NM ci sed trap	450' US Aren stav ectangular) installed trap location, manhole elevation (1. trap location, manhole elevation) (1. trap location) (1. trap locatio	1 2 ~ fg78/0.0' US A on and inline sediment if pres 2.0" diameter privilogated VC lateral 1.51 off of invert 100 full of 1/4" minuters Sands 18_572_131_WM	non orginarya sent. Orient drawing NS graves
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trep 0 42	Low-profip tra DIAGRAM and lo teral(s) and layout of mar age as north): US Pipe J. DA Existing Anchor Stand St	dury 2. 82 NM rep 2. 82 NM resp rep 2. 82 NM resp rep 2. 82 NM resp rep rep rep rep rep rep rep re	450' US Aren stav ectangular) installed trap location, manhole elevation (1. trap location, manhole elevation) (1. trap location) (1. trap locatio	1 0. "diameter 0. "diameter	renn standyd sent. Orient drawing MS graves 1 w/ 1 bacu
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trap	Low-profip tra DIAGRAM and is teral(s) and layout of mar age as north): US Pipe J. D. Existing Standy	dury 2.82. NM dised trop pow-mouth 2.1-42"-1 2.82. NM dised trop pow-mouth 2.1-42"-1 pinstandird pen 12.83.5Q fashe square	450' US Aren stav ectangular) installed trap location, manhole elevation (1. trap location, manhole elevation) (1. trap location) (1. trap locatio	1 0" diameter 0"	renn standyd sent. Orient drawing MS graves 1 w/ 1 bacu
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trep 0 42	Low-profile tra DIAGRAM and le teral(s) and layout of mar age as north): US Pipe Jappe	2. B2. NM Rel sed trop mole, showing approx sed 1-42"-1 2. B2. NM Rel sed trop row-month 1. bottle pin standard pain 12_B3. SQ refile Square Trap w/ wide - month 1. bottle Square bottle	Grangular) installe ectangular) installe I trap location, manhole elevation I faz.o I	1 0." drameter on and inline sediment if pres 1.0." drameter pringated VC lateral 1.51 off of invert lar full of 1/4"min Sands 18-572-31-WN Standard sed frap wide-month HOPE Upotream trap i	non standyd ent. Orient drawing Ms graves 1 22 borthe n skindwrd por
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trep 0 42	Low-ptofile tra DIAGRAM and le teral(s) and layout of mar age as north): US Pipe Dipee Dipee Dipee Dipee Dipee Dipee Dipee Dipee Dipee Dipee Dipee	duri 1-42"-1 1-42"-1 2-62-NM dised trip 2-62-NM dised trip 2-62-NM dised trip 2-62-NM 1-42"-1 1-42"-	Constant installed ectangular) installed trap location, manhole elevation factor for the constant factor factor for the constant factor factor for the constant factor factor factor for the constant factor factor facto	1 0. "diameter 0. "diameter	non oranzya ent. Orient drawing Ms graves 1 22 bottle n skindara por
SED TRAP SITE (Sketch map of the la using the top of the p 42 EOF NM Trep 0 42	Low-ptofile tra DIAGRAM and le teral(s) and layout of mar age as north): US Pipe JENISTIN CENISTIN CALLEN Pipe JENISTIN CALLEN CAL	2. B2. NM Rel sed trop mole, showing approx sed 1-42"-1 2. B2. NM Rel sed trop row-month 1. bottle pin standard pain 12_B3. SQ refile Square Trap w/ wide - month 1. bottle Square bottle	Constant installed ectangular) installed trap location, manhole elevation factor for the constant factor factor for the constant factor factor for the constant factor factor factor for the constant factor factor facto	1 0." drameter on and inline sediment if pres 1.0." drameter pringated VC lateral 1.51 off of invert lar full of 1/4"min Sands 18-572-31-WN Standard sed frap wide-month HOPE Upotream trap i	non oranzya ent. Orient drawing Ms graves 1 22 bottle n skindara por

SECTION 2 MONTHLY FIELD CHECK INFORMATION Hansen ID ate: Estimated sed, depth per bottle (% by Bottles removed/replaced? Y/N/ volume & inches): -14-.09 If removed which one(s)? Archived ID US Bottle1 - < 0.2" - DS-Bottle3 - < 0.1" By: Final Removal? YN JXB 1115109 Bottle2\_≈0.5" Bottle 4 - D.2" IX B. LAP All bottles full of stormweder. Baseflow = 0.6" & I fps Comments: Bottle's free from "obstructions" Minor amount of organics. Holding on sediment. thaps No odor detected in any bottle. Sticker US-Bottle - 18 ST2-BI-WM Adhesions present. Solids = <0.2" DS-Bottle - 18-572. B3-5Q: Addesions present. Solids - 0.5 - 0.6" No sheen. DS-Bottle - 18-572. B3-5Q: Addesions present. Trace ant. solids (0.1"). 18 ST2 Bt- RECT Adhesions present Solids= 0.2" Photos Taken? Y/N No sheen observed. Describe: Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N) 2/20/09 volume & inches): If removed which one(s)? Archived ID US-Bottle 1 - < 0-9" DS Bottle 3 - 40.1" By: WOS SAR Bottle 2 - 0.6" Bottle 4- 0.7" Final Removal? Y(N) Comments: Baseflow present in pipe at depth of 0.3 and 1-15 Fps. All hittle openings are free of obstructions, but there is paper, Tais and organics on sed trop housings. Surface of storm water in hotle US Bottle - has a film of iron-oxidizing buckeria. Holding Sticker 18-572-BI - match allheston of fine particles on inside of bottle, Lad" solids 18-572 BA move amount of adhering fines on inside of bottle, D.6" of solids DS Bottle - B3 - some amount of adhering fires, < 0.1" of sedment 18-312- By - which adhoving five particles on inside of bottle - 0.2" of sediment Photos Taken? ((N) Describe: Date: Estimated sed, depth per bottle (% by Bottles removed/replaced? Y/N 3/30/09 volume & inches): If removed which one(s)? Archived ID By: ■S Bottle ) - つみ( BS Bottle 3 - 0,3 Bottle 2-0, 6'-07" Bottle 4 - 0 2 AJA JXB Final Removal? YIN Organics Paper, non-organics. B2 has a Leat Covaring Openi Hally mine w/ B4 Holding inside of Sticker US Bottle 1 Iron Bacteria present, substantial Fines on bottle wall. NO. 4" deposited sedi Bottle 2 - Really tur bid stormwater, visible sheen on surf. He odor DS Bottle 3 - (Square) Minor fines an - inside of battle, 0.3" accum. Seds Bott . Trace fines ion inside of Wolles no change in accum. 0.2 Sotos Taken? Y/ Describe:

Ptriconer	SECTION 2 - MONTHU	Y FIELD CHECK INFORMATION	Hansen ID
Date:	Estimated sed. depth per bottle (% by	Bottles removed/replaced?(\$/N	
)614109	volume & inches):	If removed which one(s)?	Archived ID:
BY: JKBIPTB	US Bottleß) - 70-3120,411/DS BottleßZ-70,411 Bottlegy-70,611 Bottlegz-70,41	End of 03/09 Pilot Study	
· · · · · · · · · · · · · · · · · · ·			
+YONG GIDIN	A AF COME ANDE STUDIO BUSCOTTA	M $M$ $M$ $M$ $M$ $M$ $M$ $M$ $M$ $M$	Gos 18-572-BI
Plastic trac	n tacked. Organic debist plastics	Adhered to Franchousings. Mate design bottle 18-ST2-BY RECT Ver WI five adhesions on the insid	- 0130108-
US Bottle All	I trap bottles were full of storm we	ver willing adhesions on the insid	12 Surfaces
			18-573
DS Bottle	RECT: Total accumulation of april NM: Total accumulation of capt	easonas was toren all	10 m x
	- SQ: Total accumulation of cap		619109-
Photos Taken?	AN Note: iron bacteria & fillame	mous algal granition the	18 512-83
			50
Describe: Sed	trops in situ prior to ren	roval & organic/ plastic trash	6/4/08- 6/4/09- 1227051
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	18 ST2-84
By:	US Bottle - DS Bottle -		RECT
	Bottle - Bottle -	Final Removal? Y/N	614109
Comments:			
· · · ·			Holding
Dette			Sticker
Bottle -			
DS Bottle -			
Photos Taken? `	Y/N		
Describe:			
Date:	Estimated sed. depth per bottle (%,by	Bottles removed/replaced? Y/N	
Duto.	volume & inches):	If removed which one(s)?	Archived ID
By:	US Bottle - DS Bottle -		
· · ·	Bottle - Bottle -	Final Removal? Y/N	· · · · · ·
Comments:	a sa kana ka ang kana ka		
			Holding Sticker
JS Bottle -			
DS Bottle -			
2 3 <sup>1</sup>			, `
Photos Taken? \	(/ <b>N</b>		
şcribe:			
			<u></u>

.

•

1

Ś,

ş

Ę,

- 2

A Code	SECT	ION 2 - MONTI	HLY FIELD CHECK INFORMATION	Flansen I
Date:	Estimated sed. depth p volume & inches): US Bottle - Bottle -	er bottle (% by DS Bottle - Bottle -	Bottles removed/replaced? Y/N If removed which one(s)? Final Removal? Y/N	AA Arcnive
Comments: US Bottle				Hold
DS Bottle -				
Photos Taken? Describe:	Υ/N			
Date:	Estimated sed, depth pe volume & inches):	r bottle (% by	Bottles removed/replaced? Y/N If removed which one(s)?	
By:	-	DS Bottle - Bottle -	Final Removal? Y/N	
Bottle				Hold Stick
hotos Taken? Pescribe:	Y/N			
2. code 1/2. sto		SECTION 3	COMPOSITE SAMPLE	Hansente
Sample ID:	FO095693	Duplicate sample this site?	e collected at DUPLICATE ID:	STREET, CARLON OF STREET, STREE
Duplicate Samp		Any deviations f	rom standard operating procedures? Y/	
Comments:	Constant of the		mple Processing Datashoet	

. . .

e

: مربع				
		PORTLAND ITAL SERVICE perations inflicton Aves in 97203-9452	<b>S</b>	
· · · · ·	INLINE SEDIMENT TR	AP FIELD DATA S	HEET	
	Project Name: Portland Harbor Stormwater Samp.	Project No.: (020,005	Date: 2908	by: JTM MTS
	Site Address: 4033 NW Yeon	Sample Pt Code:	Basin: 12/18108 18 CH	Hansen ID: AND535
	SECTION 1-INST	LLATIONINFORMAT	ION	
ari Tanana	Traffic control and/or site access concerns: N/A · Potential for parked vehicle obstructing node.	Describe flow conditions water at time of install (d line intermittently?):	oes river appear to ba	
	See 18_STY Traffic control and/or	· Riverdoes not appear	to backup at this	ocation.
	Site access concerns		A CONTRACTOR OF	NEW DESCRIPTION OF THE OWNER OF T
	Describe sediments in pipe if present (depth, sampleable qua No sampleable sediment present	inities, lateral extent, etc.).		irap bottles lledion cjije
	Sediment trap location(s) (pipe size, distance from center of r Traps loated upstream of node ~30" apart beg		etc.): Place	diameter es) 42// ince from MHs. ( <sup>feet)</sup> 30 <sup>(rs)</sup>
	SED TRAP SITE DIAGRAM (Sketch map of the lateral(s) and layout of manhole, showing approx sed. tra using the top of the page as north).	p location, manhole elevation and	l inline sediment if present.	Orient drawing
	18,513 FOS			
and the second	Exploded Virsu			
	Ling 18 513- 19 18 513- 19 18 513- 19 18 513- 19 19 19 19 19 19 19 19 19 19 19 19 19 1	AND535		
	to node AND \$35 4- AAT	<b>a</b> 166 <b>a</b> -		

S:\FIELDOPS\FORMS\Inline Sediment Trap FDS.doc

Ę

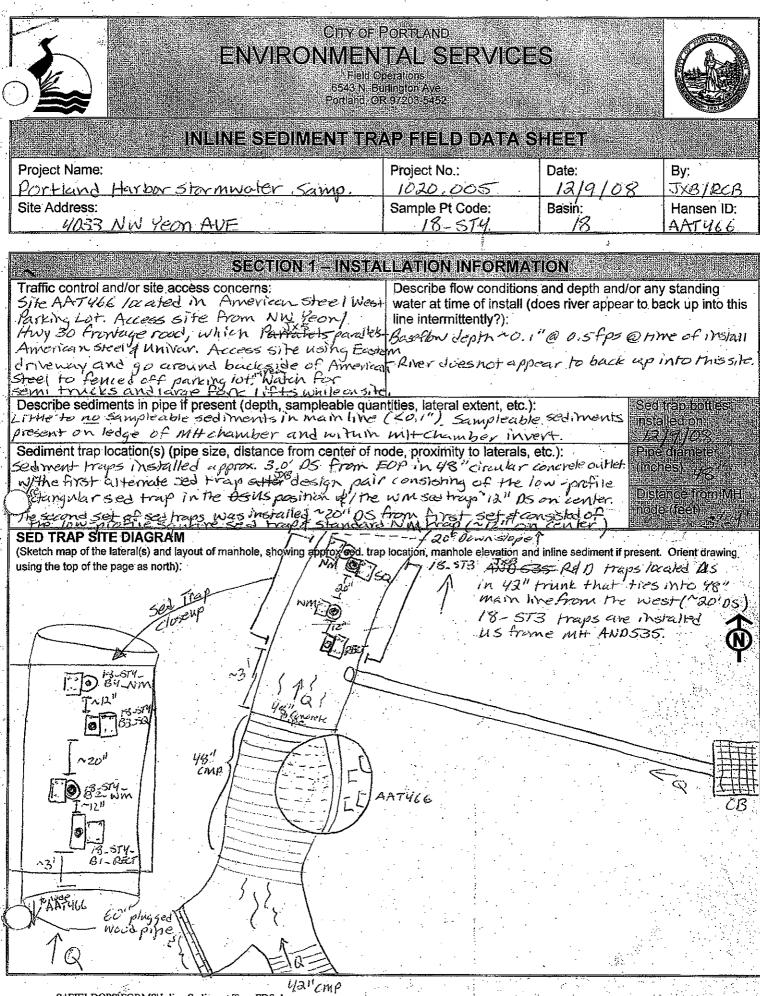
Pt Code SECTION 2 MONTHLY FIELD OFFECK IN FORMATION Hansen ID ANDSSS Estimated sed. depth per bottle (% by-/ate: Bottles removed/replaced? YN -14-09 volume & inches): If removed which one(s)? Ang hive daile. ₩S Bottle<sup>†</sup> - 4.9 DS Bottle 3 - 2.5 By: ALL 18-573 JKB 1115 Bottle<sup>2</sup> -  $\approx 3.4$  " Bottle 4 - 3.5 JXB, LAP Final Removal? Y/N NM 9108-11109 Comments: All bottles full of stormwater; No ador or sheen detected. R&D bottles had been filled more than halfway by solids. Bottles were a stratifized by larger organic debris (eq. pineneedles, twigs) intermixed whire scalment. No sidewall adhesions. All bottles archived. New bottles installed. Bottle A Labeled sequentially. scaiment. 18. ST3-BI-NA = 18-ST3-B5-NM Base Ploni Nas 2018 1.5-2.0 fis 18-573\_ B2\_ WM => 18-573\_ B6\_ WM 63. PECT 29105-1114109 removed 1/14/09 @1350pst 139 19-573- B3\_ RECT => 18-573- B7- RELT 18\_573-B4-SQ => 18\_573-B8-50 Photos Taken?(Y)N Describe: Photo of significant woody debris around all trap housings & Estimated sed. depth per bottle (% by Date: Bottles removed/replaced? Y/N volume & inches): 2/20/09 If removed which one(s)? US Bottle X- Ø By: DS Bottle 3 -Bottle &- Ø Bottle U-MISJYB Final Removal? Y/N Comments All bettle openings are free of obstructions Heasings have some organic material & plastics accumulated in them, along w/ DE from vyidizing bacteria on surface of traps of knockans here is base flow averying & 1.8" in depth and moving at ~15ps Holding Sticker US Bottle All 4 bottles are free of stormweter and any associated sediment. Level never sot sufficiently high to submarge battles since 1/14/09 DS Bottle Photos Taken? Y/N Describe: Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/N volume & inches): 3/30/09 If removed which one(s)? vichived II By: US Bottle 5 DS Bottle - O. C AJAKJXA Bottle / - ~ 0 Bottle X-20 Final Removal? Y/N/ Comments: Organics adhered to bottom 1/3 it we sed traps , 42, 3" at 2,5+/5 all openings are free form obstructions. Strong hydrocarbon Holding Node (manhole vault) Sticker US-Bottle - Battle 5 has no water no sadment Battle & has about 1-2" off Stormater and a Gu Placks of Sedment deposited in portour of bottle S-rolle B- Rectangular (BF) ~ 0.6" sediment, full of Stornwater, no adhened DS=Bottle are NO . 1" accumulated sed, full of Storm water Sottle 8 7 54 νtos Taken? Υ/Ν Describe:

<u>عتم</u>			· :
Pf Code /&25T3	SECTION 2 - MONTHI	Y FIELD CHECK INFORMATION	HansendD AN 0 5
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? XN If removed which one(s)?	Archived
By:	US Bottle 26-77.50% DS Bottle 26-70.50 Bottle 26-71.2" Bottle 27-71.5"	6" End of 08/04 Pilot Study	18-573
Comments:	n site to semore standard narrow rans of the end of the 08/04 pile	mouth sed trap of the alternate design	- NM 1114109= 614109 105505
Four trap All four of t	s were full offstormwater. Minor reporte openings were file of obstr	r organics adhered to trap housings uctions. Trace adhesions observed or	18-513-64
US Bottle Iron B6-	wm: Total accumulation of salids was	r organics adhered to trap housings uctions. Trace adhesions observed or ap bottless removed trap bottles & housi captured solids appear to be in the large course particle fraction.	NS. (10-14-100) 11-14-100 11-14-100
	tersy: 10tal accumulation of soil	as captured was a 1,2"	18-513-1
0. <u>+</u> -	NM ? Total accumulation of solid RECT: Total accumulation of cop	twied solids was alist	- RECT 111410 614104
Photos Taken?			1051
Describe: pho Date:	Estimated sed. depth per bottle (% by	Bottles removed/replaced? Y/N	35 . Start &
By:	volume & inches): US Bottle - DS Bottle -	If removed which one(s)?	Archi M.
	Bottle - Bottle -	Final Removal? Y/N	· ·
Bottle -			Holdin Sticke
DS Bottle -			
Photos Taken?	Y/N		
Describe:			
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	Anchived
By:	US Bottle - Bottle - Bottle -	Final Removal? Y/N	
Comments:			Holdin
			Sticke
US Bottle -			
DS Bottle -			
Photos Taken?	Y/N		
cribe:			
· · · · ·		A DATE AND A DESCRIPTION OF A DESCRIPTIO	· ·

PICAL	SECT	ION 2-MON: BH	Y FIELD CHECK INFORMATION	ANNY 335
Date:	Estimated sed. depth p volume & inches):	er bottle (% by	Bottles removed/replaced? Y/N If removed which one(s)?	Acolved ID
ву:	US Bottle - Bottle -	DS Bottle - Bottle -	Final Removal? Y/N	
Comments:				Holding
US Bottle -				
DS Bottle -				
Photos Taken?	Y/N			
Describe:				
Date:	Estimated sed. depth pe volume & inches):	er bottle (% by	Bottles removed/replaced? Y/N If removed which one(s)?	Atonivea 10
By:	US Bottle - Bottle -	DS Bottle - Bottle -	Final Removal? Y/N	
Comments:				Holding Sticker
Bottle -				
DS Bottle -				
Photos Taken?	יווא	······································		
Describe:		·		· · ·
P Code Kaz 13		Section3-1	OMPOSITE SAMPLE	Pansen D AUASS
Sample ID:	FO095694	Duplicate sample this site?	collected at DUPLICATE ID:	
Duplicate Sampl	· ·	Any deviations fro	m standard operating procedures? Y/	
affix FO number :	FO095697	Describe:	A	
Comments:	See Inline :	sediment Tra	p Sample Pracessing Data She	et
	· · · · · · · · · · · · · · · · · · ·			

. . .

سنتن



S:\FIELDOPS\FORMS\Inline Sediment Trap FDS.doc

	ELD CHECK INFORMATION	Hansen to ALT 466
	ttles removed/replaced? Y/N	
By: US Bottle 1 - ≈ 0.9" BS Bottle 3 _ 0.2~0.3"	enoved which one(s)?	Archived ID
	nal Removal? YA	
Comments: All bottles ful of stormwater Base	flow = 1.2" e. 5 fps.	
18. ST4-BI-RECT: totaling obstructed by plu	astic bag-bag carefully removed.	Holding Sticker
US Bottle - sheen noted. Marked Side C.B." w/ an avera	age of 0.9" depth. No odor cr	
18. ST4-BI-RECT: totaling obstructed by plu full of stormwater; no hadhesicns. Solids a side 1.1" -> downstream side c.8" w/ an avera US Bottle - sheen noted. Marked upstream side a 18.5T4-B2-WMs full of stormwater; no adhesions	Solids = 0.2". No sheen or	visits observation JXB/115/09
Inon we are an are bound of the of the weather with a dise	COME Solids = 0.2 -0.3" NO CLERIN	יאכון ז מאט
US Bottle or cdor detected. 18-STA-BA-NM: full of stormwater; no add	hesions. Solids = 0.6". No sheen	
Photos Taken? (YN Photo of 18.5T4-BI-RECT	T with @ obstructed	
Describe: by plastic bag prior to rei	moral.	
Date: Estimated sed. depth per bottle (% by Bot	ttles removed/replaced? Y/N)	
$\frac{2/20/04}{2}$ volume & inches):	emoved which one(s)?	ArchivedID
	al Romanal VIII	a na se anna an a
Comments: Bear fl. of All man is it and		
Comments: Baseflow of 0.1" moving at 202 f are free of obstructions. There is accumul Organies on sed trap housing WB Bottle [-Fall of stemmater minosulting	ps. openings or all hottles	Holding
Organies on sed trap housing	area rupor, plastics, and	Sticker
Bottle 2 - Full of stormwater, minar adhesion of sed, on ins. Bottle 2 - Full of stormwater, minar adhesion of sed, on ins. Bottle 2 - Full of S.W. some adhesion of fines on intertor BS-Bottle 3 - Full of S.W. trace adhesion on intertor u	ide of hittle indirect desca ted	
Dettle 2 - Full of 5. W. Some adheston of times on interio	1 valls 0.3 st sed ture F	charges stream
	1 Contraction of a	edura venue ins
Boffle 4 - Full of S. W. Ino adhesion of Fines on w Photos Taken? Y(N)	cully 0.6" of sedment	0,2-,3-9
Describe:		
	tles removed/replaced? Y/N	
By: US Bottle! - ~/. 3 ang. DS Bottle 3 - 0, 2-0,3		Atchived ID
AJA J×B Bottle 2 - 0.3 Bottle 7 - 0.7 - 0.8 Fina	al Removal? Y/	
Comments: Strong hydrocarbon over in fipe. Basetten storm water, and openings are un obstrace	them. Rolles are fill of	$\frown$
		(Holding Sticker
US Bottles - Rectangular batt. Seds, and thicker (du	adhesion of thes to sides	
Bette 2 - why month some trace of hesing the	said & fline do oth = ~0.3"	
DS Bottles - Swore battles, 0.2-0.3, minor aches	and to maile of batt	
Bottle H - Narrow month, 0,7-0.3" Some ad	thesion to thite	
otos Taken? Y/N		
Describe:		

S:\FIELDOPS\FORMS\Inline Sediment Trap FDS.doc

دن

.

••

÷,

: ...

Pr Codet	SECTION 2- MONTHLY	(FIELD CHECK INFORMATION TO LE	Hansenilo AAY Guia
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	Archuvee 107
By: M. 55, 543	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N	
Comments:			Holding
US Bottle -			Sticker
DS Bottle -			•, •
		·····	
Photos Taken?	Y/N		
Describe:			
Date: 6/4/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? (//N If removed which one(s)?	AV2 AV BIT
By: JXB/PTB	US BottleBt ~2.04 DS Bottle32- ~0.2" BottleBz ~0.2" BottleBy ~(1011 1 3)7e to remove all four sedime	Final Removal? (Y/N	18- 219101-
08/09 Pilots on traphon adhesions	1 5) Te to remove all four section tudy deployment. Traps were in the asings. All four traps were Pull a on the inside surface of the bottle cept for the standard trap 18- partially obstructing bottle opening Total accumulation of solids was in Total accumulation of solids was	acted Minor build up of organics of captured stormwater w/ fine . Bottle openings on all four track	14554-62 W14106 214109 2133 24ween
Photos Taken / G	AN SITU prior to removal of on		Metion Metion
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	18-574-84 WM 1219108-
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N	614104 1018/8T
Comments:			Holding Sticker
US Bottle - DS Bottle -			
Photos Taken?	(/N		
Cribe:			<u> </u>

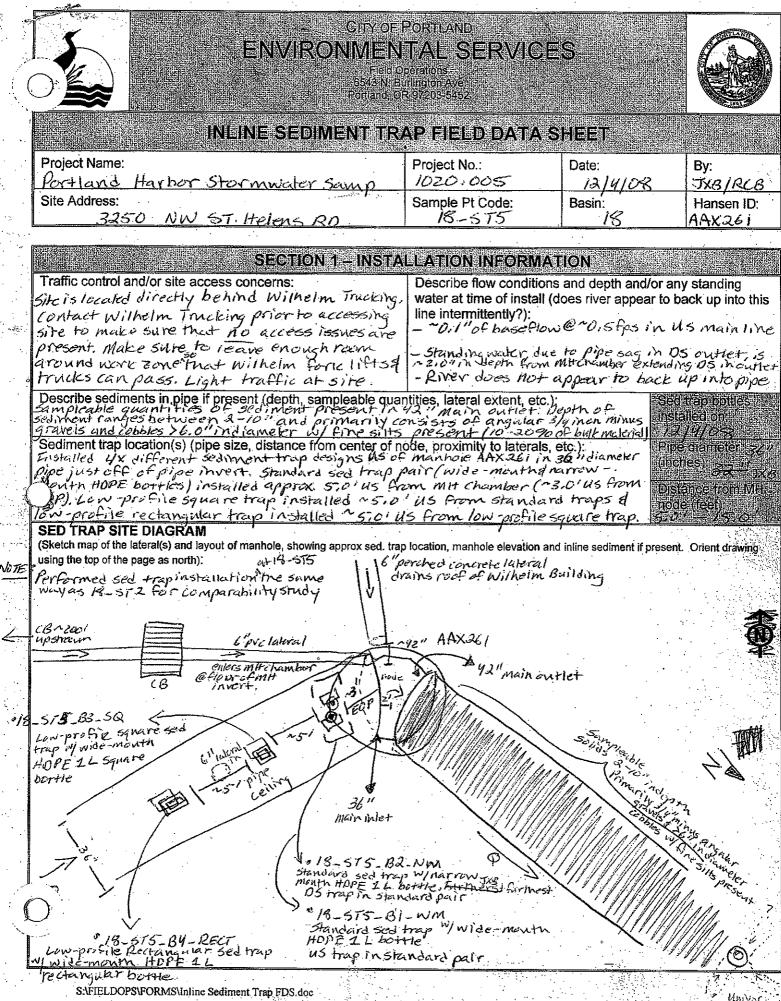
1.1

P 200	SECTI	ON 2- MONTHL	VIIIID O	HECKINFORMA	TION	Hansen ID
Date:	Estimated sed. depth pe volume & inches):	r bottle (% by	Bottles ren	noved/replaced? Y/N	1	Arcmved ID
ву:	US Bottle - Bottle -	DS Bottle - Bottle -	Final Rem	.,		
Comments:	· · · · · · · · · · · · · · · · · · ·		·			
· .				and the second second	•	(Holding Sticker
US Bottle -				and the second		
DS Bottle -		· ·		• **-		• •
Photos Taken?	Y/N			·		
Describe:						
Date:	Estimated sed. depth pe volume & inches):	r bottle (% by		noved/replaced? Y/N which one(s)?		Archiveo ID
By:		DS Bottle - Bottle -	Final Remo			ALCHINGO LA
Comments:						(Haldian
						Holding Sticker
Bottle -						
DS Bottle -						
Photos Taken?	Y/N			· · · · · ·		
Describe:			· ·	• • • •		-
Preside						
Procest		SECTION 3 G	OIMIR(0)SIT	EISAMPLE:		Hanseniio AATM&6
Sample ID: affix FO numbe	FO095695	Duplicate sample c this site? Y/N	ollected at	DUPLICATE ID:		:
Duplicate Samp	ble ID on COC:	Any deviations from	n standard o	perating procedures?	YN	• • •
affix FO number stic	cker	Describe:			Ý	•
Comments:	See Inline Sed	iment Trop Pr	OCESS IN	ng Field Da	la shee	
	•	· · · · · · · · · · · · · · · · · · ·				•
C		· · · ·		- - -	•	
· · · · · ·		· · · · · · · · · · · · · · · · · · ·				
		· · ·	Ĩ.	· · · ·		-

÷к.

.

.



Page 1 of 4 Crowns war

	SECTION 2 - MONTHLY FIELD CHECK INFORMATION	HansenilD
· <del>.</del> .	ate:     Estimated sed. depth per bottle (% by volume & inches):     Bottles removed/replaced? Y/N       1-14-c9     volume & inches):     If removed which one(s)?	AAX261
; 	By: $JXB_{LAT}$ Bottle 2 - $50.1^{\circ}$ Bottle 3 - $40.2^{\circ}$ Final Removal? YN	
``	Comments: All bottles fill of stormwater. Baseflow= 0.2" @ 0.5 for	Holding
•	18: ST5. BI-WM: Full of stormwater, with fines adhered to inside wall of bottle (adhesions). Trace ant of solids (<0.1"). No visible sheen. No apparent adm US Bottle-18. ST5-B2-NM; Full of stormwater; adhesions. Solids = 0.2"	Sticker
•	DS Bottle - very bottom of bottle. Slight Sheen observed. Faint spaint' dor. 18-ST5-B4-RECT: Full of stormwater; adhesions. Solids (<0.2") @ 18-ST5-B4-RECT: Full of stormwater; adhesions. Solids have settled at an angle. Total dopth. Solids have	
• .	Photos Taken? VN 0.3 - 0.5" w/ an average depth of 0.4" Slight sheen observed. Faint paint edor	ж 
	Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y(N)	
• •	$3/30/0^{\circ}$ Volume & inches):If removed which one(s)?By: $35$ Bottle $1 - < 0.1^{\circ}$ $35$ Bottle $3 - < 0.4^{\circ}$ M 15, $3 \neq 8$ Bottle $2 - 0.2^{\circ}$ Bottle $4 - \sim 0.4^{\circ}$ Final Removal? Y(N)	ArchivedAD
	Comments: All 4 bottles are full of stormwater and openings are unobstracted. All hottles have some organic moterial accumulated around the housings. There is not in of the base flow moving at NIFPS	Holding
	US-Bottle - 18_ ST5 Bi - Full of Stormweter; trace amounts of sediment	
	DSBottle - 18-575 B3 - minor fines adhering to interror of bottle, full of stormwoter, do. 2" and surlawof swim 18-515 B4 - iron bicterra on bottle, full of stormwater, minor amount of fines withered to inside of bottle, wourd afsed ment	e f
•	Photos Taken? Y(N)	
	Describe: Date: Estimated sed. depth per bottle (% by Bottles removed/replaced? Y/W	
	Date: $3/_{3o}/_{0A}$ Estimated sed. depth per bottle (% by volume & inches): By: By: By: By: By: Bottles removed/replaced? Y/N If removed which one(s)? By: By: By: By: By: By: Bottles removed/replaced? Y/N By: By: By: By: By: By: By: By:	Archived ID
	ASA SXB Bottle 2 = 0,3" Bottle 4 - 0.4.05 Final Removal? YMP	
•	Comments: All four bettles are full of storm water organics around sed Trap housings but bottle openings are approved by the B1+ B2 for every Base flow is about 0.1" at 0.5 fls, NU discernable odors. In any sample	E to Holding Sticker
	US Bottle - (8 575 BI- (Wide month). Fires a diferred to sides. Some in consolitated season	$\sim$
	DS Bottle (3, 575-B3 (Square bott) files on inside of bottle ~0,2" Seds Hydrocartion in stE By - Bottle coeffing 50% obsicrated w/ cenf. 5. ill.	
	Hydrocartin 12 st234 - Bottle opening 50% obstancted w/ leaf. Fines alleved to sides at bott. Aur MB3t By OHL-0,5" accumulated seds. Some thatmy material in B4 ptos Taken? Y/N Note: 6" Lateral entering main pipe botwn botts 3 + 4.	
:	Looking up side but remest C. B. has sed sock in	Halled
····	Which would Block out light S:VFIELDOPSVFORMSUNINE Sediment Trap FDS.doc.	
	Page	2 of 4

All Fre

· . :

.

. . .

1.5.5

· · ·

;

A10			
	SECTION 2 - MONTHL	Y FIELD CHECK INFORMATION	Hansen ID ZAASX Z 451
Date: 14/.	Estimated sed. depth per bottle (% by	Bottles removed/replaced? Y/	
<u> </u>	volume & inches): US Bottle 1 - Trace DS Bottle 3 - 0.2"	If removed which one(s)?	Archived ID
/AJA	Bottle $1 - \sqrt{25^{\circ}}$ Bottle $7 - \sqrt{29^{\circ}}$	Final Removal?	
Comments: A	Il four bottles full of stormwa	ter. 83 opening obstructed of month. Set trap housings	
all	have some debris (plastics	+ organics) on them.	(Holding Sticker
US Bottie - 6	have some debris (plastics small baseflow (~ 1/4" depth), sottom of pipe Material on Walls, 2	Some filamentous bacteria on	
18-	555-B2-NM-Small amount address	ed to bettle avails easily dishodged in color Decomposed organiss abor	
DS Bottle -13	-ST5_B3_SQ - 30% opening obstruc	h in color Decomposed organizes dor ted by Latex above slight film	
18	-ST5_B3_SQ - 30% opening obstruc on surface. Material -ST5_B4-rect: Proyouncef Surf, film	on widly. Defour organics don't reddish in color some sed on inside	
Photos Taken?	MAN War,		<i>.</i>
Describe:	Overview + close ups	of an bettles	
Date:	Estimated sed. depth per bottle (% by	Bottles removed/replaced? Y/N	
	volume & inches):	If removed which one(s)?	Archived Data
Ву:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N	and the second
Comments:	1		
			Holding
Bottle -		A starting the second start of	Sticker
DS Bottle -	a tha an an tha tha a file		
Photos Taken?	Y/N		
Describe:	an an taon an taon an taon 1960 an taon 17		
Describe.	Estimated sed, depth per bottle (% by		
Dale.	volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?	Archived ID
By:	US Bottle - DS Bottle - Bottle - Bottle -		
	Bottle - / Bottle -	Final Removal? Y/N	
Comments:	the second of the second second		Holding
· · · ·			Sticker
US Bottle -			
DS Bottle -			· · · · · ·
Photos Taken?			· · · · · · · · · · · · · · · ·
· .			
Cribe:			· · · · ·

•••

.:

÷.

j.

Pt Code 1/3 - STC		ON 2-MONTH	Y EED C	HECK INFORM	ΙΑπίοΝ	Hansening AAXAC
Date:	Estimated sed, depth per volume & inches):	er bottle (% by	Bottles ren	noved/replaced? which one(s)?	Y/N	Archiveo ID
By:		DS Bottle - Bottle -	Final Remo	,		
Comments:		· · · · · · · · · · · · · · · · · · ·	<u> </u>			
	· · · · · · · · · · · · ·				•	Holding Sticker
US Bottle -						
DS Bottle -				на селото н По селото на		
Photos Taken'	? Y/N	/	<u>/</u>	· · · · · · · · · · · · · · · · · · ·	•	
Describe:	· · · · · · · · ·			,		· .
Date:	Estimated sed. depth pe	r bottle (%/by	Bottles rem	ioved/replaced?	//N	
Ву:	Volume & inches): US Bottle - [ Bottle -	DS Bottle - Bottle -	Final Remo	which one(s)? wal? Y/N		Archived D
Comments:		/				Holding
Bottle -			• • •			Sticker
DS Bottle -						
Photos Taken?	Y/N	,				
Describe:					· ·	
Ph Code		SECTION 3-C	(olmeoisim	Esample		HansenHD
Sample ID:	FONSERGE	Duplicate sample	collected at	DUPLICATE ID:		AAX261
affix FO numbe	FO095696	this site? YN		en e		
Duplicate Sam	ple ID on COC:	Any deviations from	m standard or	perating procedure	es? Y/N)	
affix FO number st	ticker	Describe:	·	_, , ,	<u> </u>	
Comments:	See Inlive Sediv	net Trap Sam	ple Process	sing Data S	sheet	
· · · · ·						· · · · ·
)						
· · ·	·		· · ·			
	· · · · · · · · · · · · · · · · · · ·					





Page <u>2</u> of \_ Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020,005 Location BASINS 44A, 43 & 18/RAD) Date 10 30 08 BY JXBIAJA Subject INLINE SENTRAP INSTALLS - AJA enters 18-572 RED (cont; AATSS7 Entrant notes trap install are still present or Apportion of D installs anchor boilts from previous sed pipe & can be used Forn Entrant Installs each of the four different sed traps for use n 18 R&D. Existing anchor bolts ilsed to matall 1 HOPF bs in And wide -mouth measurements refer 1 0 18 rop locations donned JKB Millos glores Trap Field Dat Entrant Sheet bottles. Sed trap bot 1L HOA HOPE RED need by entrant. Bottle cope were were ver deployment entire clean Fiplicic bag to be stored the period @ 18-STJ Photo of all four test traps taken by entrant US @ EOP OF 42" moin line Left site for Basin 43 to install a standard sed trap pair @ 43-ST1 (ABC 290) TYOC Arrive on site to install a pair of standard traps ABC290 in 16.0" terra cotta pipe. site 4 located Albing, Entrant confirmed pipe diameter as USADS. Maintine is te Entrant Sed hearn During Installation entrant noticed what JXB IIIM sanisary Flow Seeping into ABC290 2 Tray JX3 Entrant tool of ecoli sample Ens sample results (see copy of cos on file for sample JXR

Attachments

## DAILY FIELD REPORT



of

Page \_\_\_\_1

Project PORTLAND HARBOR STOPPMWATER SAMP Project No. 1020.005 Location BASENS 44A, 43 \$ 18(R\$D) Date 10/30 08 Subject INLENE SED TRAP INSTALLS By JX3/AJA 0951 PST - Amire on site @ 44A\_STI[N Larabee & Randolph/ABC31] to install sed trap bottles & housing for secondary (standard) sed traps, located approx 9.0' DS From primary 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 poimary sed trap bottles w/ site's designated clean bottle caps prior to moving DS in main line to install secondary sed trap housing. Entrant notes accummulation of organic leaf debris around primary Sed trap basephiles. Primary sed trup bottles are full stormwater "/ mouths of bottles free of obstructions bothe mouths Jxg 12/16/08 Entrant installed secondary sed traphonising N/ clean gloves; secured decontaminated 1 L HOPE narrow-month bottles in econdary sed traps & removed bottle caps w/ clean gloves Bottle caps from primary & secondary sed trap bottles were placed into clean, individual Ziplock bags for deployment pended storage & labled Photo taken of primary & secondary sed trap pairs insitu

1035 - Left site for Basin 18 R& D site AAT557

1130 - Annve on site @ 18-ST2 (3950 NW Yern Ave (AAT557)] to install four different sed trap styles for Basin 18 Rtp.

1) Standard Sed Trap W/1-L HOPE, namow-month bottle

2) Standard Ed trap 1/1-LHOPF, wide mouth bottle

Attachments 3) Rectangular low-profile 1L HOPF wide-mouth trap

4) Square low-profile 1L HOPE wide-mouth bottle trap

### DAILY FIELD REPORT



Project No. 1020.005 Project Portland Harbor Stormwater Samp Location Basin 18 - 18- STS Date 12/4/03 Subject Basin 18 Sed Trap R&D Installation BY JXR/RCB 1195 PST- Arove on site @ 3250 NW St. Helens RO ( Withelm Trucking Locate node # AAX261. Site code designated as 18-STS. RCB pressions to install 4x different sed trap designs @ this site for Basin 18 R&D X261. Futrant confirms inlet main pipe diameter as 121 RCB enters AA 36,0". Outlet main pipe diameter is 42.0". Two laterals enter node AAX261 within the MH chamber. A 6.0" Due lateral enters at Floor of MH chamber & a perched 6.0" concrete lateral enters approx. 42" above MH chamber Floor. + notes presence of 2-10" in Lepth of Leposited sediment along the entire extent of the NS 42" diameter main ontlet. Deposited sediment primarily consists of 3/4 minus angular gravels and "cobbles >6.0" in

diameter contacted LAS. Determination made to install sed traps us of node in 3600" diameter inletione to volume of solids in DS line.

Entrant installed all four of the different sed trap designs similiar to 18-572 metati for comparability study. Entrant nised sed traps w/UPDT after securing base places. Entrant installed each of the different sed trap bottles. Bottles were secured in housing tenhant removed bottle caps "wearing clean gloves Bottle caps were placed in clean ziplock bag for duration of deployment period. 13-575 R&D Sed Trap Installation:

· Standard sed trap W/1 L HOPE narrow-month bottle

· Standard sed trap w/ 1 L HOPE wide - mouth bottle

· Low-profile rectangular sed trap W/1 L HOPE wide-martin rectangular bottle · Low - profile square sed trap W/1 L HOPE wide-mouth square bottle 1500 - Left site to return to WRCL

Attachments

## DAILY FIELD REPORT



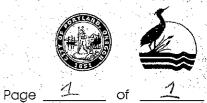
Page <u>2</u> of Project Portland Itarbar Stormuster Samp Project No. 1020,005 Location Basin 18-18-STS Date 12/4/08 Subject Basin 18 sed Trap R&D Installation By JXB/RCB 18-575 Schematic/ Plan View - AAX261 6"perched concrete Interal HAX 261 6" pv Lateral to Co 5, 4211 NME OnHej WM Shind 09 Ĵĥ 3 B BGII Squire Trap In et Rectangular Trap Attachments

#### DAILY FIELD REPORT



Page \_\_\_\_ \_\_\_ of Project Brithing Hurbor Stormwater Sampling Project No. 1020,005 Location NW Portland Date 12 9 108 subject 18-ST3 installation BY JTM, MJS 1040 Andre on site @ 4033 NIW Year ANDSZ ST3 Nonat US 421 1,20 1103 Entrant was able to ve-use botts from previous install (on 3/15/07) and then installed Trectangular and Isquaresediment trap upstream of previous Labeled bottles 13-ST 3- #- Bottle type. The # corresponds to location Upstream of node AND 535 and Bottle type is NW for narrow mouth, WM for Wide Mouth, #RECT for rectangle and SQ for square mouth, bottles Ilin JXB 12118/08 1136 Entrant removed bottle caps, captured photos of Sao Inline Sheet for diagram of bottle location linstall Sediment Trap Field de Departer **Attachments** 

DAILY FIELD REPORT



÷.

Project PORTLAND HARBOR STORMWATER SAMP Project No. 1020.005
Location BASIN 18 - 18-ST3 \$ 18-ST4 Date 12/9/08
Subject BASIN IS SED TRAP RED INSTALLATION BY JXB/RCB/ JJM/MJS
1040 PST - Arrive on site @ 4033 NW Yern Ave (American Steel)
to install four different sediment traps of 18-ST3 (ANDS35) &
18-STY (AATY66) for Basin 18 RED. MJS to Install sed traps @ 18-SI3
RCB to install sed traps@18-STY
R& D Sed mont Traps:
· Low-profile rectorigular trap 1/12 HOPF with rectangular plastic bottle
· Low-prifile square trap w/1L HOPE win square plastic bottle
* Standard sed trap w/ 16 HOPE wm plastic bottle
· Standard sed trap w/ 1 L HOPE NM BAStan-round plastic bottle
Martin Den to the two was to see the second to be and the second to be a second t
1115 - RCB enters 18-STY (AAT466) to install all Pour sed trap designs.
Anchor bolts from previous sed trap installs ( 06/07 deployment period)
are unusable (punched through pipe or stripped). RCB to install all four traps DS from previous placement, and DS from CB lateral. Traps to
be installed US from 20° downslope An Tiles in main pipe
Entrant instants all four sed traps sod trap base plates & housing
are rinsed w/ UPDI after being seamed Einfrant installs sed
trap bottles & secures bottles in traps. Entrant removed Lottle
caps wearing clean gloves & placed bottle caps in clean Ziplock
bag for storage during entire extent of deployment period.
1221 - Leave Basin 18 pero sites for WPCL
Attachments

## DAILY FIELD REPORT



	Page of
Project	tland Harbor Stormwater Samp. Project No. 1020.005
Location	3asin 18 R & D Date 1-14-09
Subject	Fial Sediment Trap checks By LAP, JXB
* All time	5 in pg7 J×B 1/15/09
1100 -	Arrive on site @ 3250 NW St. Helens Rel. (18-ST5_AAX261)
	Entrant notes that all fair bottles are
	free of obstruction. Some organic
	depris observed around base of sectiment
	trap housings, primarily on the upstream
	Side. All bottles full of stormwater
	Baseflow 0.2"@ 0.5 fps at time
	of entry
1236 :	Depart 18-ST5.
	<u>VEPaul 10-31</u>
1239.	Arrive on site (2 4033 NW Yean Ave
	(18 - 5T4 - AAT466)
	Entrant notes organics 2 plastics
	wrapped around baseplate & housing of
	all bottles upon arrival. 18-574-BI-RECT
	was totally obstructed by a plastic bag
	Photo taken. Plastic bag carefully removed.
	All bottles fill of stormwater. Baseflow
	1.2" @ 0.5 fps at time of entry
1314:	Entry of 18-ST3_AND535. Entrant
	notes organic debris (wood) and trap
	housing Photo taken. Baseflow = 2.0" @
Attachments	1.5-2.0 fps at time at entry

## DAILY FIELD REPORT



Project Partland Harbor Stormwater Samp. Location Basin 18 R 2 D Subject Initial sed. trap checks By LAP, JXB 18-ST3 cond. Atl R & D bottles more than have filled by solids. All bottles archived & photo- graphed. Time of removal = 1350 pst (14/09. Bottles installed 12/9/08. New bottles installed . 18-ST3-B1-NM = 28ST3-B5-NM 11510 18-ST3-B2. WM = 28ST3-B5-NM 11510 18-ST3-B2. WM = 28ST3-B5-NM 11510 18-ST3-B3-RECT = 28ST3-B6-WM 18-ST3-B3-RECT = 28ST3-B6-WM 18-ST3-B3-RECT = 28ST3-B6-SQ. 1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) mats of Entrant notes minor Organic debris on
Subject Initial sed. trap checks 18-ST3 ond. All R & D bottles more than half filled by solids All bottles archived photo- oraphed. Time of removal = 1350 pst (/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. Starsta-BI-NM =>RST3-B5-NM 1/8-ST3-BI-NM =>RST3-B5-NM 1/8-ST3-B2_WM =>RST3-B6-WM 1/8-ST3-B3-RECT =>RST3-B7-RECT 1/8-ST3-B4-SQ =>RST3-B6-SQ. 1446: Depart 19-ST3. 1446: Depart 19-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) 
18-ST3 conf. All R & D bottles more than half filled by solids All bottles archived photo- araphed. Time of removal = 1350 pst (/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. St. 18-ST3-BI-NM =>85T3-B5-NM 115101 (8-ST3-B1-NM =>85T3-B6-WM 18-ST3-B2_WM =>85T3-B6-WM 18-ST3-B3-RECT =>85T3-B7-RECT 18-ST3-B4-SQ =>785T3-B9-RECT 18-ST3-B4-SQ =>785T3-B8-SQ. 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1446: Depart 18-ST3.
All R & D bottles more than half filled by solids All bottles archived & photo- araphed. Time of removal = 1350 psr (/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. 518. 18-5T3-BI-NM =>85T3-B5-NM 115101 18-5T3-B2_WM =>85T3-B6-WM (8-ST3-B3_RECT =>85T3-B7-RECT 18-ST3-B3_RECT =>85T3-B7-RECT 18-ST3-B4-SQ =>785T3-B7-RECT 18-ST3-B4-SQ =>785T3-B7-RECT 1446: Depart 18-ST3. 1446: Depart 18-ST3.
All R & D bottles more than half filled by solids All bottles archived & photo- araphed. Time of removal = 1350 psr (/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. 518.18-5T3-B1-NM =>85T3-B5-NM 115101 18-5T3-B2_WM =>85T3-B6-WM (8-ST3-B3_RECT =>85T3-B7-RECT 18-ST3-B3_RECT =>85T3-B7-RECT 18-ST3-B4-SQ =>785T3-B7-RECT 18-ST3-B4-SQ =>785T3-B7-RECT 1446: Depart 18-ST3. 1446: Depart 18-ST3.
by solids: All bottles archived& photo- graphed. Time of removal = 1350 pst 1/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. 5/3 18-ST3-BI-NM=#85T3-B5-NM 18-ST3-BI-NM=#85T3-B5-NM 18-ST3-B2_WM=#85T3-B6-WM 18-ST3-B3_RECT=#85T3-B7-RECT 18-ST3_B4_SQ=#85T3-B7-RECT 18-ST3_B4_SQ=#85T3-B8-SQ. 1446: Depart 18-ST3. 1455: Amive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) parts: of
by solids: All bottles archived& photo- graphed. Time of removal = 1350 pst 1/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. 5/3 18-ST3-B1-NM=#85T3-B5-NM 18-ST3-B1-NM=#85T3-B5-NM 18-ST3-B2_WM=#85T3-B6-WM 18-ST3-B3_RECT=#85T3-B7-RECT 18-ST3_B4_SQ=#85T3-B7-RECT 18-ST3_B4_SQ=#85T3-B8-SQ. 1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) ants: of
alaphed. Time of removal = 1350 PST (/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. 518-5T3-BI-NM=385T3-B5-NM 115101 18-5T3-B2_WM=385T3-B6-WM 18-5T3-B3_RECT=385T3-B7-RECT 18-5T3-B3_RECT=385T3-B7-RECT 18-5T3-B4-SQ=385T3-B7-RECT 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) puts.of
(/14/09. Bottles installed 12/9/08. New bottles installed, numbered sequentially. 5 <sup>18</sup> 18-ST3-B1-NM =>8ST3-B5-NM 115101 18-ST3-B2_WM =>8ST3-B6-WM 18-ST3-B3_RECT =>8ST3-B7-RECT 18-ST3-B3_RECT =>8ST3-B7-RECT 18-ST3-B4-SQ =>78ST3-B7-RECT 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1445: Amive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) amits. of
New bottles installed, numbered sequentially. 5/3 18-ST3-BI-NM = #8ST3_B5_NM 115101 18-ST3_B2_WM = #8ST3_B6-WM 18-ST3_B3_RECT = #8ST3-B7-RECT 18-ST3_B4_SQ = #8ST3_B7-RECT 18-ST3_B4_SQ = #8ST3_B8_SQ. 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557)
519 18-5T3-BI-NM =>RST3_B5-NM 115101 18-5T3_B2_WM =>RST3_B6-WM 18-ST3_B3_RECT =>RST3_B7-RECT 18-ST3_B4_SQ =>RST3_B7-RECT 18-ST3_B4_SQ =>RST3_B8-SQ. 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1455: Amive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) amts: of
18-5T3-B3-RECT =785T3-B7-RECT 18-ST3-B4-SQ =785T3-B8-SQ. 1446: Depart 18-ST3. 1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) muts. of
18-ST3_B4_SQ =7/8ST3_B8_SQ. 1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) ants.of
1446: Depart 18-ST3. 1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557) ants. of
1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557)
1455: Arrive on site @ 3950 NW Yeon Ave (18-ST2; AAT557)
ants. of
ants. of
Entrant notes minor Organic debris on
sediment trap housing- no obstructions.
Basetlow = 0.6 " @ 1 fps at time of
outry All bottles full of storminater
NO odov detected in any pottle.
1536: Depart site.
Attachments

		DAILY FIELD REP
Environmental Services Filter S Protection Protection	otype -	
	5	Page <u>1</u> of <u>1</u>
Project Portland Harbor Storm	nusater Samp.	Project No. $1020,005$
Location Basin 18-18-STI		Date 3/5/09 2/4/09
Subject Inline Filter Sock Prototy	pe Install	By JXB/MJS
BACKOROUND: High pressure vi	doe throughout	region Prolonged day
period (1/23 - 2/4) w/ moderate te	imperatures follow	ving Artic Frontal systems J
1441 - Annie on site@18-	STI (AAT565)	- NW 35th Ave & Yea
On site to install inline "F		
prototype to be installed	US OF AATSES	în 12" diameter,
circular concrete main int		
Sedment Trap anchor balts		
as 12"		
1500 - MJS installs large	filter sock p	prototype approx. 6"
US from 12" diameter inte	+ FOP Filler	Socie is approx 1
US from (Binlet entering	manhole chay	mber. Stainless stee
	ainless com	ponents decorred @
scissor-jack hand of all st	i e par e construction de la constru	
Scissor-jack hand of all st WPCL prior to installation	Decon proced	use included: scapy
Scissor-jack hand of all st WPCL prior to installation	Decon proced	use included: scapy
Scissor-jack hand of all st WPCL prior to installation taprinse; action erinse; DI	Decon proced	and ultrapure DI Wa
Scissor-jack hand of all st WPCL prior to installation	Decon proced writer rinse; a be wrapped in a	and ultraphire DI wa aluminum foil for
Scissor-jack hand of all st WPCL prior to installation toprinse; actione rinse; DI rinse. Band & components her	Decon proced writer rinse; a be wrapped in a	and ultraphire DI wa aluminum foil for
Scissor-jack hand of all st WPCL prior to installation tap rinse; actione rinse; DI Minse. Band of components has transport into field. Took	Decon proced water rinseja ne wrapped in a photos of ine	ure included: scapy and ultraphre DI wa aluminum foil for stallation
Scissor-jack hand of all st WPCL prior to installation top rinse; actione rinse; DI rinse. Band & components nor transport into field. Took Filter sock prototype installed	Decon proced water rinse; a ne wrapped in a photos of ins in 12" diameter	une included: scapy and ultrapure DI wa aluminum foil for stallation or pipe using 12" diame
Scissor-jack hand of all st WPCL prior to installation top rinse; actione rinse; DI pinse. Band of components her transport into field. Took Filter sock prototype installed scissor-jeck hand. US face of fi	Decon proced water rinse; a photos of ins in 12" diameter itersock (weir)	une included: scapy and ultrapure DI wa aluminum foil for stallation er pipe using 12" diame langled upinavds off of
Scissor-jack hand of all st WPCL prior to installation top rinse; actione rinse; DI rinse. Band & components nor transport into field. Took Filter sock prototype installed	Decon proced water ninser of wrapped in a photos of ine in 12" diamete iterseck (weir) es Height of fro	une included: scapy and ultraphre DI wa aluminum foil for stallation or pipe using 12" diame langled upmards off of m pipe invert to top of
Scissor-jack hand of all st WPCL prior to installation top rinse; actione rinse; DI rinse. Band & components her transport into field. Took Filter sock prototype installed scissor-ject hand. US face of fi the hand & pipe invert ~ 15 degree	Decon proced water rinser of wrapped in a photos of ine lin 12" diamete itersock (weir) es Height of fro Angle (pitch)	une included: scapy and ultrapure DI wa aluminum foil for stallation er pipe using 12" diame langled upinavds off of
Scissor-jack hand of all st WPCL prior to installation tap rinse; actione rinse; DI rinse. Band & components her transport into field. Took Filter sock prototype installed scissor-jack hand. US face of fi the hand & pipe invert ~ 15 degree	Decon proced water rithseja photos of ine in 12" diamete iterseck (weir) es. Height of fro Angle (pitch) ID of sock	une included: scapy and ultraphire n_ wa aluminum foil for stallation er pipe using 12" diame langled upmards off of mpipe invert to top of of filtersect after install

.

DAILY FIELD REPORT



Page of
Project Povtland Havber Stovmwater Project No. 1070.005 Location NW 35th + Veele Date 2/18/09 Subject Fivest Check By ECH
1424 Arrive et 18-5TI. Set vp coveage.
1434 Entrant enters node Notes organies avound the band, Trap was interest.
1442 With plan eloves outrant passes - front ene and back end up for
pietures V
1445 Front rud appears to collect organic Debris and popple. Back and seems to collect very formation fine sediment
The weiv on the front end seems to impact back and callection but it's
tochearly to speculate how it is exactly hupparting (see photes to
on back end Some collection of Erding
on the woll of the back end.
end to have confirme angle of
Bankonound
fartup weeks There has been a duy
Attachmenter or were the fact notable but/simal
그는 그는 것 같은 것 같





	Page <u>1</u> of <u>1</u>
Project Portland Harbor Stormwaler Samp	Project No. <u>1020-005</u>
「たちに、ここで「「」と言いていていている。 ひょうしょうかい 人ががく うえながった はせん 表示される うし	
Location Basins 18 # 43	Date <u>2/20/09</u>
Subject Basin 18 R&D Inline Sed Trap Checks	By JXBIMITS
* Alltimes in PST	
0938- Arrived in Basin 18 to conduct se	cond inspection of
inline sedment traps for Basin 18 R	
For inspected the following sites:	
18-ST2	
18 - 573	
18-573 18-574 18-575	
18-575	
1145 - Left Basin 18 For 43_571	
1200 - Annved on site @ 43-571. Heighter	ned ESCSO construction
activities @ Albina River ST Shaft are Stiv	Locuming Unable to
access site 43 st1	$\mathcal{G}$
LEFT 43-STI For WPCL.	
사람이는 것은	
Attachments	

## DAILY FIELD REPORT



\_\_\_\_ of \_\_\_\_ Page \_\_\_\_\_ Project Portland Harbar Stormwater Samp. Project No. 1020, 005 Location Basin 18 RED - 18\_STI Filter Sock Date 3/18/09 subject Filter Scork Prototype Check BY JXB/MAJS BACKGROUND: Intense, yet sporadic showers of rain events have occurred during the last week and a half through out the region \* ALL times in PST. 0830 - Annive on site@ 18-STI[NW35th & Year" (AATSKS)] to inspect the filter sock prototype, following several spring like showerst rain events. Mus prepares to enter Mith. This is the second check of the filter sock prototype since it's installation on 2/4/09. Leavest organic debris adhered to the front of the trap the face of the weir. However, the trap opening is not obstructed. Took photo of debnise of trap insitu. Entrant removed filter sock for visual inspection Enstchamber: The first chamber (chamber w/ weirst stamped stainless plate) had large particles, & organics & leaves adhered along the front edges of the trap, as well as inside mechamber Small filamentous, organic particles, along with some smaller stormwater solids were retained on the stamped stainless plate on the back of the chamber as well as being deposited in the lower third (invert) of the chamber. Took a photo of the captured solids "(supernaliant in the chamber Carefully scrapped & remared solids from first chamber using a decon

taminated stainless spatula. Large organic particles were remared From subsample (<30% of built material). Captured solids (subsample) were placed in a 402 sample jar of will be archited back@the WPCL Second Chamber:

The second chamber (chamber "/stamped stainless backplate & fine gauge screen) had approx. O. 5 mm in average thickness of fines deposited Attechments in the lawer third of the chamber's invert "/an additional

## DAILY FIELD REPORT



of \_\_\_\_

Page 2

Project Dorthand Harles - Sternweiter Some	Project No. 1070.005
Project Portland Harbor Stormwater Samp	Project No. <u>1020,005</u>
Location Basin 13 R&D - 18-STI Filter Sock	Date 3/18)89
subject Filter Sack Prototype Check	By JXB/MITS
Second Chamber (cont.):	
1-2 mm in total thickness of fines of supernal	cunt retained on the
face of the fine gauge screen. Took photos o	F captured fines
Sincipped & removed deposited Fines from the a	hamberts invert usine a
deconed stainless spatula, and the fines retain	ed on the surface of
the five gauge screen. Subsample material from	
was placed in a 4-07 sample jar & will be are	
Notes A small volume of supernaliant passed	
Chamber's Fine gauge screen when the Fine	es were beraboed a randwed
from the surface of the screen the lost su	pernatant fic not have
a large proportion of suspended particles (su	pernalant was faitly clair.
0924-	
Subsample material from the first of second	chambers was placed
in a coller Wchilled blue ice for subsequen	
WPCL. Subsample jars to be archived in Field	
until the completion of the Basin 18 RED dep	
Field Observations ?	
	is adequately segregating
It appears that the filter sock prototype different stormwater particle ranges (i.e., fin	e particles are allowed
to passively flow through the first chamber	and then be deposited
A for retained within the second chamber; w	
ranges (organics & stormweter solids >67 um)	
depended for retained in the first chambe	
of the transforment to be a line of a	1.5.43

Γ ist chamber's the

JXB

18\_STI-Chamber 1 Wet weight = 3.59

Attachments

18-52-18-579 18-571-Chamber 2 wet weight = 12.52

## DAILY FIELD REPORT



	Page of
Project Daily Field notes	TXB Project No. <u>2020,005</u> 3/30
Location BASTN 18 RED	Date 3/3/09
subject <u>Set trap</u> checks	By AJA /JXB
Time PST	
OPID Leme WPCL for Basin 18	STS
0940 Arrive on site for normal	bottle inspection
1115 On site at 15_5744 a	<u>ST3</u>
1115 On site at 18_ 5147 a	Her having to
return to wpch to pick a	p a caméra
12/10 1210 Onsite at 15-572	$\mathbf{C}$ = 01 - 1
$\frac{1}{1}$	
1305 Onsite at 18 5T	1 For a check
에 가장 같은 것은	
사실 수 있는 것은 것은 가지 가지 않는 것은	
Attachments	

DAILY FIELD REPORT



Page of Stormwater Śe JES Project No. 1020.005 Project <u>VD</u> Harbor SeciAtent Times in DST Date 5/18/09 Location OF 18, NW 35th EON-18-571 VO Check 188 By Subject trap protol cherk Se Ma WOUNC he 100 1:105 Ċ  $\partial cS$ ast n en 2 014 s im 10:0 [n 60 to กั 6 QN 10 15a 55em removed からい WILL Seloni asphal in Ð. GUSSE γö tho rove 0 seconds number er à pront and gone Sample jod Strang of "/new material (captured solids was el Gedimen (emora Simple trap Ô redeployed weighed Composite in WPCI 5 16 Sconda weigh 9.7 0 ation since icci mil h+ = 34 3 419 we. econder Č¢ Minder. Driw the

Attachments

DAILY FIELD REPORT



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

Project Portland Harbor Stormwater Samp. Project No. 1020,005 Location Basin 18/18-STI) NW 35th Year Date 5/20/09 subject Filter sock Prototype Check BY JXBIMJS \* All times in PST Background: Distinct storm event occurred on 5/18/09@ 1900 5/19/09@ 1200. Total measurable precipitation registered by reor Raingage was ~ 0.36". Filter sock prototype was checked prorto storm event on 5/18/09@ 1018 RST. All solids were removed at that

time from trap prior to forecasted storm event.

0904 - Arrive on site @ 18-STI [ NW35th & Yean Ave (AATS65)] Filter sack prototype was intacked. Mypercorganic debrist plastics on trap housing. Pipe was wetted but no flow. Removed trap for inspection. Took photos of traps & solids.

Trace amounts of stormwater sourds captured in primary & secondary cylinders "some solids adhered to" back plates & filter screen. • Primary cylinder had trace amounts of sediment; mainly large organic particles "Captured solids following stormevent = "i.ag • Secondary cylinder had trace amounts of sediment, primarily Consisting of fine silt & clay sized particles. "Captured solids following storm event = "0, 3g

"Total wet weight of solids captured during storm event= 713g Total weight of solids captured between initial installment on 2/4/09 through 5/20/09: Powany cylinder="23.4g; secondary (ylinder = ~19.5g [ 42.9g to date ]

0938 - Tock photos of solder trap Re-installed Filter Sock prototype Attachments & left Basin 18

# DAILY FIELD REPORT



of

Page \_ Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020 005 LOCATION BASINIS RED PILOT STUDY Date 614109 Subject FINAL TRAP REMOVALS - 18-STI BY JXB/PTB 0313 PST-Amveonsite @ 18-STI-AATSES (NW 35th & Yeon Ave) to remove inline sediment sieve prototype @ and of deployment period Inline sediment sleave formerly known the inline "Filter sock", was in tached upon arrival. PTB prepared to enter AATSES. Pipe is dry, no base Pions. Minimal build up of erganic debris on prototype housing friends prototype housing friends band. Removed Lebris Took a photo of prototype prior to Final removal Removed assembly from pipe Dismantled primary & secondary sediment sleeve cha Trace solids captured in cylinders and adhered Filter screens Took a photo of cylinders. Attempted to remove trace solids from each cylinder & filter screen. Scrapped primary cylinder W decomed spatiala. Captured minor amount of very dry Fine silts & clay particles from primary cylinder (~ 40g 17 added archited sample jar. Scrapped secondary cylluder. Trace solids captured (~< 89). captured calids were primarily Fine silts of Lapelay particles. Added solids to archived sample jar

0840-Sotup for a freld docon blank

Attachments





of

Page

Project PORTLAND HARRON STORMWATER SAMP Project No. <u>1020 005</u> LOCATION BASEN 18 PED PILOT STUDY SITES Date 614109 FINAL TRAP REMOVALS BY JXB/PTB Subject 12 0955 - On site @ 18\_STY (AAT466) to remove pilot study sed traps @ end of 08/09 deployment propaned to Onter AAT466 For last inspection & new for dept standard sed, trap\$ prototype traps. Minor amounts of organics on trap housings. Bottle openings on all of the traps, except for 18-5TY\_BY\_NM (Narrow-month Standard trap) are free of obstructions. Leaf partially obstructive 18-514-BY-NM opening Entrant carefully removed leaf after securing bottle caps on traps upstream from 18-STY-BY-NM. Entrant then capped last sed trap bottle. Took a photo of debris/obstructions of traps in situ prior to securing buttle caps & subsequent trap removals

Base Flow was minimal ~ 0.1-0.2". Removed trapsed trap housing All Four sed trap bottles were full of Stormwater minimal solids captured in 18-STY\_BZ\_wm (wide-month pontotype) & 18-STY\_B3 SQ (square prototype). Bottles were double - bagged and placed in cooler up bagged chilled blue ice for transport back to WPCL to be archived. program 1045 - On site @ 18-ST3 (AND 535) For Final removal @ end of 08/09 Pilot study. Base Flow was "0.5" @ of Flow of ~ 1.0 fps. Minor buildup of Organics on trap honsings. Bottle openings on all four traps Standard namow-marth of prototype traps) were free of Obstructions All four sed trap bottles were full of stormwater w/ trace achesions inside bottle walls. Took a photo of trops in situ prior Capped sed trap bottles & removed. For subsequent processing removal Archived trap bottles Removed trap housings, Note: due to Preg-Spining anchor boilt a base plak was left installed @ This site (maintenance 120- Offsite Attachments

With by double bagging the trap bottles and placing them in cooler w/ bagged chilled blue ice

# DAILY FIELD REPORT



<u> of</u>

Page <u>a</u>

Project PORTLAND HAPPOR STORMINISTER STMP. Project No. 1020.005 LOCATION BASEN 18 RED PILOT STUDY STTES Date 6/4/09 BY JKB/PTS Subject FINAL TRAP REMOVALS 1206 - Arrive on site @ 18 ST2 - AATSS7 (350 NW YEON AVE) to archive & remove standard & alternate design sed traps @ end of "8/09 Pilbt Study deployment. PTB entered APT557. Base 900 Was ~ 0,75" WI FIDNI @ ~1,5 fps. Entrant noted minor organics adhered to housing of standard trap 18-STZ-B2-NM w/ plastic trash & organics adhered to alternate design trap 18-ST-B1-WM. Took aphoto of debris & traps in situ prior to capping bottles & removing sed traps Alternate design trap 18-ST2-B4-RECT bottle opening us unas partially obstructed by plastic trash. Both alternate design traps SQ & 18-ST2 BY\_RECTI housing had trace organic 18-ST2-83. debrisw plastics. Entrant carefully removed plastic obstruction tating photo in situal removed for from By. Capped bottles after subsequent processing. Placed double bagged sed trap bottles in cooler w/ bagged chilled blue ice for archiving & transport to WPCL. Removed trap housing from line 255 Off site Return to WPCL

Attachments.



of Page \_\_\_\_( Project PDX Harbor Stormwater Project No. 1020 005 Location 3250 No St Helens Rd Date 6/4/07 BY AJA/ Subject Basin 18 ST5 sed trop removal Arrive onsite at willely Trucking 3250 NW 020 entry St. Henkens Rd. Set aginoment NO order to retrieve Tritial check of all 4 sed trap bottles complete. Begg 10.40 removal of sed trap bottles Descriptions of bottler 82@ 1045 7'Gp+ B1 @ 1048 removal Sed Trap Data B3@ 1052 sheet B4@ 1053 110 the Custody seals placed, bottles baged placed in coolers whice and Base plates are left in place removed sed trap retrieval End of Attachments

	2	Signal Many	Received By winigh Bandre	Printed Home:	Keinquished By: 1, Signature:				F0095697	FO095696	F0095695	F0095694	FO095693	F0095692	WPCL Sample I.D.	Sediment traps removed: 6/4/09 (All OF 18 sites)     Sediment traps removed: 6/4/09 (All OF 18 sites)     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	Basin 18 Sediment Trap Pilot Study Chain-of-custody Z/4/09 Sediment traps installed: 10/30/08 /18 ST2/ 12/4/08 /18 ST5/ 12/9/08 /18 ST3 18 ST4/ 27/4/09		File Number: 1020.005	Project Name: PORTI	(503) 823-5696	6543 N. Burlington Ave. Section Portland, Oregon 97203-4552	Water Pollution Control Laboratory
	SHEID/1000/1020.005/Pontland Harbor Shommuster SamolSamodochland Harbor Stommuster OE 18 Sout Trave Direct COC via	VJ TIME 1030	~ C/11/09	050					DUPLICATE	ST-18-AAX261-0609 3250 NW ST HELENS RD	ST-18-AAT466-0609 4033 NW YEON AVE	ST-18-AND535-0609 4033 NW YEON AVE	ST-18-AAT557-0609 3950 NW YEON AVE	ST-18-AAT565-0609 NW 35th & YEON	Location	Sediment traps removed: 6/4/09 (All OF 18 sites) PCL, care should be taken to use the smallest all volume for additional follow-up analyses	Basin 18 Sediment Trap Pilot Study Chain-of-custody			PORTLAND HARBOR STORMWATER SAMP		·····	aboratory
odistroctoria	rniked Name: Samin/Samind	Signature:	rinuo vame:		Relinquished By: Signature:				DUP	18_ST5	18_ST4	18_ST3	18_ST2	18_ST1	Point Code	09 (All OF 18 s use the smaller	tudy Chain-		S	ORMWAT			
	n Dortland Ha	,			<u>3v:</u> 2.				60/9/09	6/10/09	6/10/09	6/9/09	6/9/09	6/11/09	Sample 4 Date	st aliquot poss	of-custody		Matrix: S	ER SAMP			
	that Charmingto						· · ·			1555	1315	1500	1359	805	Sample Sa Time T	sible to retain s	811 0011/2		SEDIMENT			Bur	
	Date:	Time:	Date:		Timet				° ≯	c X	c X	o X	° X			oclors (Low	ievel)					Bureau of Environmental Servi	
	Print	Signature	Print	4	Re			 	×. ×	XX	×	×	×	×	SVOCs (	es (Low-lev low-level C. hthalates (L	AS)	Organics				vironme	City of Portland Chain-of-Custody
XIS	Printed Name:	ignature:	Printed Name:	c.Bueiri e.	Relinquished By:				XX		××	X			Herbicid Grain Si	es (TA)						ntal Ser	stod)
-		្ម្			¥ 3.			-	X	• ×	× •	× •	× •	×.	TOC TS*			General				vices	okitinga
•	, D	, TI	D	· .	1	2			×	×	X	×.,	×		1	utals (As, Co <u>vin,</u> Ni, Ag, Z		Metals	Reques				
	Date:	Time:	Date:						Z.	S	6	5	4	. ~	Tota	123	*To		Requested Analyses		<b>.</b>	L	
	Printed Name;	<u>Received By:</u> Signaturo:	Printed Name:	olgnature;	Relinguished By:			•	56.5%	59.7%	9659	56.5%	45.9%	39.2%	Total Slids	reguested	Ctober		lyses				•
		4			4.					163.4 g T	492.2 g T	3903-8-g T 3 \$60.0e	223.3 g T		V <sup>4</sup>	Tests requested per ros hower who have	* TOC to be done at CAS	Comments			JJM/LAP	Collected Rv:	Date: <u>6/11/09</u> Page: 1 of
	Date:	Time:	Date:	Time:						163,4 g Total Wet Weight	492.2 g Total Wet Weight	3903-8-g Total Wet Weight 3 \$60.0e -{Phil	223.3 g Totai Wet Weight	41.5 g Total Wet Weight		یہ (ماری در م	( 5692 only)				JJM/LAP	1 10-01ATA	of (
								 		ight	ight	ight	ight	ight		<	<u>¥€</u>	<u> </u>		••		TA .	

----

.....

	: - ()	· · ·	R.	周而	Sect"   B_5	STI (
	ENV	RONMEN Water Pollution 6543 N. BI	PORTLAND TAL SER Control Laboratory Itlington Ave R 97203-5452	VICES		
INLINE SE	DIMENT	TRAP SAMP	LE PROCE	SSING D	ATA SHEET	
Project Name: PORTLAND H,	ARBOR STO	RMWATER SAMP	•	Project Nun	nber: 1020.005	
Sample Processing Conducte	d By: Sa	mple Pt. Code:	Removal Dat	te:	Processing Date:	
JXB/PTB/LAP		18-STI	6/4/09		611109	
Basin: 18 R&D Winter 2009 P	liot Study Ha	ansen ID: AAT 56	,5	Subbasin: N		719
Sediment Trap Location Desc of the end of pipe (E Was installed via sc was installed via :	ription/Addres 2193 : 'n th issorjac is from	ss: "Filter Sach e circular, co L band. Azto CB mlets	e" prototype oncrete 1211 type was se	us inst diameter	alled $\sim 6, 0^{11} \text{ ap}$ $\gamma$ main inlet: angle of $\sim 15^{\circ}$	Filter S , Trap
	SEDIMEN	T TRAP PROCI			A Geon Ane	
Filter Equipment/Method:	Portland Ha	rbor, 90-millimeter (m	nm) stainless steel t Operating Procedu	filter support wa	conical glass microfiltra	tion system
ilter brand, grade, porosity in Fisher Scientific, 9	micrometers	(µm) and material	(e.g., Fisher Scien	tific, qualitative	P2, 1-5 µm cellulose fil	ter paper):
Sediment Trap Bottle ID: Pr	mary Filler	Societyinder	Sediment Trap	Bottle ID: <sup>50</sup>	condarry Fillersc	ercylinde
Total Est. Depth of Accumulate	ed Sed in Bot	tle (inches):,⊮}A	Total Est. Depth	of Accumula	ated Sed in Bottle (inc	hes): μjA
Sample Processing Start Time: 0745 PST	Sample Pro <sup>Time:</sup> の구	cessing End	Sample Process <sup>Time:</sup> <i>0구4</i> 劣	sing Start	Sample Processin Time: 0アらぞ	g End
· · · · · · · · · · · · · · · · · · ·	× P5,5-		Number of Filter	rs Used: Use	d The same filter	
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in nilliliters (mL): Fare Weight [empty jar in grams (o	~40 n	n	DI used to remobi stormwater solids	ilize adhered within bottle ir		
		J				g)]: 130, 6g
Dewatered/Filtered Sed. Weight ( Sample Processing Notes/Com run the Filter Sock fin placed into an 802 supple placed into an 802 supple smogenizing. Rinsed total smogenizing. Rinsed total supple for the scoop all	ments: Arcl Nary Cylim ar. Solids Big Euro Ao Big Euro Ao Big Hillered Nere adde	nived solids der were were remored r subsequent dual solids residual solids d to soc sample	solids from	sing Notes/Co secondar	(9): 19:49 pomments: Processe ry Filter socie c Ninder process scondary cylinde int than priman	ylinder
Sual Description of Final Con	<u>_/3i,3g~/3</u> iposite Samp	0.5 <u>5 = 0.8</u> 5  6. Final com Color, consistin	<u>Net loss of</u> posite sample sof fine sill	<u>solids=</u> ewas pri) stday pav	131,3g -130,6 maniy blackisht fictst fine to mediv	g = 0, 7g nonin in in sind pr
OC Time (time composite jar <sup>apped):</sup> <i>の</i> らのち わて らいい		watered/Filtered Si <sup>):</sup> 41. ち <sub>ら</sub>	ed. Weight in	A CONTRACTOR OF	s Collected (number, parnal 80z 5	
ample ID: FO095692 fix F0 pumb	2	Figure and and the state of the	ample collected?		PLICATE ID	
uplicate Sample ID on COC: fix FO number stoker		Any deviation	ons from standard	l operating pr	ocedures? YA	

S:VFIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc

k

+√

-----

#### DAILY FIELD REPORT



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

Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020,005 Date 0/11/09 LOCATION WPCL FIELD OPERATIONS FIELD LAB SUBJECTBASTAL 18 SEDIMENT TRAP PROCESSING-18-STBY JXB 0710 PST - All times in PST Set-up deconed microfiltration system in order to process suspended residual solids for 18-STI Filter Sork prototype composite. Archived solids were contained in two 407 sample jars ( 1x402 jar contained captured solids from the primary cylinder of the Filter Sack of the other 402 jar contained solids from the secondary cylinder. Archived Solids were combined into a new 807 sample jar using a decomed stainless scapula after taring the jar. #1) Primany Cylinder Weight of solids in jar w/ lid Fran cylinder#1= 154. 2 g Take weight of sample jar Wild 130,54 12) Secondary Cylinder "Total weight of cap saids = 23.7. Fre 718109 Weight of solids in jar Mild from a linder# 2= 150.0g Tare weight of sample jar W/ 112 = - 130.60 Total weight of capsolids = 19.4

Tare weight of 807 jar 1112 = 212.6g Net 1055 of solids => Cylinder#1 =0.8g Cylinder#2=0.7g 0745- Equipped filtration system 1/2 PS, 5-10 mm Filter. Used 408 60mL of UPDI to suspend residual solids adhered to inner surfaces of the two 402 archived sample jars & stampess scoopula. Filtered residual solids

075800759 - Residual solids filtered. Scrapped-solids from filter of added to 802 jar. Homogenized solids from 18-STI Filter Sack Prototype. Took photos of final composite (03411.3PG 6/11/09 0808) Total weight befor processed solids = 212.6g - 254.1g (Processed solids in Bozjar Mid) Attachments = 412.5 g

0805 - capped compositio jar

Chron Port LABU         ENVIRONMENTAL SERVICES         Water Policin Cabinator, Portand, 9780723440         NUMER POLICIES         Water Policin Cabinator, Portand, 9780723440         INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET         Project Name, PORTLAND HARBOR STORMWATER SAMP.       Project Number 1020,005         Sample Processing Conducted By.       Sample PL Code:       Removal Date:       Or 8 - 8 - 9 - 9 - 6 - 9 - 9 - 6 - 9 - 9 - 6 - 9 - 9				ALESA ALESA SALANDI LANDI	ana	
INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET         Project Name: PORTLAND HARBOR STORMWATER SAMP       Project Number: 1020.005         Sample Processing Conducted By:       Sample PL Code:       Removal Date:       Processing Date         LAP       IB_ST2       6-4-09       6-8-09       6-9-05         Basin: 18 R&D Winter 2009 Pilot Study       Hansen ID       A A T 5.5.7       Subbasin: NIA         Sediment Trap Location Description/Add6555 Forget filteroats and income the instant of provide of the instant of pr		ENVIRONME Water Pollutio 6543 N	NTAL SER n Control Laboratory Burlington Ave	VICES		
Project Name: PORTLAND HARBOR STORMWATER SAMP.       Project Number: 1020.005         Sample Processing Conducted By:       Sample Pt. Code:       Removal Date: $6 - 6 - 0.9$ Processing Date:         LAP       18 & ST 2       Bubbasin: NA $6 - 6 - 0.9$ Processing Date: $6 - 8 - 0.9$ $8 - 0 - 0.9$ $8 - 0$						
Sample Processing Conducted By:       Sample Pt. Code:       Removal Date:       Processing Date:         LAP       IB_ST2       6-4-09       Processing Date:         Basin: 18 RAD Winter 2000 Pilot Study       Hansen ID:       A T 5 5 7       Subbasin: NA         Sediment Trap Location Description/Addresser       For off the cost sediment, the plastice with a post which off the cost sediment, the plastice with a post which off the cost sediment of the plastice with a post which off the cost sediment of the cost sedim						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	·····	· · · · · · · · · · · · · · · · · · ·	·			
Basin: 18 R&D Winter 2009 Pilot Study       Hansen ID: A T 557       Subbasin: N/A         Sediment Trap Location Description/Add(85% of monochements)       Sediment Trap of description/Add(85% of monochements)       Sediment Trap of description/Add(85% of monochements)         3950       NW Yeon Ave first visit and provide the set of monochements of the set of monochements)       Sed trap of set of monochements of the set of monochements)         Sediment Trap Location Description/Add(85% of monochements)       Potal Add(85% of monochements)       Sed trap of set of monochements)         Sediment Trap Set Difference       Sed trap of set of monochements)       Sed trap of set of set of monochements)       Set of monochements)         Sediment Trap Educed to provide the set of monochements       Portand Handers (000 certains)       Set of	· · ·		·		. =	
Sediment Trap Location Description/Addiesses for a fifter of set in set in the first part of the set of the set in the first part of the set of the	Bacin: 18 P&D Winter 2000 Dilet	t Chudu Hansan ID:				
SEDIMENT TRAP PROCESSING/FILTRATION NOTES         "Ilter Equipment/Method:       Portland Harbor, 90-millimeter (nm) stainless steel filter support wiconical glass microfiltration system [Field Operations (FO) Standard Operating Proceeding Proceeding Proceeding Proc 2007.         "Ilter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, Qualitative P2, 1-5 µm cellulose filter paper):         Fisher Scientific, Qualitative P2, 1-5 µm cellulose filter paper):         Fisher Scientific, Qualitative P2, 1-5 µm cellulose filter paper):         Footal Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Time:       10.59         P3 22.6       P5         Number of Filters Used:       (12)         P5       P5 </td <td>Sediment Trap Location Descrip</td> <td>tion/Address. Four diffe</td> <td>rent sediment tr</td> <td>up designs we</td> <td>we installed up</td> <td>stream JXB</td>	Sediment Trap Location Descrip	tion/Address. Four diffe	rent sediment tr	up designs we	we installed up	stream JXB
SEDIMENT TRAP PROCESSING/FILTRATION NOTES         Filter Equipment/Method:       Portland Harbor, 90-millimeter (nm) stainless steel filter upport wiconical glass microfiltration system [Field Operations (FO) Standar Operating Proceeding Forced (SOP) 5.010 & Evaluation of Microfiltration Equipment for Phthalatest Technical Memorandum – Septembor 18, 2007.         Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper).         Filter Scientific, Qualitative P2, 1-5 µm cellulose filter paper).         Filter State Scientific, Qualitative P2, 1-5 µm cellulose filter paper).         Fordal Est. Depth of Accumulated Sed in Bottle (inches): *0,4"       Total Est. Depth of Accumulated Sed in Bottle (inches): *0,4"         Sample Processing Start       Sample Processing Start       Sample Processing Start       Sample Processing Start         Time:       0.9 2.6 psr       V       Number of Filters Used: (L) P5 filters V       Number of Filters Used: (L) P5 filters V         St. total volume of Ultra Pure       Di used to remobilize adhered stathered filtered Sed. Weight (g): 12.2 4 g         Sample Processing Notes/Comments:       South Processing Notes/Comments:       South Processing Notes/Comments:         South material is primarily filtered Sed. Weight (g): 12.2 4 g       Sample Processing Notes/Comments:       South waterial is admonst filtered sed. Sed weight (g): 12.2 4 g         Sample Processing Notes/Comments:       South wateriad; darke brown in colors junjdarcaveban color	3950 NW Yeo	n Ave unchor point excorpine (1 excorpine (1 bottle: A to	Stundard Sed tra Stundard Sed tra locations approx EOPJI. Stundard p	ameter main pair install 5.0'is of n air housed	ed using@origing.hohe chambe	106/07 7/1 r E-3.0' 45 fra 1 Marrow-126
Filter Equipment/Method:Portand Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration Equipment for Phihalates Technical Memorandum - September 18, 2007.Filter brand, grade, porosity in micrometers (um) and material (e.g., Fisher Scientific, qualitative F2, 1-5 µm cellulose filter pape Sediment Trap Bottle ID: 18 – ST2 – B1 – WM / Sediment Trap Bottle ID: 18 – ST2 – B1 – WM /Sediment Trap Bottle ID: 18 – ST2 – B2 – NM / Sediment Trap Bottle ID: 19 – ST2 – B1 – WM /Statistic Contract Sediment Trap Bottle ID: 19 – ST2 – B1 – WM /Sediment Trap Bottle ID: 19 – ST2 – B2 – NM / Sediment Trap Bottle ID: 19 – ST2 – B2 – NM /Sediment Trap Bottle ID: 19 – ST2 – B2 – NM / Sediment Trap Bottle ID: 19 – ST2 – B2 – NM / Sediment Trap Bottle ID: 19 – ST2 – B2 – NM /Statistic Contract Statistic Contract Sample Processing Statt Time: 10 – S2 – S7 – Number of Filters Used: 10 – S2 – S7 – Number of Filters Used: 10 – S – S – S – Number of Filters Used: 12 – PS – A (14 – S – 10 – S – A (14 – S – 10 – S – A (14 – S – 10 – S – A (14 – S – S – S – Number of Filters Used: 12 – PS – A (14 – S – 10 – S – A (14 – S – S – Number of Filters Used: 12 – PS – A (14 – S – S – Number of Filters Used: 12 – PS – A (14 – S – S – Number of Filters Used: 12 – PS – A (14 – S – S – Number of Ultra Pure 10 – S – A (14 – S – S – Number of Filters Used: 12 – PS – A (14 – S – S – S – Number of Ultra Pure 10 – S – A (14 – S – S – Number of Ultra Pure 10 – S – A (14 – S – S – A – Number of Ultra Pure 10 – S – A – Number of Ultra Pure 10 – S – A – Number of Ultra Pure 10 – S – A – Number of Ultra Pure 10 – A – A – K – Koronn un – C (20 – M – A – K – Koronn un – C (20 – M – A – K – Koronn un – C (20 – M – A – K – Koronn un – C (20 – M – A – K – Koronn un – C			and the second	And the second sec		O'US STANCE
Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fister Scientific, qualitative P2, 1-5 µm cellulose filter paper):Filsher Scientific, gradient Trap Bottle ID: 18 - ST2 - B1 - WM ×Sediment Trap Bottle ID: 18 - ST2 - B1 - WM ×Sediment Trap Bottle ID: 18 - ST2 - B1 - WM ×Sediment Trap Bottle ID: 18 - ST2 - B1 - WM ×Sediment Trap Bottle ID: 18 - ST2 - B2 - N/M ×Total Est. Depth of Accumulated Sed in Bottle (inches): *0.9Sample Processing StartSample Sitters VDevatered/Filtered Sed. Weight (g): 20.9Sample Processing Notes/Comments:Solid I rate of the sed. (G): 20.9Sample Pr	Filter Equipment/Method:	Portland Harbor, 90-millimeter [Field Operations (FO) Standa Equipment for Phthalates Tech	(mm) stainless steel rd Operating Procedunical Memorandum	filter support w/ ure (SOP) 5.01t – September 18	сопісаl glass micro & Evaluation of M 20071	icrofiltration
Sediment Trap Bottle ID: $10 + ST2 - B1 - WM \times$ Sediment Trap Bottle ID: $10 + ST2 - B2 - NM \times$ Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\circ}0.4^{\circ}$ Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\circ}0.4^{\circ}$ Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\circ}0.4^{\circ}$ Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\circ}0.4^{\circ}$ Sample Processing StartSample Processing EndTime: $1059 + gst + V$ Number of Filters Used: (12) PS AtlensSample Processing Colspan="2">Sample Processing EndTime: $1059 + gst + V$ Number of Filters Used: (12) PS AtlensSt. total volume of Ultra PureDi used to remobilize adheredSample Processing Notes/Comments:Solid wraterial is primarily filtered Sed. Weight (g): $9.0 - grams$ VDewatered/Filtered Sed. Weight (g): $122.4g$ Sample Processing Notes/Comments:Solid wraterial is primarily filters of a petroleum my drocarbonStit/ clarge colspan="2">Sample Processing Notes/Comments:Solid material is a line of Filters of the set is is total wraterial is a petroleum my drocarbonSample Processing Notes/Comments:Solid material is a petroleum my drocarbonSample Processing Notes/Comments:Solid material is a petroleum my drocarbonSolid material is a colspan="2">Sample J	Filter brand, grade, porosity in m	icrometers (um) and materia	al (e.g., Fisher Scier	ttific, qualitative	P2, 1-5 un celluic	se filter paper):
Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\infty}0.4^{\circ\prime}$ Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\infty}0.5^{\circ\prime}$ Sample Processing StartSample Processing End Time: $10.59_{PST}$ Sample Processing StartSample Processing End Time: $12.11_{PST}$ Sample Processing End Time: $12.2_{PST}$ Number of Filters Used: (b)P5 filters VNumber of Filters Used: (c)P5 filters VNumber of Filters Used: (c)P5 filtersSt. total volume of Ultra Pure D) used to remobilize adhered. tormwater solids within bottle in millifters (mL): are Weight (empty jar in grams (g)): 201.8 g (m 1id) Dewatered/Filtered Sed. Weight (g): 9.0 grams filter site & clary; darke brown in color m/ a petroleum mydrocarbonSample Processing Notes/Comments: Solid material is primarily filter site & clary; darke brown in 	<u>1151161 Scientitic,</u>	grate qualit	ative Mo, 5	-10 pin c	ellulose fi	Her pape
Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\infty}0.4^{\circ\prime}$ Total Est. Depth of Accumulated Sed in Bottle (inches): $^{\infty}0.5^{\circ\prime}$ Sample Processing StartSample Processing End Time: $10.59_{PST}$ Sample Processing StartSample Processing End Time: $12.11_{PST}$ Sample Processing End Time: $12.2_{PST}$ Number of Filters Used: (b)P5 filters VNumber of Filters Used: (c)P5 filters VNumber of Filters Used: (c)P5 filtersSt. total volume of Ultra Pure D) used to remobilize adhered. tormwater solids within bottle in millifters (mL): are Weight (empty jar in grams (g)): 201.8 g (m 1id) Dewatered/Filtered Sed. Weight (g): 9.0 grams filter site & clary; darke brown in color m/ a petroleum mydrocarbonSample Processing Notes/Comments: Solid material is primarily filter site & clary; darke brown in color.Sample Sample Site / clary; darke brown in color.Sample Processing Notes/Comments: Solid material is primarily filtered Sed. Weight (g): 2.2.4 gSumple Processing Notes/Comments: Solid material is primarily dark brown in color.Sample Processing Notes/Comments: Solid material is almost brown in color.Sample Processing Notes/Comments: Solid material is almost brown in color.Sourd Description of Finel Composite Sample: Sitt/clary maped): 1359_pst. 1999 weight ID is PonumaTotal Dewatered/Filtered Sed. Weight in part almost part almost is primarily primarilySample Processing Notes/Comments: Solid material is almost is primarily primarilyOC Time (time composite sample: Sitt/clary mapela): 1359_pst. 1999 weight ID is PonumaTotal Dewatered/Filtered Sed. Weight in partial) part almost is par	Sediment Trap Bottle ID:	-ST2-BI-WM/	Sediment Traj	Bottle ID:	8 ST2-B	2-NM (
Time: $0926$ $PST$ Time: $1059$ $PST$ Time: $1211$ $PST$ Time: $1523$ $PST$ Number of Filters Used:(b)P5filtersyNumber of Filters Used:(12)P5AltersSt. total volume of Ultra PureDi used to remobilize adhered.Number of Filters Used:(12)P5AltersDi used to remobilize adhered. $\approx$ 80 ml vNumber of Filters Used:(12)P5AltersDi used to remobilize adhered. $\approx$ 80 ml vImiliation of Ultra PureDi used to remobilize adhered. $\approx$ 130 ml vIniliations (mL): $\approx$ 80 ml vImiliates (mL):Tare Weight [arran of filtered sed. from Bottle1 in grams (g)]: 2 to 2Dewatered/Filtered Sed. Weight (g):9.0 masDewatered/Filtered Sed. Weight (g):12 2.4 gSample Processing Notes/Comments:Solid waterial is primarily filters waterial is almostSample Processing Notes/Comments: Solid waterial is almost waterial is almost waterial is almostSolid Description of Final Composite Sample Siltt/clay apped)Totel Dewatered/Filtered Sed. Weight in grams (g))Sample Jars Collected (number, size full of partial)OC Time (time composite jar is apped)Totel Dewatered/Filtered Sed. Weight in grams (g))Sample Jars Collected (number, size full of partial)OC Time (time composite jar is apped)Totel Dewatered/Filtered Sed. Weight in grams (g))						
Number of Filters Used: (b) P5 filters vNumber of Filters Used: (12) PS filtersSat total volume of Ultra PureStat total volume of Ultra PureDuesd to remobilize adhered. $\approx$ B0 ml vDillilliters (mL): $\approx$ B0 ml vare Weight [empty jar in grams (g)]: 201.8 g (M IId)Tare Weight [jar and filtered sed. from Bottle1 in grams (g)]: 2 to 8Dewatered/Filtered Sed. Weight (g): 9.0 gramsDewatered/Filtered Sed. Weight (g): 122.4 gSample Processing Notes/Comments:Solud material is primarily filter silt & clary; dark brown in color M a petroleum my dirocarbonStaul Descenption of Final Composite Sample Silt / clarySample Silt / clary material; dark brown in color:Solud Descenption of Final Composite Sample Silt / clarySample Jars Collected (number, size, full grams (g))2.2.3 gramsDeviatered/Filtered Sed. Weight in apped)Sample 4D: odor:Total Deviatered/Filtered Sed. Weight in grams (g))Sample 4D: outputFO095693Duplicate Sample 4D on COC:Any deviations from standard operating procedures? YN	Time: 0926 PST T	Sample Processing End	Time et	-	Sample Proce Time: 152	ssing End 3 PST
Di used to remobilize adhered.       Stormwater solids within bottle in SOM V         Di used to remobilize adhered.       Di used to remobilize adhered         stormwater solids within bottle in SOM V       Di used to remobilize adhered         Di used to remobilize adhered.       Di used to remobilize adhered         Sample Processing Notes/Comments:       Di used to remobilize adhered sed. from Bottle1 in grams (g)]: 2 to g         Sample Processing Notes/Comments:       Sample Processing Notes/Comments:         Solid waterial is primarily       Sample brocessing Notes/Comments:         Solid waterial is primarily       Sample Sibt/claw imaterial; darke brown in color Mydrocarbon         Isual Description of Final Composite Sample Sibt/claw imaterial; darke brown color Mydrocarbon color M	Number of Filters Used: (6)				2) PS -	Alters
rare Weight [empty jar in grams (g)]: 201.8 g ( 1 id)       Tare Weight [jar and filtered sed. from Bottle1 in grams (g)]: 210.8 g ( 1 id)         Dewatered/Filtered Sed. Weight (g): 9.0 grams       Dewatered/Filtered Sed. Weight (g): 122.4 g         Sample Processing Notes/Comments:       Sample Processing Notes/Comments:         Solid material is primarily filtered to clary; dark brown in color of a petroleum mydrocarbon odor.       Sample Processing Notes/Comments:         Solid material is primarily filtered to clary; dark brown in color of a petroleum mydrocarbon odor.       Sample Processing very fine gilts brown in color.         //sual Description of Final Composite Sample Silt/clary       Material; dawle brown in color in grams (g) Z Z Z grams       Sample Jars Collected (number, size, full of partial).         //sual Description of Final Composite Sample Silt/clary       Total Dewatered/Filtered Sed. Weight in grams (g) Z Z Z grams       Sample Jars Collected (number, size, full of partial).         //supped):       1359 pst <sup>49</sup> /by       Total Dewatered/Filtered Sed. Weight in grams (g) Z Z Z grams       Sample collected? V/()       DUPLICATE ID.         //supplicate sample ID on COC:       Any deviations from standard operating procedures? V(N)	DI used to remobilize adhered. stormwater solids within bottle in finitive fill fill fill fill fill fill fill fil	· · ·	DI used to remot stormwater solid	ilize adhered	≈130	mer
Sample Processing Notes/Comments: Solid material is primarily fine silf & clay; dark brown in color of a petroleum mydrocarbon odor. Isual Description of Final Composite Sample Silf/clay inaterial; dark brown in color. Isual Description of Final Composite Sample Silf/clay inaterial; dark brown in color. Isual Description of Final Composite Sample Silf/clay inaterial; dark brown color injudicearbon COC Time (time composite jar is apped) 13:59 pst <sup>519</sup> /pg grams (g) 2233 grams partial) 1 jar ( $\approx 3/4$ full) ample 1D: reconstruction from standard operating procedures? NN.			Tare Weight [jar	and filtered sed.	, from Bottle1 in gr	ams (g)]: 2 10 8
Solid material is primarily fine silt & clay; dark brown in color of a petroleum mydrocarbon odor. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color induced to color. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color induced to color. Isual Description of Final Composite Sample Silt/clay inaterial; dark brown color induced to color. Sample ID: FO095693 Isual Description COC: Any deviations from standard operating procedures? Y(1)	Dewatered/Fillered Sed. Weight (g):	9.0 grams V	Dewatered/Filter	ed Sed. Weight	(g): 122.4	9
Solid material is primarly fine silt & clay; dark brown in color of a petroleum mydrocarbon odor. Isual Description of Final Composite Sample Silt/clay Material; davie brown color Hydrocarbon (sual Description of Final Composite Sample Silt/clay Material; davie brown color Hydrocarbon color (sual Description of Final Composite Sample Silt/clay Material; davie brown color Hydrocarbon color; (sual Description of Final Composite Sample Silt/clay Material; davie brown color Hydrocarbon color; (sual Description of Final Composite Sample Silt/clay Material; davie brown color; Hydrocarbon color; (sual Description of Final Composite Sample Silt/clay Material; davie brown color; Hydrocarbon color; (sual Description of Final Composite Sample Silt) (sual Description of Final Composite Sample Silt; clay Material; davie brown color; Hydrocarbon color; (sual Description); (sual Description); (sual Description of Final Composite Sample Silt; clay Material; davie brown color; Hydrocarbon color; (sual Description); (sual Description); (sub class for standard operating procedures; Material; for color; for standard operating procedures; Material; for color; for standard operating procedures; for			Sample Proces	sing Notes/Co	mments:	•••
the silt & clay; dark brown in color M a petroleum mydrocarbonexclusively very fine silts & clay - dark brown in color.Isual Description of Final Composite Sample Silt/clay material; dark brown color inducearbonpetroleum color.Isual Description of Final Composite Sample Silt/clay material; dark brown color inducearbonpetroleum color.Isual Description of Final Composite Sample Silt/clay material; dark brown color inducearbonpetroleum color.Isual Description of Final Composite Sample Silt/clay material; dark brown color inducearbon grams (g): 2:23:3 gramsSample Jars Collected (number, size, full c partial).I 359 pst 19/09 grams (g): 2:23:3 gramsDuplicate sample collected? Y/NDUPLICATE ID DUPLICATE IDSample ID: tx FO numberFO095693Any deviations from standard operating procedures? YN	Solid material is	primarily	Solid	naterial	is alm	ost-
/isual Description of Final Composite Sample: Stilt/clarg Imaterial; day 1/2 brown: color Imparcartan e         COC: Time (time composite jar is apped): 1359 pst 30/05       Total Dewatered/Filtered Sed. Weight in grams (g): 2233 grams       Sample Jars Collected (number, size, full o partial): 1 jay ( $\approx 3/4$ fvil)         Sample-ID: fix FO number       FO095693       Duplicate sample collected? Y/O: DUPLICATE ID         Duplicate Sample ID on COC:       Any deviations from standard operating procedures? Y/O: DUPLICATE ID	the silt & chang;	dark brown in	2xclusiv	lely very	1 fine si	1+52
/isual Description of Final Composite Sample: Silt/clay material; davide brown color phydrocartan c         COC: Time (time composite jar is apped): 13 59 pst 3/9/09       Total Dewatered/Filtered Sed Weight in grams (g): 2.2.3.3 grams       Sample Jars Collected (number, size, full c         ample ID: for number       FO095693       Duplicate sample collected? Y/O       DUPLICATE ID         puplicate Sample ID on COC:       Any deviations from standard operating procedures? Y/O	color of a petroleu	m my drocarbon	clay - a	dark br	own in	color.
OC Time (time composite jar is apped):       1359 pst       Total Dewatered/Filtered Sed Weight in grams (g):       Sample Jars Collected (number, size, full of partial):         apped):       1359 pst       9/9/99       grams (g):       2233 grams:       partial):       1 jav       ( $\simeq 3/4$ fvll)         sample ID:       FO095693       Duplicate sample collected?       Y/N       DUPLICATE ID         publicate Sample ID on COC:       Any deviations from standard operating procedures? Y/N						
OC Time (time composite jar is apped)       Total Dewatered/Filtered Sed Weight in grams (g)       Sample Jars Collected (number, size, full of partial)         apped)       1359       PST       99/09       2233       partial)       1       jav       C 3/4       fvll of partial)         sample ID:       FO095693       Duplicate sample collected?       Y/N       DUPLICATE ID         Duplicate Sample ID on COC:       Any deviations from standard operating procedures?       Y/N	isual Description of Final Compo	osite Sample Silt/class	imaterial:	tarle brow	in color iP	troleum
apped):       1359       PST       \$19/09       grams (g):       2233       grams       partial):       1 jav       ( $\cong$ 3/4       fv11)         ample ID:       FO095693       Duplicate sample collected?       Y/N       DUPLICATE ID         tx F0 number       Any deviations from standard operating procedures?       Y/N	OC Time (time composite jar is	Total Dewatered/Filteren	Sed Weight in		CALL A PREADER FRANKLING	
FO095693     Duplicate sample collected? Y/O DUPLICATE ID       fix FO numed     Puplicate sample collected? Y/O DUPLICATE ID       Duplicate Sample ID on COC:     Any deviations from standard operating procedures? Y/O	apped): 1359 pst 49/0	9 grams (g) 2233	quance			
	FO095693			Y/O DUF	LICATE ID.	<u>a a 47</u>
<u>出现,在人们就是我们的生活性的,我们就</u> 有这些是我们就是我们的是我们就是我们把手提到我们的是我们的是我们就是我们的,我们还是我们的人们,我们就是我们的这些我们就是我们能能是我们能能	uplicate Sample ID on COC.		tions from standar	d operating pr	ocedures? YN	

.

 $\checkmark$ 

		·····		[6-	STX'
EN	CITY OF PC VIRONMENT Water Pollution Co 6543 N. Burli Portland, OR 9	AL SER ntrol Laboratory ngton Ave	VICES		
INLINE SEDIMEI	NT TRAP SAMPL	E PROCES	SSING DA	<b>NTA SHEET</b>	
Project Name: PORTLAND HARBOR S	TORMWATER SAMP.		Project Numl	ber: 1020.005	<u>n (en mant e per la part de man</u>
Sample Processing Conducted By: LAP	Sample Pt. Code:	Removal Dat		Processing Date: $6$ 6 - 9 - 09	-8-09 to
Basin: 18 R&D Winter 2009 Pilot Study		557	Subbasin: N/	/Α	
Sediment Trap Location Description/Adi (SCE Page#1 of trap location) 39 50 NW Yec	dress: 5×B) 7/8/09 M AVE				
SEDIM	ENT TRAP PROCES	SSING/FILTF	ATION NO	TES	
[Field O	l Harbor, 90-millimeter (mm perations (FO) Standard O ent for Phthalates Technica	perating Procedu	re (SOP) 5.01b	& Evaluation of Micro	ation system filtration
Filter brand, grade, porosity in micromet Fisher Scientific qualitat	ers (µm) and material (e	.g., Fisher Scien	tific, qualitative	P2, 1-5 µm cellulose l	ilter paper):
Sediment Trap Bottle ID: (8_ST2	计成为通行时 疏 "你这个方向"落分离"李林林"的"你们,不知道了。	and a second			RECT
Total Est. Depth of Accumulated Sed in	Bottle (inches): ≈0.4 <sup>in</sup>	Total Est. Depth	of Accumulat	ted Sed in Bottle (in	ches):≈0.6"
		Sample Process		Sample Processii Time: 1353	
J Number of Filters Used: (7) P 5	<u> </u>	Number of Filter		<u></u>	
milliliters (mL):	oml s	Est. total volume of DI used to remobi stormwater solids milliliters (mL):	lize adhered within bottle in	≈1307	nl
Jare-Weight [empty jar in grams (g)]: JAR. Contri Dewatered/Filtered Sed. Weight (g): 18.8	& B1, B2 333.20 7 butions = 333.20 7 grams [	Fare-Weight []ar a JAR S, BI, Dewatered/Filtere	nd filtered sed. B2, B3 <i>cov</i> d Sed. Weight (	from Bottlet in grams utributions = 3 (g): 73.1 cytan	(9)]: 52.0g
Sample Processing Notes/Comments:		, Sample Process			
Solid material prim	anly consists	Solid	materi	al is a ve	ery .
of very fine silt w dark brownin color.	raterial -	Time si Dark br	ilty/cla	up materic	trong
Visual Description of Final Composite Sa	ample: Silt/claur vnu			direcent boin petroleo color; hydroca	
COC Time (time composite jar is Tota	Dewatered/Filtered Sec Is (0): 223.3	. Weight in	Sample Jars	S Collected (number ) ar $(\approx 3/4)$	size, full or
Sample ID: FO095693	- 「「「「」」「「「」」、「「」、「」、「」、「」、「」、「」、「」、「」、「」、	orecontracted?	1 1 1 <b>1 1 1</b> 1 1 1 1 1 1 1 1 1 1 1 1 1	2 <u>V</u> 1 LICATE ID	<u>, - 11  </u>
Duplicate Sample ID on COC: affix FO number stoker	Any deviation Describe:	is from standard	l operating pr	ocedures? Y	

S:\FIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc

 $\checkmark$ 

PAGE 2 of 2

## DAILY FIELD REPORT





Page \_\_\_\_\_ of \_\_\_0

Project PORTLAND HARBOR STORMWATER SAMP Project No. 1020.005 15 Date 6-8-09 Location WPCL Field Lab Subject BASIN 18 Sed Trap Processing-18-572 By LAP Time in PST K 0905: Set-up microfiltration system w/ a P5 5-10 um)cellulose filter Primed filter small amount of alter ultra-pure D Water (UPDI) to secure filter. #1 0926 Begin to process bottle site 01 18-STZ BLWM 0938: Filter #1 clogged - no recoverable solids Replaced M a New P5 filter & processing of supernate. resumed Filter # 2 clogged - no recoverable solids 000 Replaced n new P5 filter primed resumed processing. WUPDI Photon 1004: VFilter # 3 cloaged- no vecoverable solids Keplaced up à New P5 filter, prim Processing Vesumed Almost ort supernate filt eved DOIN 3) filters used to notoavarized the process Most 253 SIPERNAL 01 Attachments

## DAILY FIELD REPORT



5

6

	Page of
Location WPCL	DHATABOR STORMWATER SAMP. Project No. 1020.005 Field Lab Date 6-8-09 18 Sed Trap Processing-18-872 LAP
1020= All W	ater has been pulled through filter. # 4.
Mater	vial consists of very fine day/silt
	wal Scraped into sample jar.
	of Solids = 254. jpg). Installed new
	Iter & primed of UPDI, resumed
	ssing
1	
1039: All V	rater has been pulled through filter#5
Solid	s retained on filter to surface
	sts of small amounts of very fine
	& clair material - scraped into
sampl	e jar Installed new P5 filter
primee	M UPDI& resumed processing
Adde	d approx. "BO me of UP'DI to sample
bottle	to mobilize remaining solids
1055: All 1	water has been pulled through filter #6.
Solid	s retained on filter surface consist
of si	mail amounts of gravel & sands of
Silts	& small sit - angular white malenal
(phot	v # 259 jpg). Scrapedsonto Sample 6xB
jär.	All material from 18_STZ-BI-WM 3160
has	been processed at this point (1059 PST).
$\overline{\mathbb{C}}$	$(\lambda)$ pc $(\lambda)$ $(\alpha - \lambda)$
<u>Dimmany</u> (	6) P5 filters used; ~ 80 ml UPPI used
Attachmonta	Fill Sample jar (n/ (id) = 210.8 g lmpty " jar (n/ (id) = 201.8 g
Attachments	limpty " jar (n/lid) = 201.8 g
	De-watered / Filtered Sed weight= 9.0 grams
제1 아파님이지는 아파 부분이 이 가지? 유민이는	unter a sector de la companya de la construction de la construction de la construction de la construction de la

# DAILY FIELD REPORT

 $\checkmark$ 

6



TKB Page 3 of 10
Project PORTLAND HARBOR STORMWATER SAMP Project No. 1020.005
Location WPCL Field Lab
Location WP.CL Field Lab Subject Basin 18 Sed. Trap Processing By LAP
1211 Begin filtration of 18-ST2-BZ-NM Using a P5 (5-10 mm) cellulose filter.
Using a P5 (5-10 mm) cellulose filter.
Primed W a small amount of UPpi to secure filter #1.
seerre filter # 1.
1223: Filter #1 clogged - no recoverable solids. Replaced up a new P5 filter & resumed
Keplaced of a new P5 filter & resumed
processing of Supernate.
1253: Filter # 2 clogged- no recoverable solids Installed a new P5 filter & resumed
Instanted a new (3 tilter & resumed
processing
1303 Filter # 3 clogged - no recoverable solids.
Installed a new P5 filter & resumed
1303: VFilter # 3 clogged - no recoverable solids. Installed a new P5 filter & resumed processing. Supernate almost all processed @ this point.
1306 Filter # 4 clogged - very small amounts of
silt recovered from filter surface &
scraped into jar. Installed a new PS
filter & vesunted processing
1325 Filter # 5 clogged-small amount of silt
material recoveried from titler surface &
scraped into jar. Photopraphed solids (275 jpg)
Attachments processing

## DAILY FIELD REPORT



Project PQR	TLANDHARBOR STORMWATER SAMP. Project No. 1020.005
Location W	PCL Field Lab Date 6-8-09
Subject Br	15100 19 Sed. Trup Projessing 8-512 LAP
	(JVW 10
Vracesia	0 / (TMA)AA (210 )
essa di Contrasti	produing -like consistency at un vering
<u> </u>	A HITCHEBSUTTACE FOR 30+-MANUTES.
1101	Cita H ( ) and in the citation
<u>1400 ·</u>	Filler FB clogaea = recovered sittering
	an hastalled a lacia 25 filter & vesumed
	지수는 그는 것 같은 것 같
473:	Filter #7 clogged - recovered sitt/ class
<u>e le 6 6</u>	
	into sample jar. Installed new P5
	Filter, primed of UPPI & resumed
	processing.
434:	Filter # & dogged - recovered silt/clay
	Maleria & Scrapeg Mro severple jan
	Installed ven P5 tilter & resumed
	processing
1420	Filtre #0 almost - love and class / silt
1720	A DIANA HANNA
<ul> <li>Very five silt material - dark brown in cover. Material is retaining wath-has a produing-like consistency atta being on filter#Esurface for 30+ minutes.</li> <li>280</li> <li>1406: Filter #6 dogged - recovered silt/clay material described above &amp; suraped into jav. Unstalled a view P5 filter &amp; resumed processing.</li> <li>423: Filter #7 dogged - recovered silt/ clay material from filter surface &amp; scraped into sample jar. Unstalled new P5 filter, primed w UPDI &amp; resumed processing.</li> <li>434: Filter # 8 dogged - recovered silt/clay material &amp; scraped into sample jar. Installed new P5 filter &amp; resumed processing.</li> <li>434: Filter #8 dogged - recovered silt/clay material &amp; scraped into sample jar. Installed new P5 filter &amp; resumed processing.</li> <li>438: Filter #9 clogged - recovered clay/silt material &amp; scraped into sample jar. Installed new P5 filter &amp; resumed processing.</li> <li>438: Filter #9 clogged - vecovered clay/silt material &amp; scraped into sample jar. Installed new P5 filter &amp; resumed processing.</li> <li>438: Filter #9 clogged - vecovered clay/silt material &amp; scraped into sample jar. Installed new P5 filter &amp; resumed processing.</li> <li>438: Filter #9 clogged - vecovered clay/silt material &amp; scraped into sample jar. Installed new P5 filter &amp; resumed sampling. Added approx 100 ml of UP01 to mobiling solids in sample bottle.</li> </ul>	
socion WPCL Field Lab socion WPCL Field Lab subject Basim 10 Sed Trap Processing (Sm) Fision recessing comment: Very fine silt material - dark krown in color. Material is retaining water-has a prodding -like consistency after being on filter to surface for 30+ minutes. (Note: Surface for	
\	to mountry source m sample bound

\_د. ج

## DAILY FIELD REPORT



Page <u>5</u> of <u>10 </u>
Project PORTLAIND HARBOR STORMWATER SAMP Project No. 1020.005
location WPCL Field Lab Date 6-8-09
Subject Basin 19 Sed. Trap Processing 18109 LAP
Location WPCL Field Lab Octo Date 6-8-09 Subject Basin 18 Sed. Trap Processing 18109 LAP
1449: Filter # 10 clogged. Receivered very fine class / silt material from filter
tive clay/silf material trom tilter surface - scraped into Sample jar.
Photographed solids (283. jpg). Installed
new pts filter; added approx 30 mb.
UPpi to sample bottle & resumed
filtration.
LACE
1507 Filter # 11 clogged. Recovered fine
silt/ day material from filter surface
& scraped into Sample jar Installed new P5 filter & resimed processing.
Sample almost filly processed @ this
ppivut.
이 같은 사람들은 것 같은 것이 가지 않는 것 같은 것이 같은 것 같은 것이라. 가지 않는 것이 같은 것은 것은 것은 것은 것이 같은 것이 있는 것이 같은 것이 같이 있는 것이 있는 것이 같이 있다. 같은 것은
1523 / Fitter #12 has pulled all noter through.
18-STZ-BZ-NM has been theyroughly
processed (Scraped small amount of clay/
Calt material from filter into sample jar)
(12) P5 filters used; ~ 130 ml UPDi
$(12)$ f5 filters used; $\approx 130$ mb VPDi used.
Full sample jar w/ lid
including 31 contribution = 210.8 g
Attachments Full sample jan including B2 contr. = 333.2 g
De watered/Filtered (B2) sed weight = 122.43

# DAILY FIELD REPORT



2

P.o.o	Page 6 of 10'
Project FOKIL	ANDHARBOR STORMMATER SAMP. Project No. 1020.005 <u>CL Field Lab</u> Date 6-9-09 <u>Date 6-9-09</u> <u>Date 7-09</u> <u>Date </u>
Location $\underline{VPC}$	<u>CL Field Lab</u> Date <u>6-9-09</u>
Subject Dast	in 18 Sed. Trap Processing 50 LAPP
	718109
Alltimesin	$\sim PST$
0710	Set up microfiltration station for
	processing of 18-ST2 B3-SQ.
	Install a new P5 filter, prime
0727;	MUPPi & begin filtering
	<u>y UPPi &amp; begin filtering</u> <u>spernate (Pre-processing photo of bottle=285.jpg)</u>
	· A - A - A - A - A - A - A - A - A - A
T	Filter #1 is clogged - no recoverable solids Replaced n/ a new P5 filter & resumed
<b>G</b>	vocessing
0755	Filter # 2 clogged - small amounts of
e •	Filter # 2 clogged - small amounts of reganic debis scraped into sample jar.
	installed a new P5 tilter & vesumed
	processing of supernate.
0823 I	$\exists 1 + 2 + 1 = -1$ is a set $a = -1/a$ could be
0021	Filter #3 clogned - no recoverable solids. Installed a new P5 filter & resumed
	Wolessing Almost all supernate has
	reen filtered at this point.
0829 F	-ilter # 4 chaqued - no recoverable solids.
	ustalled a her P5 filter & resumed
	filtration.
Attachments	
	는 것이다. 이렇게 있는 것이다. 이렇게 있는 것은 것은 이렇게 있는 것이다. 이렇게 가지 않는 것이다. 이렇게 있는 것이다. 것이다. 가지 않는 것은 것은 것은 것은 것은 것은 것은 것이다. 것이 같은 것이 같은 것은 것이다. 것이 같은 것이다. 것이 같은 것이 같은 것은

## DAILY FIELD REPORT



Page <u>1</u> of <u>1</u>	
Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020.005 Location WPCL Field Lab Date 6-9-09 Subject Basin 18 Sed Trap Processing 18.55By LAP	
0841: Filter #5 is clogged. Recovered silt material from filter surface - scraped into sample jar (photo # 286. jpg). Installed new P5 filter, primed ul FD VPPi & resumed processing	
0919: Filter #6 is clogged. Recovered dark brown silt material from filter surface scraped into sample jur linstalled new P5 filter & resured processing Added approx. 60 ml UPPi to mobilize remaining solids in sample bottle.	
0956: Filter #7 has pulled all water through 18-ST2-B3-top 18-ST2-B3-SQ has been thoroughly processed at this point. A small among of fine silt material was r recovered from filter surface & scraped into sample jar.	
Summary (7) P5 filters used; ~60 mb uppi used Sample jar of B1 & B7 contributions = 333.2 grams (n/10) Sample jar of B3-SQ contribution = 352.0 g Attachments De-watered/Filtered (B3) sed. weight = 18.8 grams	

## DAILY FIELD REPORT



3

4

\_\_\_\_\_0f \_\_\_\_0 Page <u>8</u> Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020.005 Fry Date 6-9-09 Location MPCL Field Lab Subject Basin 18 Sed. Trap Processing 18 18 By · Up Microfiltra 1119 51 tima tor Sim ST2 0 8 Po REAT Dhoto 1122 1011 cloaged no 1124 VECOVANDO 3 0) NAV ホート MSFR Filtrati Sv VESUME on 01 amounts 4-1 tt cloaged. lern < MARAI N.0 Cit ON AND 1.N Aluit ed a Sample i an: vber MARC CO 1 OIN Inas DOU time MAN DOOM 140: OFTO SAM M Laned. ormanic materia from Silt 1 ian S ing ITAA strong SAMABLE petroleum- Indrocarbon od - **%** 

Attachments

## DAILY FIELD REPORT



Page () of 10 1

Location $\underline{V}$	PCL Field Lab Date 6-9-09
Subject <u>B</u>	Isin 18 Sed-Trap Processing-18-ST2 By LAP
1148	Filter # 4 clogged. Moderate amount of
11-10	Silt/ clay material recovered from filter
	surface & scraped into sample lar.
	いいが二 アージ ひいしつ アロンショオングリー ビット・アーダ レー・コール うけい たいたいたいたちか ちゃん 山根 シーマン・セーダ シー・セルション たかい
	Photo of Filter # 4 = 293, pg Installed
	New P5 filter, primed vy UPPix resumed processing Used approx 100 ml
	VPDi to mobilize solids in sample bottle.
	<u></u>
1220:	Filter #5 clogard Silty / class material
	Filter #5 clogged. Silty/clay material recovered from filter surface & scraped
	into sample jav. Installed yen P5 filtar
	2 resumed processing.
1306	Filter # 6 cloaged - recovered silty/ clay
	material from filter surface & scraped
	into sample jar installed new P3 fitter
	× resumed processing.
1320:	Filter #7 clogged - recovered small amount
	of silt/ clay material - Scraped into
	sample jav the talked very P5 tiller 2 resumed proc
	Added approx- 30 ml UPDI to Sample
	bottle To Widdibige solids.
100 0.	n en sen en e
1975	HITER FO Clogged - recovered Small
	amount of silty/ clay material & suraped





0\_\_\_\_\_of Page Project No. 1020.005 Project PORTLAND HARBOR STORMWATER SAMP. Date 6-9-09 Location MPCL Field Lab subject Basin 18 Sed Trap Processing -18-5BY LAP JXB 718109 1353cont. B4\_RECT 18-ST2-Sample jar. UNTO has been thoroughly processed at this point. filters used; ≈ 130 ml UP Di used P5  $\mathcal{B}$ umany ar w/ BI BZ & B3 Sample (including lid) = 352.0 grams contributions iar including RE 34\_ Sample contribution = 425.1 w/ lid) De-watered/Filtered (B4) sed. weight = 73.1 grams V. -inal sample photo # 301. pg Full jar w/ B1, B2, B3 8 B4 = 425.1. (w/ tid) mpty jav Sediment weight - 223.3 grains otal SAMPLE COLLECTED : FINAL 9109 359psr 6 Attachments

EN	WIRONMEN Water Pollution 6543 N. BI	PORTLAND TAL SER Control Laboratory Inlington Ave R 97203-5452	VICES		
	NT TRAP SAME	LE PROCE	SSING D	ATA SHEE	
Project Name: PORTLAND HARBOR S	TORMWATER SAMP		Project Nur	nber: 1020.005	
Sample Processing Conducted By:	Sample Pt. Code:	Removal Da	ite:	Processing Date	):
Basin: 18 R&D Winter 2009 Pilot Study	10-513 Hansen ID: A 10-	1/14/0	29	6/8/09	
Sediment Trap Location Description/Ad AND535/20070X. 30" 45 from	dress: Traps were in	nstalled upsi	Subbasin: 1 rean (US)	ofnode	Tr. 710
AND535, approx. 30" us from pipe. Traps were spaced appr	the end of pipe ( ox 30" from pa	EOP) in the			
			- 40	33 NW 40	$\overline{\circ}$
SEDIM	ENT TRAP PROCE	ESSING/FILT		DTES	
Filter Equipment/Method: W/	Harbor, 90-millimeter (m perations (FO) Standard	m) stainless steel Operating Procedu	filter support w re (SOP) 5.01	conical glass micr & Evaluation of M	ofiltration sys licrofiltration
Filter brand, grade, porosity in micromet	ers (um) and material (	A ri Fishar Solar	- September 18	<u>3, 2007].</u>	se filter nane
<u>- Lisher Scientific Giralata</u>	<u>tive P5, 5-16</u>	MI Call	ulose t	The Paper.	
Sediment Trap Bottle ID: 18 - 513	-BI -NM /	Sediment Trap	Bottle ID:	8 - <del>513 - 8</del> 1	1-50
Total Est. Depth of Accumulated Sed in	Bottle (inches): <sup>4,9</sup> *	Total Est. Deptl	n of Accumula	ted Sed in Bottle	(inches): ~
	Processing End	Sample Proces		Sample Proce	
0732 PS1 1	<u> </u>	Time: Z	15 pst '		Opst
Est. total volume of Ultra Pure	IOMAT) V	Number of Filter Est. total volume		-(15, 5-10)	mM).
DI used to remobilize adhered 75ml stormwater solids within bottle in	1	DI used to remob stormwater solids	lize adhered		
milliliters (mL): Fare Weight [empty-jar-in grams (g)]:Tet, = 124	13.7 105,1 (bett tare)	milliliters (mL):		Toil	
Dewatered/Filtered Sed. Weight (g): Sed wt,		్ ఎత	e wheen shee	from Bottle1 in gra	letails
	r discussion w/38		4	(0), 931-09 21.99 Used	and se
Jumped Contents directly from Site bullt "bucket. Used two	BI Noto compo-	Sample Process Supernata	ing Notes/Co and Ist	mments: Cilter	for decan
ilters (after initial fltr) to fili	ter residual seds	residuals;	Used 2	nd P5 filt	er to
ind add to composite.		1 mar	. 1	npacted sed	
		Terantina	and to	The Fi	
/isual Description of Final Composite Sar	nple FINal composi <u>silta clay par</u>	te was dure b Hicles w/min	rewn w/F	ine to medi	un con
OC Time (time composite jar is Total apped)	Dewatered/Filtered Ser	d. Weight in	Sample Jars	Collected (num	or cizo fui
	<sup>(g)</sup> 3860,09		partial): 7	full 807 + 1 full 402 + 1	1) 802 A
FO 095694	Duplicate sa	nple collected? (	Y/N DUP	LICATE ID ત્યા ૪૦૬	Gre
uplicate Sample ID on COC:	Any deviation	ns from standard	<u>by t</u>	-ixii 402	7
fix FO number sticker FO 095697	Describe				Ca all

			(_)		-8T3
	ENVIRONMEN Water Pollution 6543 N B	PORTLAND TAL SER' Control Laboratory urlington Ave R 97203-5452	VICES		
INLINE SE	DIMENT TRAP SAME	PLEPROCE	SSING DA	TA SHEET	
Project Name: Portland Hard	our Stormwater Samp.	······································	Project Num	<sup>ber:</sup> 1020.005	
Sample Processing Conducted		B Removal Dat	:e: ୮ <i>୦</i> ୩	Processing Date: 6809	
Basin: 18 R 1 Winter 2007 1			Subbasin: N		
Sediment Trap Location Descr 30° US of the tz" clian from each other.	ption/Address: Traps were Noter Inlet and of plas	installed US (EOP) and	of node A were app	HND535 appro voximately	ssimately 50 <sup>4</sup> apart
	SEDIMENT TRAP PROC	ESSING/FILTI		TES	
Filter Equipment/Method:	Portland Harbor, 90-millimeter (r [Field Operations (FO) Standard Equipment for Phthalates Techn	Operating Procedu	re (SOP) 5.01b	& Evaluation of Mici	tration system ofiltration
Filter brand, grade, porosity in					filter paper):
Sediment Trap Bottle ID: \%	_ ST3 _ B2 _ WM	Sediment Trap		-10 Arm cellul (20) 7114109	<u>ose firter</u>
Total Est. Depth of Accumulate	d Sed in Bottle (inches): ~3,4 <sup>ii</sup>	Total Est. Depti	n of Accumulat	ed Sed in Bottle (j	nches):
Sample Processing Start Time: 101%	Sample Processing End Time: i043 ✓	Sample Proces Time:	sing Start	Sample Process Time:	sing End
Number of Filters Used:	2	Number of Filte	rs Used:		
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 50 mL		Est. total volume DI used to remob stormwater solids milliliters (mL):	ilize adhered 🖊	de la companya	
Tare Weight [empty jar in grams (g Dewatered/Filtered Sed. Weight (g	652 8 000			from Bottle1 in gran	ıs (g)]:
Sample Processing Notes/Com #+ bottom of bott lo. Solids					
withmedium sands and Solids had strong odor debris, All 18-573 bobbe	some woody debris.				
Visual Description of Final Com	posite Sample: Fixel comp 511 dictory	coite masdar particles "/mi	k brown w	Thine to mediv regarile materi	m sands; al present
COC Time (time composite jar i capped) 619109 @ 1590	s Total Dewatered/Filtered S grams (g): 3860 , 0		partial) (1)	Collected (numbe いいかっこ + (4) いいりゃき + (1)	Soe Archiv
Sample ID: affix F0 numbi	Dunlicate e	ample collected?		11 102 711 LICATE ID いちのを ひり 402	<u>408 Archi</u> Txa Hallo
Duplicate Sample ID on COC	Any deviati	ons from standar			
FO095697	Describe				51211

2 of 67

		· .	U	- 18_	ST31
ENVI	CITY OF PC IRONMENT Water Pollution Cor 6543 N. Burlin Portland, OR 9	AL SERV	ICES		
INLINE SEDIMENT	TRAP SAMPL	E PROCES	SING DAT	A SHEET	
Project Name: PORTLAND HARBOR STO	RMWATER SAMP.	F	roject Number	: 1020.005	
A 10-10-10	mple Pt. Code: \$-5ד3	Removal Date:	Pro	cessing Date:	
Basin: 18 R&D Winter 2009 Pilot Study Ha	insen ID: ANDS3		ubbasin: N/A		
Sediment Trap Location Description/Address 4/2" diameter inlet end of pipe other.		felled VS of m ere approxim 1033 NW 4			
	T TRAP PROCES	, .			. ·
[Field Opera	rbor, 90-millimeter (mm ntions (FO) Standard Op or Phthalates Technica (µm) and material (e.	perating Procedure I Memorandum – S .g., Fisher Scientifi	(SOP) 5.01b & E eptember 18, 20 c, qualitative P2,	valuation of Mici	ofiltration
Sediment Trap Bottle ID: 18 - 5T3 - 1		Sediment Trap B		/	
Total Est. Depth of Accumulated Sed in Bot		rotal Est. Depth o	f Accumulated	Sed in Bottle (i	nches):
	I	Sample Processin Time:		ample Process ime:	ing End
Number of Filters Used: 2 🗸		lumber of Filters	/	• .	
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in 50 mL milliliters (mL):	r E	est. total volume of l of used to remobilize tormwater solids wi nilliliters (mL):	adhered		
Tare Weight (empty jar in grams (g)]. 4774 368 1501 Dewatered/Filtered Sed. Weight (g): 505 18_	He tare weight=131.15 T	are Weight [jar and STO 7-11509 Dewatered/Filtered S	filtered sed. from	n Bottle1 in gram	ıs (g)]:
لاتی Sample Processing Notes/Comments: Salia	D 7-12/109 K were compacted s	ample Processin	1	ents:	
at bottom of bottle. Solids were most silts with medium coarse sands. So debris present, yet r <del>em</del> Im mostly re	me woody, leafy emoved. Strong			e de la composition de la comp	
at bottom of bottle. Solids were much	me woody, leafy emoved. Strong s odor.				
at bottom of bottle. Solids were most silts with medium coarse sands. So debris present, yet perform mostly re decomposing organic woody debri	me woody leafy emoved. Strong s odor. Ket				
at bottom of bottle. Solids were most silts with medium coarse sands. Sou debris present, yet comJm mostly re decomposing organic woo dy debri Bottle B3 added to composite buc Visual Description of Final Composite Sampl	me woody, leafy emoved. Strong s odor. .Ket le: watered/Filtered Sed		iample Jars Co artial):		er, size, full or
at bottom of bottle. Solids were most silts with medium coarse sands. So debris present, yet remiting mostly re decomposing organic woody debri Bottle B3 added to composite buc Visual Description of Final Composite Sampl COC Time (time composite jar is Total Dev	me woody, leafy emoved. Strong s odor: .Ket le: watered/Filtered Sed );		artial):		er, size, full or

3 of 167

		)	- <u></u> -,	()	1.8	- ST3v
	ENλ	CITY OF PO /IRONMENT Water Pollution Co 6543 N. Burll Portland, OR	TAL SERV iontrol Laboratory rilington Ave	VICES		
INLINF	E SEDIMEN	T TRAP SAMPI		SSING DA	TA SHEET	
Project Name: PORTLAN	ND HARBOR ST	ORMWATER SAMP.	<u></u>	Project Num	ber: 1020.005	
Sample Processing Cond		Sample Pt. Code:	Removal Dat		Processing Date:	
Basin: 18 R&D Winter 20			-	Subbasin: N		
Sediment Trap Location I of the Yz " diameter			<u>.</u>	······		ely su us ach other
		NT TRAP PROCE				
Filter Equipment/Method:	Field Ope Equipmen	Harbor, 90-millimeter (mr erations (FO) Standard C nt for Phthalates Technic	Operating Procedu cal Memorandum –	re (SOP) 5.01b - September 18	& Evaluation of Mi 3, 2007].	icrofiltration
Filter brand, grade, poros		ers ( $\mu$ m) and material (	(e.g., <u>Fisher Scien</u>	<u>ntific, q</u> ualitative		The second division of
Sediment Trap Bottle ID	5:18 _5T3 -	– B5 – <i>NM</i>	Sediment Trap	•		· · · · ·
Total Est. Depth of Accun	mulated Sed in B	ottle (inches): 0.6"	Total Est. Depth	n of Accumula	ited Sed in Bottle	(inches):
Sample Processing Start Time: 1300	t Sample Pi Time:	Processing End	Sample Process Time:	sing Start	Sample Proces Time:	ssing End
Number of Filters Used:	2	•	Number of Filte			
Est. total volume of Ultra Pu DI used to remobilize adhere stormwater solids within bott milliliters (mL):	red <i>None</i> ttle in	540 7115109	Est. total volume DI used to remob stormwater solids milliliters (mL):	oilize adhered s within bottle in	*	· .
Tare Weight [empty ]ar in gra Dewatered/Filtered Sed. We		501ids + bottle = 697.4 165.53 59.1 g V	Tare Weight [jar a Dewatered/Filtere		. from Bottle1 in gra	ams (g)]:
Sample Processing Notes compacted at bottom fine clay and slit w All ST3 bottles compo	s/Comments: Sol of bittle. So / medium co ostled into so	lids were minimal, lids were Mostly parse sands. arme bucket.	Sample Process	/ sing Notes/Co	omments:	
Visual Description of Fina	al Composite Sar	npie:				
COC Time (time composi capped):	site jar is Total I grams	Dewatered/Filtered Se s (g):	ed. Weight in	Sample Jar partial):	rs Collected (num	ber, size, fuli o
Sample ID:		Duplicate s:	ample collected?	Y/N DU	PLICATE ID	

affix FO number sticker	
Duplicate Sample ID on COC	Any deviations from standard operating procedures? Y/N
affix FO number sticker	Describe:

4 of B

S:\FIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc

		i			- 18_3	ST3 r
	ENVIRO	CITY OF PC NMENT Vater Pollution Coi 6543 N. Burlii Portland, OR 9	AL SER trol Laboratory igton Ave	VICES		
INLINE S		P SAMPL	E PROCE	SSING D	ATA SHEET	
Project Name: PORTLAND H				i de la servició de l En la servició de la s	nber: 1020.005	
Sample Processing Conducte			Removal Dat	<u> </u>	Processing Date	
AJA	18 -	ST3	6/4/	09	6/8/	09
Basin: 18 R&D Winter 2009 F	Pilot Study Hansen I	D: ANDS3	5	Subbasin: N		
Sediment Trap Location Desc address details				sed trap	location of:	sile
Conces Ceraits	. ·	· · ·	•			• •
	JXB) 7/13/09					
	SEDIMENT TRA					
Filter Equipment/Method: 5Fandard W/vacuum	Portland Harbor, 90 [Field Operations (F Equipment for Phth	<sup>2</sup> O) Standard Op alates Technica	perating Procedu Memorandum –	re (SOP) 5.01. Sentembor 1:	b & Evaluation of M	crofiltration
Filter brand, grade, porosity in	n micrometers (μm) a	nd material (e.	g., Fisher Scien	tific, qualitative	P2, 1-5 µm cellulo	se filter paper):
<u>Fisher Scientific</u>						
ediment Trap Bottle ID:	8 - 5T3-B6 -	WM 713	Sediment Trap	Bottle ID:		
otal Est. Depth of Accumulat	ed Sed in Bottle (inc	hes): - 18 , 1	otal Est. Depth	of Accumula	ated Sed in Bottle	(inches):
Sample Processing Start	Sample Processing Time: (449 ps-	g End S F T	ample Process ime:	sing Start	Sample Proces	ssing End
lumber of Filters Used: 3			lumber of Filter	s Used:	· / ·	
st. total volume of Ultra Pure I used to remobilize adhered		D	st. total volume of used to remobi	lize adhered	<i></i>	
tormwater solids within bottle in tilliliters (mL):		П Г	tormwater solids iilliliters (mL):	within bottle in	1 <sup>*</sup> .*	
are Weight [empty jar in grams اعن Dewatered/Filtered Sed. Weight (	6g green sheets)	ed -> see T	are Weight [jar a ewatered/Filtere	/	l. from Bottle1 in gra	ims (g)]:
Sample Processing Notes/Con as compared to 4.0+") The of B62113 much dike	e vertical disti BI + B4, Light	only-18" S bution er woody	ample Process			
ebris on the surface ith very dense, compare the bottom. Filtered Sq into Composite bu	ted Clay + Sa	directly	1 6 00	• . •		
isual Description of Final Cor		<u> 2011 TO B</u>	14 611.			
OC Time (time composite jar apped):	is. Total Dewatere grams (g)	d/Filtered Sed	Weight in	Sample Jar partial)	s Collected (num	per, size, full or
ample ID Ix FO number sticker		Duplicate sam	ple collected?	Y/N DUF	PLICATE ID	
uplicate Sample ID on COC.			and the second		ocedures? Y/N	and the second state of th

20 20

5 of K

						-18	_ST3 /
		ENVI	RONMEN Water Pollution C 6543 N. Bu	ontrol Laboratory	VICES		
	NLINE SED	DIMENT	TRAP SAMP	LE PROCE	SSING DA	TA SHEET	
Project Name: P	ORTLAND HAF	BOR STOP	RMWATER SAMP.		Project Numb	per: 1020.005	<u>1993 - Alfred Alfred Alfred A</u>
Sample Processi JJM/AJA JJX	ng Conducted I	By: Sa	mple Pt. Code: 8 - 573	Removal Da 6/4/09		Processing Date: 18/09 - 6/9/0	75
Basin: 18 R&D W	/inter 2009 Pilo	t Study Ha	nsen ID: ANDS		Subbasin: N/		v
Sediment Trap Lo ~30 <sup>II</sup> Upstrea Each orner( <u>U</u>	<u>133 NN</u>	Yeon A	s: Traps were netright en stars of were ~e. [TRAP PROCE				735 7071 420535)
	Method: e, porosity in m	Portland Har [ <i>Field Opera</i> <i>Equipment fo</i> icrometers	bor, 90-millimeter (m tions (FO) Standard or Phthalates Technic ( $\mu$ m) and material ( PS, $S$ - $ID$	m) stainless steel Operating Procedu cal Memorandum (e.g., Fisher Scier	filter support w/c ure (SOP) 5.01b – September 18, ntific, qualitative I	conical glass microfi & Evaluation of Mic. 2007	rofiltration
Sediment Trap E				Sediment Trap			
Total Est. Depth of Sample, Processi Time: Juliu Psr	ng Start S	Sample Prod	cessing End	Sample Proces		ed Sed in Bottle (i Sample Procest Time:	
Number of Filters	Used: 4	5.5-10		Number of Filte	rs Used:		
Est. total volume of DI used to remobiliz stormwater solids w milliliters (mL):	ze adhered	~75	mL ,	Est. total volume DI used to remote stormwater solids milliliters (mL):	oilize adhered s within bottle in		
Tare Weight [empty		C.	D JAB 131,19		. /	from Bottle1 in gran	ns (g)]:
Dewatered/Fittered Sample Processin Solids were trap bottle P	ng Notes/Comm	nents: et in bot		Dewatered/Filter	1		
fine silts a c medium sands No visible sh woody odor a	lay particle en present uns black	s w/ fin anic wa Sample ich brown	e to clarse Udy debrz had an organi Wred inclusion	c is	-	· · ·	
Visual Description							
COC Time (time c capped):		grams (g			partial).	Collected (numb	er, size, full or
Sample ID: affix EO number sticke			Duplicate sa	ample collected?	YN DUP	LICATE ID	
Duplicate Sample affix FO number sticke			Any deviation	ons from standar	d operating pro	ocedures? Y/N	. Shu

S:VFIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc

6 of K

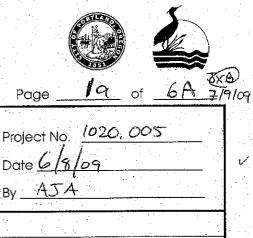
				18-ST
	ENVIRONME Water Pollu 6543	OF PORTLAND INTAL SEF tion Control Laboratory N. Burlington Ave d. OR 97203-5452	RVICES	
INLINE SE	DIMENT TRAP SA	MPLE PROCI	ESSING D	ATA SHEET
Project Name: PORTLAND H/	ARBOR STORMWATER SA	MP.	Project Nun	nber: 1020.005
Sample Processing Conducted JXB/PTB/LAP	d By: Sample Pt. Code 18 -ST3			Processing Date: 6/9/09
Basin: 18 R&D Winter 2009 Pi		····	Subbasin: N	
Sediment Trap Location Desc	ription/Address: - See	page lof.	7 -	и <del>н</del>
	SEDIMENT TRAP PRO	DCESSING/FILT	RATION NO	DTES
Filter Equipment/Method:	[Field Operations (FO) Stand   Equipment for Phthalates Te	lard Operating Proced chnical Memorandum	lure (SOP) 5.011 – Sentember 12	/conical glass microfiltration system b & Evaluation of Microfiltration 5, 2007
Filter brand, grade, porosity in	micrometers (µm) and mate	rial (e.g., Fisher Scie	entific, qualitative	P2, 1-5 µm cellulose filter paper):
Fisher Scientific				filter
Sediment Trap Bottle ID:	&_ <i>ST3_</i> &?_SQ	Sediment Tra	p Botfle ID:	
Total Est. Depth of Accumulate	ed Sed in Bottle (inches): 1,	Հ <sup>™</sup> Total Est. Dep	th of Accumula	ated Sed in Bottle (inches):
Sample Processing Start Time: 677070 1320	Sample Processing End Time: 619166	Sample Proce Time:	ssing Start	Sample Processing End
Number of Filters Used:	2	Number of Filt	ers Used:	
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL):	~100 mL	Est. total volume DI used to remo stormwater solic milliliters (mL):	bilize adhered Is within bottle ir	· ·
Tare Weight [empty jar in grams (g	101119	Tare Weight [jar	and filtered sed	. from Bottle1 in grams (g)]:
Dewatered/Filtered Sed. Weight (g		Dewatered/Filte		
Sample Processing Notes/Corr compacted fine to mediv particles w/course large deposited on the sarpa majorial- woody debas w lark brown sources to lark brown sources to	organic woody material	*	ssing Notes/Co	omments:
Indea to competition of Final-Com				
COC Time (time composite jar i capped):	is Total Dewatered/Filtere grams (g):	d Sed Weight in	Sample Jar partfal):	s Collected (number, size; full or
Sample ID:	Duplicat	e sample collected		PLICATE ID
Duplicate Sample D on COC:	Any dev Describe	lations from standa s:	rd operating pr	ocedures? Y/N

S:\FIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc ÷ .,

7077

-----

### DAILY FIELD REPORT



Project Fortland Harbor Stormwater Samp Location WPCL Field Lah. Date 6/8/09 Basin 18 subject Basih 18 Sed Trap Processing -18-ST3 By AJA \*Times in PST 0912 Assembled deconned 90mm Stainless, alass MICIO . filtration set-up to start filtration processing site 18-ST3 (8 bottles total. filtration set-up Use F.O. SOP 701a accordina to decanned solvent rinses based on higher methand acetone + analyses. This deviation from the PCR SOP Prioritu In previous processing years documented has been approved and ( oh-07 07-08 64 11Manager- Linda Scheffler. set up with P5, Equipped Fittra lluloso paper filter Fiskher scientific ce Photographed Sample Gattle 18\_ST3\_BI\_NM 08 removed 1350 1/14/09 stalled 12/9, filtered supernate Note that these first 4 bothles from Chay-like lot of compacted SPE Abrams A on discussion Poter Jason linnerte concluded that individual bottle contributions to the total mass of Sediment Co ired in a gross manner. Wieght dewatered seds plus any filtered 05 neasured minus the empty bottle weight will est collected seds in each bottle Attachments

## DAILY FIELD REPORT

7/13/09 Page 29 \_\_\_\_\_of <u>\_\_\_\_</u>66 Project No. 1020,005 Harbor Stocmwater Alon Samp. Project\_ Date 6/6/ Location WPCL Field Lab Dasin 18 filtering Subject 19-573 notes BV AJA £X9, Fficul (cont.) inclushy bothes lated seds accumu See. directly into Got LS44 aleiz à anot UPDI ni las an freate horongh manner Captu 000 bottle - Seds 1035 Sod + bottle h+= 100420 + 138.19 (1st f. /ter. weig - B1 50 1054 Completed transfer of 501 B1 From Adde Composite nr fa UPDT re nesolids Fili PS ind 115 Update - Aun : reto 60 e on that neede NPDI mi to maximize bottle, in order Sed Capture 20 USE amoun +5 large di < duplica xe. a. cample 1120 dry wieg nod lected  $C \cap$ Composite (3rd)added ~ 25 ml up DI Replaced lee+ E. Her Attachments

1

## DAILY FIELD REPORT



V

JAB 7/13/09 Page 30 of 64 Project No. (020,005 Project PDX Hacbor Stormwater Samp Basin 16 Location WPCL Field Lab Date 6 nci subject 19-573 Filtration Notes. Βv. 1120 (cont) to ruse residual contents Cottle of sample @Used P5 (5-10 MM) ter filer2 tot 98.09.2.24 (scraped filter 95,8 G filter2 105. wt CA dried er Se. 7.59 ter tot ferral grain ficles Bot w/seds + 1st filter wt. 1142 30 Sed Wt-0 95.8% Silter 2 falter ? l total (JXD 7113101 added UPDI ampty bott sed B1 05 filter (5-10 MM) Same Using mcro. 215 Ronewed RL **S**() Filtrat Set Filterian 18 - up. photograph NU mit. Upon Inas Sed look Battle erred woody Chips + pieces nent otoanap Removes woody pieces a +e iscar cim Supernate Hurongh PL Attachments

## DAILY FIELD REPORT



JXB 7113102 49 of 6A
Project PDX Harbor Stormwater Samp Project No. 1020.005 Location WRCL Field 19 Basin 18 Date 6/8/09 Subject 18-573 filtration notes By AJA
5×B 7/13/09
(cont.) (XO) 7/13/09
Weights: Bottle w/o water or wood = 8976g Bott + Seds Discorded wood (+ Foil) = 109.1g
14912 Finish transtering solids in bottle to composite
Consisting of mostly clays and fine sands.
Used ~25ml gf 40 rinse accumulated residual
to continue residual SPA relies (50 ml uppT tota)
Still using first filter.
1250 First filter dried, photographed twice, weighed, Collected into comp. bucket:
W+= 34,9g(seds+filter) ~1.8g filter= [33,1g filter] "
Filter Cake was very dried sand and 1 Selat.
1300 Replaced filter with second P5 filter for this z
get last alignot of residual solids out of
1310 Filter 2 dry Final Filter for BY_SQ. Very fine
Veighed, composited and discorded filter.
Seds + filter = 3,8 g filter = 1.8 g Solut = $2.0$ g Attachments

DAILY FIELD REPORT **City of Portland Environmental Services** JX8 7113109 Page Sa of 6A 020,005 Stormwater Samm Project No. Tarbor Project Location WPCL Field Lab Sasin Date subject 18.573 Field Filtration notes Bv bottle + Seds ( de watered Total 897 1310 cont ò of captured solids fiscardet woody debic 109. TXN Filter 33 1 Ó. 1310 2.0 Filterz 104 lotel initial solids captured by BY-S R Bott Weight -10.8emoty captured soils 931 101 Sec in composite Total Cont 8a. 1345 Photographed 18 57 Kenewed **P5** 5-10 MM S.Her. fed nani Gotte. 1 lev Fred rotito ~ 0 1. thick 10 the imilar 15 Ugina 2.1 520 in B6-WM 50 in Mas la iu impac amon In. composite the cods 70Ja \_ . +01= -0 68 do d G Plantoava 5-10 M Gr this Her to,C  $\mathbf{\Omega}$ doed ~50 re-suspend LIPΣ 10 Z adhered Solids Attachments

# DAILY FIELD REPORT



V

	(JXX)		of <u>6a</u>
Project PDX Harbor Stormwater Sc wpal Location Pield Lab /Basin 18	2113, amp	Project No.	
Subject 18-573 filtration notes		Date <u>6-8-0</u>	
		By ASA	
14133 Filter #2 dry. Photog	vaphee	wieghet con	posited.
Again soil is very fine			<b>e</b>
Filter + seds = 61.4 Filter = 77	9		
$Filter = 7.7 a$ $\frac{159.29}{59.29}$	) )		
<u> </u>	<u> </u>	2	<u>.</u>
1440 Replaced Filter of	another	- p5-(5-10 mb	MS
Filter paper, Used on	<u>n additio</u>	nal 35ml U	PDI
1449 Filter dry Bottle			
Filter + Sed wt = 16.3 Filter wt = 2	3 9	(TXB)	<u>No</u>
Filter wt = 2. Seds = 14.1	$\frac{29}{11}$	2	<u>2</u> 
	g inter		
Total seds collected	From BG	ne change die de la change en la	-1
		<u>59.29</u> 2 14 10 EH-3	V
		141.5g from 0	sc (1
Attachmonte			
Attachments			

## DAILY FIELD REPORT



weight of solids from Filter #25 5.39

B of Page Project Portland Hurbor Stormwater Samp Project No. \_\_\_\_020.005 Date 618/2009 - 619109 Location WPCL Field Operations Field Lab Subject Bastin 18 Sedtment Trap Processing - 18\_ST By JTM 7114109 (All Himos in PST 0953 PST Assembled decontaminated 90 mm stainless/glass Micro filtration apparatus for filtration processing of site 18-ST3 (8 bottlestotal) Decontamination per F.O. SOP 7.01 q. use of a retone and methanol solvent rings based on higher priority PCB analysis This deviation from the SOP has been documented in previous processing years, (06-07=07-08) and has been approved manager Linda \_WM P5 wation apparatus with 5-10 mm 1006 Eavloped cellulose filter paper Photographed sample bottle 18-5T3-B2-WM removed 1114/09 Filtered supernate at which removed bolk is stic 1018 Weight of removed floatables Woody leaty debris Daper 12, 6 aroms ull composite bowl ST3" Neight OI or st Weight Z уĽ.: of composite spoors BZ - WM (sans superna Weight of Jum 36.39 y woody debris physically removed w Weight of leaf 1 socon = 7/14/09 1043 nto composi Emptied trom to facilitate removal of remainsing solids adhering oure D Filtered w/ P5 (some sed. remaining nner sur ter paper ( solids suspen Marcht Attachments \* Approximate tare weight of blank wet PS filler= 1.89 . Weight of solids from Filer= 1.89

### DAILY FIELD REPORT



Page 2B of 3B9B GXB) ZIIUIO9 Project Portland Harbor Stormwater Sampling Project No. 1020.005 Location WPCL Field Operations Field Lab Date GISI2001 subject Basin to Sediment Trap Processing - 18-573 BY JUM Captured photos of 1st 2-d filter papers and removed woody, learly 1106 debris. The second filter paper sollids scraped into composite BOIN. hoille Weight of 18-ST3-B2-WM (W/ some minimal solids, sands and 113 v debris adhereing to inner walks) = 94 9 4 Weight of cleaned 18-St3-BZ-WM = 90. Approximate loss due to adhevence 18-ST3-B3-RECT -> See Adda Photographic bottle 18-ST3\_B3\_RECT against dry grase board. Kinsea 200 tiltering apparatus with Ultrapure DI. Per AJA advice, did not decontaminate fillering equipment in between bottle BZ : B3 as samples theoretically ronsist of the same sample; same site. Poured supernates into apparatus and filtersthrough P5 (5-10pm 1208 Fischer Scientific cellulose filter paper. Weight of 1st filter paper = 7.0gt Solids on paper consist primarily of Woody, leafy debris and larger, angular gravels. Weight of removed woody, leafy debris settled on surface of sediment In bottle = 31.29; 38:39 Woody, Teary debris in total. Dumped sediment from B3 Into composite 12.30 JOML UPDI to bottle in an attempt to re-suspend solicis adhering to inner walks Poured SOML UPDI/ suspended solids on 2nd piece of P5 filter paper Weight of 2nd filter pad (w/ re-suspended solids) = 17.2g \* Weight of 18\_ST3\_B3. RECT (bottle w/ minimal remaining solids) = 135.60 Weight of 18-513-B3-RECT Carter cleaning)=131.19 v Attachments Approximate weight of lost solic's due to adherence = 4.5 g v

# Approximate tare weight of blank wet PS filter="1,8g" weight of solids from filter#1=5.2g weight of solids from filter#2=15.9g

## DAILY FIELD REPORT



of 9B Page Project Portland Harbor Stormwater Samp. 1020.005 Project No. 618109 Location WPCL Field Operations Field L Date subject Basin 18 Sediment Trap bottle processing Вy Captured photo of Aller paper to composite bowl. 1238 Holded solids on 2nd pads (1st = 2 and verieved woody debris 18-ST3-R5-NM fering apparatus with UPDI. Equipped apparatus w/ P5 Fischer 300 Ac cellulose filter pad. Poured supernate from bottle eavina roximately looml to assist in re-suspending solic and adheraing to sides bottle \*No recoverable solids. Tave weight of blank wet filte Weight of 1st liller rad=1.89 =quipped apparatus w/ second ter had ΛđÌsuspend solids Mixture noured over 719 ter Dad. 7/16/0 Note: Fotal weight of solids minus supernote + bottle 1336 Filtration complete. Captured photo o Viter Dad rake. Weight of second pad w/ solids = 60.9 9. 1,80 Added solids cake from B5 to composite bow Chottle only w/ minimal solids a Weight of 18-ST3-B5-NM Weight of 18-5T3-B5-NM (after rinsing clean)=104.09 Approximate loss of solids due to adherence = 2.4 g 18-573-B7-RECT tering apparatus w/ UPDI. Cuptured photo 3-B7-REAT. 414 18-ST leaving some fluid to Poured supernate from bottle solids packed against bottom and adhering to sides. 15 P5 (5-10mm) as used in previous filtering proce er pad = 1.89 K No recoverable solid Tave weight of blank we JAB 7-115109 Poured~ 200 ml of mix oitated bottle to re-suspend solid 2 P5 Interpod for filtration. weight of b 2nd Silter pad = 46.2g 44.4 Attachments

### DAILY FIELD REPORT



Page 4B of

578) 2115109 Project No. \_\_\_\_ /020.005 Project Portland Harbor Stormmater Samp. Location WPCL Field Operations Field Lab \_\_\_\_\_ Date \_\_\_\_\_ Subject \_\_\_\_\_ Basin 18 Sed. Trap Bottle Processing-18\_ST3 By \_\_\_\_\_\_ Date 6/8/09 1440 Equipped apparatus with third filter pad. Desett Poured approximai 100 ml onto filter we meight of blank Weight of 3rd filter pad = 7.0g. -1, 8g = Captured photo of filter pads 1-3. 505 Added filter pad cake from 2nd : 3rd to composite bow Remaining solids will be processed on JXB 619109 7115109 Attachments

## DAILY FIELD REPORT



of \_

Page <u>58</u>

Project PORTLAND HARBOR STORMWATER SAMP. 7/20/09 Project No. 1020.005 Date 6/8/09-6/9/09 Location WPCL FIELD OPERATIONS FIELD LAG SUBJECT BASEN 18 SEPTMENT TRAP PROCESSING 18-STBY JXB 0910 PST (All times in PST Remared lab-grade Perafilm & aluminum Poil From microfiltration System, which was initially used to process 18-ST3\_ B7\_RECT sed trap bottleton 6/5/09 (Filtration system was closed off to the Lab's a mosphere overnight of will be used to process the maining Supernale of captured solids from 18-ST3\_B7\_RECT)\_ Equipped Filtration system w/ a new PS, S-10 un qualitative filter. Primed cellulose filter w/ UPDI. Processed remaining Supernatant. Tare weight of wet filter (wet weight of PS Filter (+) UPDI 1.80 020 - Filter dagged. Approx weight of spent filter & trace solids on surface of filter was = -1.89 No recoverable solids. Removed Filter A equipped filtration apparatus w/another PS, 5-10 filter. Processed remaining supernatant (JN) 7120109 ter. Trace recoverable solids on surface of filler 1045 - Clogged secon Weight of spent filter(t) retained solies = -2.39 Tame weight of wet filtr= 1.89 ... Approx weight of Retained solids = 0.59 retained solids on surface on surface of spent filter of filter # a = 10.5. Spent filter Equipped system W/ nowPS Filter Primed Filter & Removed processed the last of the supernation Attachments

### DAILY FIELD REPORT



Page <u>6</u>B of \_

Project PORTUAND HARBOR STORMWATER SAMP. Project No. 1020.005 Location WPCL FIELD OPERATIONS FIELD LAB Date 6/8/09-6/9/09 SUBJECT BASEN 18 SED TRAP PROCESSING-18513 By JXK 1100 - Filter clogged. Retained solids on surface of filter# 3 primarily consist of fine silts a clay particles w/ sman worky organic material. Took a photo of retained processed solids on filter#3 (0288. ing Spent Filter weight (+) recoverable solids = ~2.8g Tare weight of wet Filter = 1:89 Filller# 3 Recovered solids = 1.00 Remaining in sed trap bottle 18-573-B7-RECT ~/ bottle lid. motted solids from B7 into composite bucketusing along stanless spilule. Total gross weight of solids in bottle 18-573\_B7-RECT 1430.30 ~ W cap (minus supernate) Remaining solids were primarily fine silts & clay particles of fine sands & large coarse woody particles. Solids in bottom of sed trap bottle were very compact & dense. Selectively removed large organic woody debus from subscimple material prior to emptying bottle into composite buckets Weight of woody, leafy debris remared from subsample 1125 - Equipped filtration system w/a PS 5-10 um Filter. Romed Filter. Added ~75 ML OF UPDI to sed trap bottle B7-RECT to resuspend 7 residual solids adhered to prove surfaces of bottle Filtered solids. Trace solids left on inner surfaces of wittle Attachments

# DAILY FIELD REPORT



Location NPCL FIELD OPERATIONS FIELD LAG Date 6/5/09-6/9/09 Subject BASIN 13 SED TRAP PROFESSING -18-573 By JX2 (139-760K a photo of spent filters #1#343 "/retained solids, used to TORES Supernale, and removed woody, leadydebris. scrapped solids from surfaces of Filters #24 #34 then added solida to composite budget (0292. jpg). (20) 710009 200-760K a photo of Filtered, remobilized solids on surface of filter (100-94. jpg). (20) 710009 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Filtered, remobilized solids on surface of filter 200-760K a photo of Salter 200-760K a photo of solids in surface of the solids = 12.29 760K a processed solids = 12.29 770K a processed solids = 12.29 770K a processed solids = 12.29 770K a processed s	Project PORTLAND HARBOR STORMU	ATER SAMP	_ Proj	ect No. <u>1020</u>	0.005
Subject BASEN 18 SED TOAP PROCESSTAK 18 573 By JX2 (139 - Tock a photo of spent fillers #1#23 "/retained solids, used to process supernale, and removed wordy, leafydebus. Setupted solids from surfaces of Filters #24 #34 then added solids to composite bucket (0292.jpg). 200 - Tock a photo of Filtered, remebilized solids on surface of filter #1 0294.jpg). (aptured solids were primarily fine silts of clay particle 11 0294.jpg). (aptured solids were primarily fine silts of clay particle 12 0294.jpg). (aptured solids were primarily fine silts of clay particle 12 0294.jpg). (aptured solids were primarily fine silts of clay particle 12 0294.jpg). (aptured solids were primarily fine silts of clay particle 12 0294.jpg). (aptured solids were primarily fine silts of clay particle 12 0294.jpg). (aptured solids were primarily fine silts of clay particle 12 05 Finished spent filter(t) processed solids = 12.29 12 05 Finished processing 18 573-07 RECT 12 05 Finished processing 18 573-07 RECT 14 93 0004y solids such at a solid 12 05 Finished processing 18 573-07 RECT 14 93 Moody solids removed 14 19 0 Moody solids removed 15 7 134.09 - 131.19 = 72.9 Approximate loss of 16 0004 solids for the togeth of solids in 18 573-07 RECT 14 93 Moody solids removed 15 7 10 0 0 11 18 573-07 RECT 17 79 Total weight of solids in 18 573-07 RECT 18 59 Moody solids removed 18 573 A71 P ECT 19 59 Total solids in 18 573 A7 RECT 18 59 Moody solids removed 18 59 Total solids in 18 573 A7 RECT 18 59 Moody solids removed 18 59 Total solids in 18 573 A7 RECT 19 59 Moody solids removed 18 59 Total solids in 18 573 A7 RECT 19 59 Moody solids removed 18 59 Total solids in 18 573 A7 RECT 19 59 Total solids in 18 573 A7 RECT 19 59					
precess supernale, and removed wardy, leafydebins. Seteppied solids from surfaces of Filters # 18 # \$ them added solids to composite burket (0292. jpg). 200- Tooka photo of filtered, remobilized solids on surface of filter \$100-970000000000000000000000000000000000	승규는 성장은 것 같은 것				
surfaces of Fitters#24#29 then added solids to composite bucket (0292.jpg). (0292	1139 - Took a photo of spent Fill	他の世代	W/retain	ed solids,	used to
(0292. jpg). 5 6 (50) 712009 200 - Tooka photo of fillered, remedilized solids on surface of filter 21(0294. jpg). Captured solids were primarly file silts of clay particles 21(0294. jpg). Captured solids were primarly file silts of clay particles 21(0294. jpg). Captured solids were primarly file silts of clay particles 21(0294. jpg). Captured solids were primarly file silts of clay particles. 21(0294. jpg). Captured solids were primarly file silts of clay particles. 21(0294. jpg). 21(0294. jpg). 21(0294. jpg). 21(0294. jpg). 21(0294. jpg). 21(0295. Finished processing 18-573-B7-RECT 21(205. finished processing 18-573-B7-RECT 22(207. finished processing 18-573-B7-RECT 22(207. finished processing 18-572(0)) 22(207. finished processing 18-572(0)					
13 200 - Tooka photo of fillened, remobilized solids on surface of filter 21(0294.; mg). Captured solids were primarily file sills of clay particles 21(0294.; mg). Captured solids were primarily file sills of clay particles 21(0294.; mg). Captured solids of some organic woody particles 21(0294.; mg). Captured solids of solids of solids 21(0) for composite but fet 21(0) for spent filter(t) processed solids = 12.29 70(14) Filter there are a fill 1205 - Finished processing 18-573-B7-PECT 2000	and the second			-p - m - m	<u> </u>
International and the series of the serie	I ware upg).				
International and the series of the serie	220m - Trade a march of Filteries on	1001		CLARDAN	- E L'i Lor
Where cause sands & some organic woody particles services solids Take into composile bucket. Take weight of spent filter(t) processed solids = 12.2g Take weight of wet filter = 1.8g [205 - Finished processing 18_ST3_B7_PECT [205 - Finished processing 18_ST3_B7_PECT [205 - Finished processing 18_ST3_B7_PECT [206 - 131.1g = 131.1g = 12.2g [207 - 131.1g = 12.2g [208 - 131.1g = 12.2g [208 - 131.1g = 12.2g [209 - 131.1g = 12.2g [209 - 131.1g = 12.2g [200 - 131.1g = 12.3g [	and the second se				1. I I I I I I I I I I I I I I I I I I I
Calce into composile bucket Total weight of spent filter(t) processed solids = 12.2g Tare weight of wet filter = 1.8g [~10.4] Filter # #Recarded Sh [205-Finished processing 18_ST3_B7_RECT [205-Finished processing 18_ST3_B7_RECT = 430, 3g (Solids & bottle + Cap) (Solids & Calce + Cap) (So					
Total weight of spent filter(t) processed solids = 12.2g Tare weight of wet filter = 1.8g [205 - Finished processing 18_ST3_B7_RECT 200 Total gross weight of solids in 18_ST3_B7_RECT = 430, 3g (300 as a bottle + cap) (205 - Finished processing 18_ST3_B7_RECT = 430, 3g (300 as a bottle + cap) (205 - Finished processing 18_ST3_B7_RECT = 430, 3g (300 as a bottle + cap) (205 - Finished processing 18_ST3_B7_RECT = 430, 3g (300 as a bottle + cap) (205 - Finished processing 18_ST3_B7_RECT = 430, 3g (300 as a bottle + cap) (205 - Finished processing 18_ST3_B7_RECT = 430, 3g (300 as a bottle + cap) (205 - Finished processing 18_ST3_B7_RECT = 430, 3g (205 - 131, 50 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (100 - 131, 1g = (-2, 9g) Approximate loss of (11, 8g) Woody solids removed (12, 8g) Woody solids removed (13, 8g = -2) 299, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (13, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (13, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (13, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (13, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (15, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (15, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g Woody solids removed (15, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (14, 8g / 18_ST3_B7_RECT = 19, 8g / 18_ST3_B7_RECT (15, 573_B7_RECT = 19, 8g / 18_ST3_B7_RECT (15, 573_B		or game nea	<del>x y plat i i</del>		
Tare weight of wet filter = 1.8 g [~10.4] Filter # #Recorded Solid [205 Finished processing 18_ST3_B7_RECT [205 Finished processing 18_ST3_B7_RECT [205 Finished processing 18_ST3_B7_RECT [205 Weight of solide in [8_ST3_B7_RECT = 430, 3 g (solide & bottle t cap) (solide & bottle t cap) (s		armanad a	$y_{1}\lambda = 12$	24	م نعدنه
(205 - Finished processing 18-573-137-RECT (205 - Finished processing 18-573-137-RECT (201) 35 & bottle + cop) (201) 35					
1205 - Finished processing 18-ST3_B7_PECT (205 - Finished processing 18-ST3_B7_PECT = 430, 3g (Sotids & bottle + cap) (Sotids & dread (Sotids				<u>ر</u>	BROCAREd Shid
Total gross weight of solids in 18 ST3 B7 PECT = 430, 3 g (solids & bottle + cap) (solids & dryed chan) (rinsed & dryed chan)	1205 Envished argressing 18 ST	3_37_2ECT			
height of 18.573.87.RECT = 134.0g (-) Weight of 18.513.132.RECT/(cap = 151.1g (bottle only w/capit residual) (rinsed & dryed cleans) (rinsed &					
height of 18.573.87.RECT = 134.0g (-) Weight of 18.513.132.RECT/(cap = 151.1g (bottle only w/capit residual) (rinsed & dryed cleans) (rinsed &	Total gross weight of solute in 18-5	T3-B7-RECT	- = 430,3	<u>.</u>	
height of 18.573.87.RECT = 134.0g (-) Weight of 18.513.132.RECT/(cap = 151.1g (bottle only w/capit residual) (rinsed & dryed cleans) (rinsed &	(Solids & bottle + cap)				
(bottle only w/capit residual) (rinsed & dryed clean) (rinsed & dryed clean)	Woright of 18 ST3 B7 RECT = 134.04 (	-) Weight of	18_5T3_B	7_RECT May	p = 131.5
1 => 134.0 g - 131.1 g = [~2.9 g] Approximate loss of f		° (ri	nsedadn	red cheans)	
toross wetweight of solids in 18 ST3_B7_RECT 430.39 - 131.29 299.29 => 299.29 + 299.29 => 299.29 - 131.25 299.29 => 299.29 - 131.25 - 131.	1 = 7134.04	- 131, 1a =	~2.94	Approxima	te loss of
430.3 - 131.8 2.99.29 => 299.89 + 135.53 - B7-D ECT - 131.8 2.99.29 => 299.89 + 100-57 - 131.25 - 131.87 - 131.87 - 131.87 - 131.87 - 131.87 - 131.87 - 299.29 -		<b>.</b>	بر <u>بر الم</u>	solids fre	e to adherence
4/30.3 - 131.2 299.29 => 299.29 + 1.59 Total weight of solids 13-573-B7-DECT - 13-573-B7-DECT - 1.59 Total solids retained - 1.59 Total gross weight of solids lost=	bross wetweight of solids in 18 573.	BJ_RECT	14.89	woody sol	ids removed
299 & g => 299 & g + 1.59 Total solids retained on fillers # 292 OF Pizolon + 200-57 Total gross wet weight of solids lost= Total gross wet weight of processed - 300, 5g (-) Total gross weight of solids lost=			17.70	Totalwe	ight of solids
Total gross wet weight of processes - 300, 5g (-) Total gross weight of solids lost=	- 131.2g			) remar 13-51	3-B7-RECT
Total gross wet weight of processes = 300, 5g (-) Total gross weight of solids lost=					
Total gross wet weight of processes = 3007.5g (-) Total gross weight of solids lost=			- V		
			529 7120109		
	Total area wet weight of armend	- 300,54 (-	) Total arm	as weight a	of solids lost=
Attachments solids from 18-ST3 87. RECT 3 . => 30015-7	Attachments solids from 18-ST3.87-RECT	and a second		3-50,3	
	stal wet weight of processed solid	stor 18-513-87	-5-9-12	25-25 (	TOB 7-1201 9

#### DAILY FIELD REPORT



Page <u>8B</u> of <u>9B</u>

Project <u>PORTLAND HARBOR STORMWATER SAMP</u> Project No. <u>1020,005</u> Location WRL FIELD OPERATIONS FIELD LAB Date <u>6/8/09-6/9/09</u> Subject BASIN 18 SEDIMENT TRAP PROCESSING-B-SB By JXB

1315 All times Dr PST

GRE FIZION

Equipped microfiltration system W/ a PS, 5-10 un qualitation cellulose filter, Primed filter W/ UPDI. Win use the same Filtration apparatus employed by AJA to process other 18-513 sed traps. Filtration system was covered W/ aluminum Foil & lab grade Peratilm overnight in order to close system off from the Lab's atmosphere. Filtration system was not decoved between bottles because all solids being processed will be incorporated in the final composite for 18-513.

1320 - Began processing 18-ST3-B8-SQ sed trap bottle supernatant after taking a photo adjacent to the dry equase board. 18-ST3-B8 SQ bottle was deployed between 1/14/09 to 6/4/09 W/an observed total solids accumulation of ~1.2" (0296.jpg & 0297.jpg)

Tave weight of spent wet filter = 71.8 g (wet weight of PS Filter + UPDI)

1335 - Processed all supernate from 18-573-B5-5Q set trap bottle. Minor solids retained on surface of filter. Captured photo of spent filter w/minor solids (0299.jpg.). No recoverable solids wetweight of spent filter w/minor solids =~1.8-1.9q. Removed spent filter.

Total gross weight of solids in bottle = 389.83 / 18-ST3-B8-SC w/ cap (minus supernationt)

Attachments

#### DAILY FIELD REPORT



of 9B

Page <u>9B</u> Project No. 1020.005 Project PORTLAND HARBOR STORMWATER SAMP Date 6/8/09-6/9/09 LOCATION WACL FIELD OPERATIONS FIELD LAB SUBJECT BASEN 18 SEDEMENT TRAP PROFESSING-19-513 BY JXO, PTB Sectiment 1351-Removed 14 large woody materia SUSTACE in base of bottle. Weight of material removed Sam has no discernible ocor other than natural organics. Photo compacted surface inside of bottle (0305.jpg Emptying into composite remaining battle ma silt and day ted fine to medium sands particles and is row organic debie. Photo of removed large wood Small Woock 0306. 2/00 ml UPDI water to resuspend material adwered walls 407-USer better Equipped system with new PS (5-10m) filter and processed remaining solids with the new UPDI. JUD 9121109 115.30 8553\_B8-50 with cap and trace golids Rottle ~1 Tare-weight of empty bottle used for 18-573-BB-SQ [ 109.7 5.60 residua SON'DE IOST w/ cap. (Bottle was rinsed, cleaned and dried sediment a constation on ust adec tration. Wexhed accumulated mont In of spent filter with solids/030/21099 composite bucket bomogenized into bucket. Weighed buchet with solids wo speaks (1 lager (small) + homogenized composite composite (0308. homo-venized sample jars the duplicate starting for 18-5T3 composite and with the 28 oz jurs ant alternating 50005 from the buchet into 4 oz. wis Using the 19-573 and avoliante jars then moving to (12 7. 4 02 was for each the 19-513 802. IN and same filling method. duplicate in total. Excess material in composite buchet Composite and PTB\_ Tised to fill (4) 8 oz. ARCHIVE and 114 oz. ARCHIVE INS. placed in fridge. Weight of empty buchet with solids Attachments residue and two spoons (lared timal) 11.27 kg Photo

# **DAILY FIELD REPORT**



Page	of
Project PORTLAND 14ARBOR STORMWATER SAMP Project No. 102	a ani-
[1] 2년 1월 20일 - 1월 20일 - 1월 20일 전에서 전문 가격 가격에서 가격에 가격하는 것을 수 있는 것을 하는 것을 수 있다. 것을 하는 것을 수 있다. 것을 하는 것을 하는 것을 하는 것을 하는 것을 하는 것을 수 있다. 것을 하는 것을 수 있다. 것을 하는 것을 수 있다. 것을 하는 것을 수 있는 것을 수 있다. 것을 하는 것을 수 있다. 것을 수 있는 것을 수 있다. 것을 수 있는 것을 수 있는 것을 수 있다. 것을 수 있는 것을 수 있다. 것을 수 있는 것을 수 있는 것을 수 있는 것을 수 있는 것을 수 있다. 것을 수 있는 것을 수 있는 것을 수 있는 것을 수 있다. 가격을 수 있는 것을 수 있는 것을 수 있는 것을 수 있다. 것을 수 있는 것을 수 있다. 것을 수 있는 것을 수 있다. 것을 수 있는 것을 것을 수 있는 것을 것을 수 있는 것을 것을 것 같이 않는 것을 것을 수 있는 것을 것 같이 않는 것 같이 않는 것 같이 않는 것 않는 것 같이 않는 것 않는 것 같이 않는 것 않는	
Location WPCL FIEIN OPERATIONS FIELD LAB Date 7/2/10	<u> </u>
Subject 18_ST3 SED. TRAP PROCESSING ADDENOUM BY JX3	
\$18_ST3_B3_RECT	
Note: The mass (captured solids minus super)	note) of
13-ST3-B3-RECT sed trap bottle was not docu	mented
during the filtration process. Therefore, the to	
solids contribution, to the overall composite for	18-ST3
was back-calculated using the total gross proces	
weight of the composite based on the the contribut	tions from
the other 13-ST3 sed trap bottles (B1, B2, B4, B	
So Sed Trap Prototypes - 19-ST3 Total Processed Solids Contributions - Filtered	
Net Weights (a):	
BI_NM= 1138,6 g Filtered Solids Contribution	
82-WM= 652, 80 from 18-573_83_RECT =	3903,84
	402.5g
$BS_NM = S9.1g$	
	501.39
B7 - RECT = 347.4 g	······································
BB-SQ = 241, 2g + Hin 9 Constant	Total Solil
3402,5 g naterial was discarded from	=> bybottle
15-ST3-83-RECT CONTRIBUTION	
18 ST2 france a mail - cizi Iriza	
18-ST3 Gross composite weight = 5,13 kg [ST30 g]	
(Solids + stainless bucket + ax mixing spaces)	
18-ST3 bross composite Weight 5730 g	
Minus buitet + mixing spans - 1226.29	
Allachmenis 3903,84 (-) 93,84 residual ma	lenal lost

\* 18-573 Total solids submitted for analysis= 3860.0

EN	CITY OF P IVIRONMEN Water Pollution C 6543 N. Bur Portland, OR	TAL SER	VICES		
	NT TRAP SAMP	LE PROCE	SSING DATA	SHEET	
Project Name: PORTLAND HARBOR S	STORMWATER SAMP.		Project Number:	1020.005	
Sample Processing Conducted By: LAP AJA	Sample Pt. Code: 18_574			essing Date:	
Basin: 18 R&D Winter 2009 Pilot Study		F 466	Subbasin: N/A	,	**
Sediment Trap Location Description/Ad 4033 NW Ye		-			
	ENT TRAP PROCE				
Ilter brand, grade, porosity in microme	d Harbor, 90-millimeter (mr Operations (FO) Standard C eent for Phthalates Technic ters (µm) and material (i	Operating Procedu cal Memorandum - e.g., Fisher Scier	ire (SOP) 5.01b & Ev - September 18, 200 Itific, qualitative P2, 1	aluation of Mic 7]. ~5 um cellulos	rofiltration
FISHER Scientific, 9	valitative P5;	5-10 m	n cellulos	e filter	Paper
ediment Trap Bottle ID:  &_ST4	[_ B   _ RECT	Sediment Trap	Bottle ID: 18	SF4_B2	-WM
otal Est. Depth of Accumulated Sed in			n of Accumulated S		and the second second second second
ample Processing Start Sample ime: 0900 psr	Processing End	Sample Proces Time: 1211		mple Process ne: 1249	sing End PST
		Number of Filte		PS Filt	en .
st. total volume of Ultra Pure			of Liltro Duro		
l used to remobilize adhered ormwater solids within bottle in illiliters (mL):	40	Est. total volume DI used to remob stormwater solids milliliters (mL):	ilize adhered within bottle in	× 50 2	•
l used to remobilize adhered 🧼 🏁 [	40	DI used to remob stormwater solids milliliters (mL): Tare Weight [jar a $(\mathcal{M} \ i d)$	ilize adhered	Bottle1 in gran	•
I used to remobilize adhered cormwater solids within bottle in illiliters (mL): are Weight [empty jar in grams (g)]: 200 (w/ (td)) ewatered/Filtered Sed. Weight (g): 360, ample Processing Notes/Comments:	40	DI used to remob stormwater solids milliliters (mL): Tare Weight [jar a (m/ i:d) Dewatered/Filtere Sample Process	ilize adhered within bottle in and filtered sed. from ed Sed. Weight (g): sing Notes/Comme	Bottle1 in gran	ns (9)]: <i>668,6<sub>6</sub></i>
I used to remobilize adhered ormwater solids within bottle in illiliters (mL): are Weight [empty jar in grams (g)]: 200 (w/ \id) ewatered/Filtered Sed. Weight (g): 360,	40	DI used to remob stormwater solids milliliters (mL): Tare Weight [jara (M 1:8) Dewatered/Filters Sample Process Filtening only on comsist	ilize adhered within bottle in and filtered sed. from ed Sed. Weight (g):	Bottle1 in gran	ns (9)]: 668,6 <sub>6</sub>
I used to remobilize adhered cornwater solids within bottle in illiliters (mL): are Weight [empty jar in grams (g)]: 20 (w) (id) ewatered/Filtered Sed. Weight (g): 360, ample Processing Notes/Comments: Material primarily com very fine Stift & organ sual Description of Final Composite Sa	40 ml 308.3 3 712/01 3 grams 1575ts of ric material.	DI used to remob stormwater solids milliliters (mL): Tare Weight (jara (M i:d) Dewatered/Filtere Sample Process Filtening only end consist consist organic	ilize adhered within bottle in and filtered sed. from ed Sed. Weight (g): sing Notes/Comme was very filten use of Sands, s material	Bottle1 in gran 15.3 g Ints: fac sit – d. Solia si It & s	ns (g)]: 668,60   s 2014e
I used to remobilize adhered cornwater solids within bottle in illiliters (mL): are Weight [empty jar in grams (g)]: 200 (W (td) ewatered/Filtered Sed. Weight (g): 360, ample Processing Notes/Comments: Material primarily com very fine Stift & organ sual Description of Final Composite Sa SC Time (time composite Jar is Total	40 ml 308.3 3 772/01 3 grams 1515ts of ric material. IDewatered/Filtered Se 15 (9): 492.240	DI used to remob stormwater solids milliliters (mL): Tare Weight (jara (M i:d) Dewatered/Filtere Sample Process Filtening only on consist organic 2 of 2 Weight Weight in Filelog	ilize adhered within bottle in and filtered sed. from ed Sed. Weight (g): sing Notes/Comme was very filten use of Sands, s material.	Bottle1 in gran 15.3 g ints: fu st $d \cdot Solia$ si it L s 25Aml LC A ected (number $6o \neq far$	ns (g)]: 668.60 I s Come Weessiw Const

S.\FIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS doc

Describe:

PAGE 1 of 2

· · · · · · · · · · · · · · · · · · ·	[8_ST-]un m
ENVIRONMEN Water Pollution 8543 N Bi	PORTLAND ITAL SERVICES Control Laboratory Bunington Ave DR 97203-6452
INLINE SEDIMENT TRAP SAMP	PLE PROCESSING DATA SHEET
Project Name: Portland Harbor Stormwater	Sung Project Number: (020.005
Sample Processing Conducted By: AJA / LAP 7124104 18-574	Removal Date:     Processing Date:       6409     61009
Basin: 18 R+D Winter 2009 Pilot Shuttansen ID: AAT	- 466 Subbasin: N/Al
Sediment Trap Location Description/Address: 4033 NW Yeon Ave	
	ESSING/FILTRATION NOTES
Field Operations (FO) Standard	mm) stainless steel filter support w/conical glass microfiltration system d Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration nical Memorandum – September 18, 2007].
Filter brand, grade, porosity in micrometers (µm) and material Fisher Scientific, qualitative, PS 5-101	(e.g., Fisher Scientific, qualitative P2, 1-5 um cellulose filter paper)
Sediment Trap Bottle ID: 18 -5TH - B3 - 5Q	Sediment Trap Bottle ID: 18 -574 - 84 - 22 -
Total Est. Depth of Accumulated Sed in Bottle (inches): $\mathcal{O}, 2$	Total Est. Depth of Accumulated Sed in Bottle (inches): $\int \mathcal{D}''$
Sample Processing StartSample Processing EndTime:0941954Time:1010p54	Sample Processing Start     Sample Processing End       Time:     (020)
Number of Filters Used: 1 p5 (5-10 Jum)	Number of Filters Used: 5 (p5 5-10 mM)
DI used to remobilize adhered stormwater solids within bottle in 60ml milliliters (mL):	Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in 90ml milliliters (mL):
Tare Weight [empty jar in grams (g)]: $215.65$ weight $31$ in $35$ sets -212 in $72$ in $7$	Tare Weight [jar and filtered sed. from Bottles] in grams (g)]: 52% 69%
Somelo Desessaring Mater /O-monthle	J "(
Used only One P5 Filter. Trace, (0.2") amount of accumulated set made for a very easy filtration, Sandy Silt w/ some small woody inclusions.	Sample Processing Notes/Comments: Filtered all supernate through first filter plus some of sediment slurry. Used 4 more filters (5 total) for remaining sluery t rises. Silt + Clay W/ Sandy component, quite dry sample.
	, clay/silt mixture w/fine grained sand t. Odor present - Decomp. Organics + Some hydro-a
COC Time (time composite jar is Total Dewatered/Filtered S capped): 13.5 grams (g): 49.2,2.4	
Sample ID: FO095695	sample collected? Y/V DUPLICATE ID
Duplicate Sample ID on COC Any deviation affly FO number sticker Describe	ions from standard operating procedures? Y/

S:\FIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc

;

v

1<sup>2</sup>

PAGE Z of 2





	ORTLAND HARBOR STORMWATER SAMP	Project No. 1020.005
	WPCL Field Lab	Date $6 - 10 - 09$
Subject _	Basin 18 Sed Trap Processing	By <u>LAP</u>
tw	e in PST	
	Gat in last of the Last of at	- Cre ovo cesciono
	of 18-STA-BI-RECT.	
	Sample bottle pre-process	
		リア
000		
0400	Install new P5 (5-10 pm)	HIPER & pequi
	processing of 18-ST4-BI	-HECT
0911:	Filter #1 cloaned - no re	coverable solids.
	Filter #1 clogged - no re installed new PS filter 2	resumed processing
	of supernate	
0920:	Cita to 1 and Jak	20 Sana call anda an att
<u>0920</u>	Filter # 2 clogged - ver of silt & overanic materi	
	h	into sample jar.
	Installed new P5 Alter	primed of UPBI
	(vitra-pure dr-mater) & Vesumed	filtration.
<u></u>		
0931	tiller # 3 clogged - simal	
	& organic debis recovere surface & scraped into St	a trong filler
	New P5 filter & vesumed	
Attachme	지수 집 外間 이 눈 밖에 가려고 가려 관하지? 김 강아가 감독이 나 감독하는 것 같아요. 가지 수가 하는 것 같아. 가지 수가 하는 것	and Alexandra and Alexandra and Alexandra

## DAILY FIELD REPORT



Page 2 A of 4 print
Project PORTLAIND HARBOR STORMWATER SAMP Project No. 1020.005 Location MPCL Field Lab Date 6-10-09 Subject Basin 18 Sed. Trap Processing By LAP
0950: Filter # 4 clogged: Large amount of clay, silt & organic material recovered from filter surface. Numerous small red worms observed (sp. tubifex tubifex?)
Installed ven P5 filter & resumed processing of solids 1000: Filter # 5 clogged large amount of
Scraped Silt & organic material recovered from with sample) filter sirface (photo # 316. jpg). Installed Jar New P5 filter & resumed processing 1011 Filter # 6 clogged. Recovered large amount of silty organic material, dark
brown in color from filter surface - scraped into Sample jar. Installed New? P5 filter & added approx 120 ml VPDi to Sample bottle to mobilize remaining Solids.
1040 Filter # 7 clogged Recovered moderate amount of silt material w/ some fine Sands from filter Surface - Scraped into sample jar Installed per P5 filter
20 ml UPBI to sample pottle to mobilize Attachments Splids.

## DAILY FIELD REPORT



<u>A</u> of <u></u> 3 Page Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020 005 Date 6-10-09 Location MPCL Field Lab subject Basin 18 Sed. Trap Processing LAP Bv 114 . 11- 9 cloaged Removed Smail tilter tra silt from filter mint 04--Surface - scaped into sample jar Photessinn ECT 116 0 complete. 29 ~140 me UPDi used filters summer User 308.3 Wergh emptes Ù d ian iar = 668.6 g Hion de watered / Filtered weight otal (BI) Splids = 360,3 grams 18-STA-BI-REC Photo of vate 19 - ST4 - B4 - NM filtrate compared with Attachments

## DAILY FIELD REPORT



174 (15)

Page $4A$ of $4R$
Project PORTLAND HARBOR STORAMWATER SAMP. Project No. 1020.005 Location WPCL Field Lab Date 6-10-09 Subject Basin 18 Sed. Trap Processing By LAP
1200: Set vp microfiltration system for
18-5'T4-B2-WM. Installed ven P3
(5-10 mm) filter, primed of UPDi
1211 : Begin processing spenate Photo of sample bolk pror to processing 326-jpg
$\frac{1}{2}$
Added approx - 50 ml UPP: to mobilize Sample bornets mobilize solids. (Filtering
has gone very fast - will only use
one filter for whole sample bottle).
Photo # 328, pg. Recovered five sands, silt 2
some organic material from filter - swaped wito jar
1249: Processing of 18-ST4-B2-MM is
complete at this point.
Summary: (1) P5 firter used; = 50 ml UPDi used.
그녀가 다 아이에 있는 것 같은 것 같아. 이는 아이에 방법에 가는 것 같아. 것은 것 같아. 한 것이 가 많을 수 있는 것을 못했는 것을 수 있는 것을 못했다. 것을 것을 하는 것을 했다. 것을 것
Weight of jar including lid + B1 & B2 contribution = 683.9
$B1^{2}B2  Contribution = 683.9$
Weight of jar (+ lid) w/ Bl contribution = 668.6 or
Y Bl contribution = 668.6 g
Total de watered / filtered weight of
(B2)  solids = 15.3  solids
* Refer to AJA's notes, page 3B, for further compositional

Attachments information

## DAILY FIELD REPORT



7-124/05 \_\_\_\_\_ of \_\_\_\_\_\_ Page 16 Project Portland Harbor Stormwater Sump Project No. 1020.005 Date 6/109 Basih 18 Location WPCL Field Lab, subject Filtration notes 18\_574\_83184 By AJA ATTICS & PST 0929 In WPCL to filter 18-5T4\_B3 + BY, (LAP concurrently filtering B1 + B2) Set up ap apparatus 90 mm 55/glass microfittration set Everything deconned to SOP 701a methods Deviation occured in the form of solvent (Acetone -> methanol has been which past processing Of dattemented in customer Lida Shef Known to Photographed Bottle 18 5T4 SO: 2941 / 314 JPG contents into filtration Poured apparatus using New P5 (5-10 MM) cellulose One filter of Gattle fit through Contents tive seds from inside residual Used ~60 m rinse to walls-04and Cilt 1010 Filter, clogaed-only One C1 for intre Her used 317. J.R.G. Sample Composed B3 sample Photographe seds with course inclusion of the anane and morganic, Composited Ora tared 607 Amber Toned Jar + B3 seds (5)912. . hr seds B3 3.5 Attachments

DAILY FIELD REPORT



TRB Page <u>2.6</u> of <u>46</u> 117
Project Portland Harbor Stormwater Saunp Project No. 1020,005.
Location WPCL Field Lab /Basin 18 Date 6/10/09
subject 18-ST4 filtration notes. By AJA
1020 Photographed bottle 18-5T4-B4 NM (319 JPG)
Renewed P5 Filter, begin Eiltering sample
1027 Filter 1 dry. Fine seds/silt/clay w/ Some
organic Woody material (small) and g red
Worm Photographed 320 3pg Composited and renewed P5 Filter (2nd) residual of
1033 Filtering a slurry of seds and supernate water.
Show going from here on out
1038 Filter 2 dry, Fines Composited seds into sample
Jar Renewed Filter with 3rd P5 (5-10 MM)
filter continued fultering:
1050 Filter 3 dry. Sed cake wery fine silts clay
and fine grain sonts composited, replaced
Cilter with 4th p5 (5-10 MM) filter
1120 Filter 4 dry photographie 1 322. JPG)
1120 Filter 4 dry photographic (322. JPG) Composited and renewed filter (P5. 5-10mM)
Centimed filtration (5= filter)
Used 50 ml MPDI to rinsp poside of
bottle
1150 Used ~ 40 ml more uppI (90ml total) to
rinse sides of battle and filtration cap.
1235 Fifth filter dry Silty, Sandy with very small
Woody debris on top. Photographed 327. Spg Composited
Attachments
Attachments
人名法 化过程模拟 网络圣人 人名法格弗尔姓氏 人名布兰 医外侧的 化拉丁乙基基 化过度分解 医外侧 医外侧 计环境 医外外的 经转换 的复数形式 医鼻腔神经

# DAILY FIELD REPORT



Page 36 of 46
Project Bittund Harbor Stormwater Samp Project No. 1020.005
Location WPCL Field Lab / Brisin 18 Date 6/10/01
subject 18-574 Filtration Notes By ASA
1235 cont Fihel wt Jar+ B3+B4 - 3286 g
Jar + B3 = 215.6g
BY 52ds = 13.0g
As per convo with PTB + PHA, will composite
seds from B3 + B4 (currently in an 802 far)
into the 1602 jar that already contains
B1 + B2 seds (B1=360.3g, B2=15.3g From LAP) Composite
of all 4 Bottles will be homogenized in this 1602
Jur, stored in the fridge until analyte priorities are
Sorted out by PHA
Photographed the two subcomposites (B1+B2 and B3BY)
prive to Final composite (330, Jpg) #
Bi+2 sub composite considerably wetter them
<u>B3+4</u> sub composite,
(omposited the Soz Sar (B3+4) into
the 16 OZ Jar, photo graphed. 331, JP9
Mixture with Fine grained Sands throughout.
Oder is strong decomposing organits
with slight hydro carbon oder.
1315. Final Composite Capped for vetridgerated for
Storage.
Attachments

# DAILY FIELD REPORT



	Page 46 of 46 12
Project Portland Harbor Stormwater Samp Location WPCL Field Lab / Basin 18 Subject 18-574 Filtration Notes + Compositing Notes	Project No. <u>/020-005</u> Date <u>6//0/69</u> By <u>AJA</u>
315-1-5021224	
<u>B15 cont</u> Final B1,2,3,4 comp wt =	<u>305,3 g pr tare</u> <u>492,2 g sect total</u>
Note that during final composition	ng Some Seeds
which were added to the bottom	a of the filtration
84. States and the second s	y cano trom
Final Wt of 8.02 jor - tare wt Seds lost during Comp	$\frac{212.5}{212.1.5}$
Sees cost airing comp	
Attachments	

	na i an	•	1. (1.45) 1. (1.45)	= 5, 3, 5 7E   0F 2
ENVIRONME Water Pollut 6543 N	DF PORTLAND NTAL SER ion Control Laboratory 1. Burlington Ave 1. OR 97203-5452	VICES		
INLINE SEDIMENT TRAP SAI	MPLE PROCE	SSING DA	<b>VIA SHEET</b>	
Project Name: Portland Harbor Stormwater	Samp	Project Num	ber: 1020.00	05
Sample Processing Conducted By: Sample Pt. Code:	Removal Da		Processing Date:	
Basin: 18 RED Winter 2017 Finit Hansen ID: AA	x 761	Subbasin: N		· · · · · · · · · · · · · · · · · · ·
Sediment Trap Location Description/Address: 3250 Ni 4 different sediment trap designs installed Ups 1st sed trap pair installed ~5.0' instream from Mitchambe (wide onerrow mouth bottles)	1 ci llabanci ()		<u> </u>	pipe p, -stelupstream
SEDIMENT TRAP PRO	DCESSING/FILT	RATION NO	TES	
Filter Equipment/Method: Portland Harbor, 90-millimeter [Field Operations (FO) Stand Equipment for Phthalates Ter	ard Operating Proced	ure (SOP) 5.01b	& Evaluation of Mi	filtration system
Filter brand, grade, porosity in micrometers (µm) and mater Fisher Scientific, qualitative PS 5-10.4m	rial (e.g., Fisher Scie	ntific, qualitative	P2, 1-5 µm cellulo:	se filter paper):
Sediment Trap Bottle ID: /8 _5[5 _13] _ UM -/			} -5T5 - B2	-NM -
Total Est. Depth of Accumulated Sed in Bottle (inches): Tra	CC Total Est. Dept	h of Accumulat	ted Sed in Bottle	(inches): (),5
Sample Processing Start j Sample Processing End, Time: 0924 PST Time: 0935 PST	Sample Proces Time: 095		Sample Proces	ssing End
Number of Filters Used:   p.5 (A)	Number of Filte	ers Used: 4	pS(AP)	
Est, total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 50 mL	Est. total volume DI used to remo stormwater solid milliliters (mL):	bilize adhered s within bottle in		
Tare Weight [empty jar in grams (g)]: 200, 8	Tare Weight [jar	and filtered sed.	from Bottle1 in gra	الجسر ا
Dewatered/Filtered Sed. Weight (g): 1.4 Dewatered/Filtered Sed. Weight (g): 23.8 Dewatered/Filtered Sed. Weight (g): 23.8 Dewatered/Filtered Sed. Weight (g): 23.8 Dewatered/Filtered Sed. Weight (g): 23.8 Sample Processing Notes/Comments: Guily 1 filter used. Trace solids in bottle filtered of the filtered			firesilts	
Visual Description of Final Composite Sample: Very dark brown with predominant clay characteristics and some				ud some
COC Time (time composite jar is collected (number, size, full or capped): $1555$ psr $163.4$ $g$ $163.4$ $g$ $163.4$ $g$ $1555$ psr $15$ $100$				ber, size, full or
Sample ID: FO095696 Duplicate sample collected? Y/ DUPLICATE ID				٦
Duplicate Sample ID on COC: NA Any dev	iations from standa a:	rd operating pr	ocedures? YØ	

10 StS

S:VFIELDOPSVFORMSVInline Sed Trap Sample Processing FDS.doc

....

ENVIRONMEN Water Pollution 6543 N B	PORTLAND TAL SERVICES Control Laboratory urlington Ave R 97203-5452		
INLINE SEDIMENT TRAP SAME	LE PROCESSING DATA SHEET		
Project Name: Portlund Harbor Stormwater	Samo Project Number: 1020.005		
Sample Processing Conducted By: Sample Pt. Code:	Removal Date: Processing Date:		
Basin: 1840 Winter ZOOT Files Hansen ID: AAX	26 Subbasin: NA		
Sediment Trap Location Description/Address: 3250 NW See PAGE 10FZ			
SEDIMENT TRAP PROC	ESSING/FILTRATION NOTES		
Filter Equipment/Method: Filter Equipment/Method: Filter brand, grade, porosity in micrometers (um) and material	nm) stainless steel filter support w/conical glass microfiltration system Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration cal Memorandum – September 18, 2007].		
H Sher Duensitic qualitative PS, 3-10.4m	cellulose filter paper		
Sediment Trap Bottle ID: 18 -515 - 83 - 5Q	Sediment Trap Bottle ID: $18 - 575 - 64 - Rect$		
Total Est. Depth of Accumulated Sed in Bottle (inches): 0.2	Total Est. Depth of Accumulated Sed in Bottle (inches): 0.9		
Sample Processing Start Time: 115pst Sample Processing End Time: 1229 P5T	Sample Processing Start Time: 1242 Port Time: 1555		
Number of Filters Used: 5 6	Number of Filters Used: 12 p5 @		
DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): $^{\circ}$ $\mathcal{O}$ $m_{\rm L}$ $^{\circ}$	Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 65 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5		
Tare Weight formpty jar in grams (g)]: 226. De jer+filterel sel from title ) + tottle 2 Dewatered/Filtered Sed. Weight (g): 28 24.6 q	Tare Weight [jar and filtered sed, from Bottle1 in grams (g)]:250.6 Dewatered/Filtered Sed, Weight (g): 113-66		
Sample Processing Notes/Comments:	Jor weight ind. I id and sed. weight from all 4 bottles: 3642 gr		
First 2 filters had no recoverable solids. / First 4 filters had no recoverable solids. Super			
Material on last 3 filters were similar in had difficult time filtering through. Final 8 filters amposition consisting of fine silts and sands with had recoverable solids. This sample must have had a processing time compared to bottles 2+3 the processing time. Compared to bottles 2+3 the processing time. Compared to bottles 2+3 the processing time.			
Visual Description of First Comparis Council Very dark bro	small woody debris very date brown in color. invir with predominant cley characteristics and is bedy provided and said grains. Slight anoxic organic ador.		
COC Time (time composite jar is composite jar is $(555 \rho_5 + (9^{10} \rho_5)) = (63.4)$			
affix RO numbe	mple collected? WD DUPLICATE ID		
Duplicate Sample ID on COC: NA Any deviation	ns from standard operating procedures? YN		

S.VFIELDOPS\FORMS\Inline Sed Trap Sample Processing FDS.doc

# DAILY FIELD REPORT



.

Page of
Project Partland Harbor Stormwater Samp Project No. 1020.005 Location WPCL Field Lab/Basin 18 Date 6/10/09 Subject Basin 18 Sediment Trap Processing By PTB
0855 PST Assembled fully deconned (as per 30P 7.01a) filtration apparatus. (Note: Decon included acetone and methanol rinses, a deviation from SOP 7.01a, as approved by customer Linda Scheffler for high priority analytes PCBs and FATTS and given precedent the previous field documentation Filtration apparutus is 90 mm diameter and a new PS (5-10 pm) filter was placed on setup and fully wetted using UPDI water and pulled via suction using a peristaltic pump to eliminate creeses.
0910 Photographed bottle 1 of site 18-575, designation 18-575-BI-WM (0'SI2.jpg) Weighed empty, clean g oz. sample jar 1200.85) to be used as composite of the fair bottles from 18-575. 0924 Began filtration of 18-575-BI-WM. All supervise and solids
jan through filter: used 50 ml of UPDI water to remove trace solids adhered to bottle walls. 1st filter is final filter used. 0935 Photo of 1st + Final Filter (0313, jpg). Added material accumulated on filter to empty, clean 8 or. cample jor that was tared. Weight of sample jor of material from 18-st5-81-WM of lid [202.2g]
0950 Pre-process photo of bottle 2 of site 18-555, designation 18-55-82_NM. (0.315-jpg). Replaced filter with new P5 (5-10mm) filter, 1st filter for this bottle. Wetted filter w/ suction using UPOI water. 0958 Began filtration of 18-555-82-NM. Supernove has strong
0958 Began filtration of 18-ST5-B2-NM. Supernode has strong decomposing organic smell. 1st filter clogged with trace solids unrecoverable. Attachments

# DAILY FIELD REPORT



200

Š.,

/

.

	Page <u>2</u> of <u>6</u>
Project Portland Harbor Stormwater Samp	Project No. 1020.005
Location WPCL Field Lab/ Basin 18	Date 6/10/09
subject Basin 18 Sediment Trap Processing	By PTB
	~
1008 Placed 2nd filter on apparatus and a P5(5-10,4m) Reached the majority	of solids in bottle
with this filter, mostly fine silts an	el sands, less noticeable
1016 pranic smell. 2nd tilter photo 0318	ipg. 2nd filter added
to composite jar. Weight of composite jurt	hel + Bottlet + 2nd filter f- Pils
1022 Placed 3rd P5 (5-10 ym) filter on app after porring out filtrate to prevent o	poratus and continued filtration
1034 3rd filter clogged. All supernute has been	processed. Nect filter will
1034 3rd filter clugged. All supernote has been be with 50ml of UPDI water to resusp	end alhered material.
1038 Placed 4th P5 (5-10mm) filter on apparatus	s and continued filtration
walls of filter wp removed with neglight	
from squirt bottle (teflon).	
1047 All water filtered through. Solids from 4th	r Final filter added to
composite jure All solids that were recover	
grain size composition mostly fine sands an	d silts, RШa 2-726
Weight of composite jour of cap + Bottle 1 +	23.8 g from bottled
1110 Pre-process photo of bottle 3 of gite 18.	- 515, designation 18_555_ B3-5Q
(0321.jpg) Replaced filter of new P5	(5-10 um) filter 1st filter
for this bottle. Welted filter w/ suction using	ng UPDY water
	of the bar the o
1115 Began filtration of 18_ST5_B3_SQ. 51 orange colored floc floating in the supernor	Le Elter #16 changed
w/ no recoverable solids.	IN FILLES TI Clugged
Attachments	

## DAILY FIELD REPORT



Page of
Project Portland Harbor Stormwater Samp Project No. 1020.005
Location WPCL Field Lub/ Basin 18 Date Date 6/10/09
Subject Basin 18 Sediment Trap Processing By PTB
1125 Placed 2nd 195 (5-10 um) filter on filtration set-up and
continued filtration. Filter 2 clogged w/ no recoverable
solids
$\frac{1}{1} \frac{1}{2} \frac{1}{1} \frac{1}{2} \frac{1}$
1134 Placed 3rd P5 (5-10 mm) filter on filtration set -up and
continued filtration. 3rd filter clogged, fine silts and
Gands with minimal organics accumulated. Material added
to composite jor. Pine needle found on surface of filter
added to composite jor.
1145 Placed 4th P5 (5-10 cm) filter on filtration set-op and continued
filtration. 4th filter clogged with last of supernatant. Material
is similar to that of 3rd filter. Photo #0324.jpg.
1200 Aelded material to composite jar.
206 Placed 5th P5 (5-10 um) filter on filtration set-up and continued
filtration of 50m of UPDI water to resuspend the adhered
solids on the inside walls of the bottle. Used squirt bottle
to remove solids from walls of filter cup/retion) JOB 7/28107 1229 Added masterial to composite jor. Material similar to filters # 304.
1227 Added material to composite jor. Material similar to tilters # 3 + 4.
Weight of composite jur w/ lid + Bottles 1, Z+3 = 250.6g
1725 De accurate 1 1 Dulla 11 Pola 10 STE LANGE 10 STE AN DECT
1235 Pre-process photo of Bottle 4 of site 18-555, designation 19-555_BY-RECT
(0327 jpg). Replaced filter with new P5 (5-10 um) filter 1st filter for this bottle. Wetted filter using UPDI water and suction.
+ ITO TOU TWO DOLLEY WETTER HILLY USING UP DI WATCH AND SUCTION
Attachments

#### DAILY FIELD REPORT



2

\_\_\_\_of Page Project Portland Harbor Stormwater Samp Project No. 1020-005 Date 6/10/09 Location WPCL Field Lub/ Basin 18 subject Basin 18 Sectiment Trup Processing BY PTB 1242 Began filtration of 18-ST5-BY\_RECT. 1th filter clogged from supernatant. No recoverable solids present on filter, only some Smaller than pen-sized pebbles. 1253 Placed 2nd PS (5-10 um) filter on filtration set-sp une continued filtration of supernate, Filters 1+2 seem to clay faster than any of the other buttles from this site Unusually slow for just the supernate. 2nd filter clogged from supernate. No recoverable solids present on filter 1310 Placed 3rd P5 (5-10 un) filter on filtration set-up and continued filtration of supernante. Filter 3 also clogged relatively quickly. This bottle seems to have a lot of suspended Bottle was handled in a similar manner to the other solids. bottlest so resuspension of solids is they not the cause. Perhaps the solids in this bottle did not settle as quickly as the others. Might be worth comparing with rectangular bottles from other Observation sites. Maybe the solids captured by this bottle type then have properties that here them in suspension longer. No recoverable solids present on clogged 3rd filter. 340 Placed 4th PS (5-10.00m) filter on filtration Set-up and Continued filtration Beginning to get down to the sediment Slurry but shill within the Supernate. Will switch this filter art before the storry is passed through the filter this filter saw the same immediate clogging as

the 1st 3 filters for this bottle. Trace solids on filter. Attachments recovered very minimal amount.

DAILY FIELD REPORT



of Page Project Portland Harbor Storm water Samp Project No. 1020.005 Location WPCL Field Lab/ Basin 18 Date 6/10/01 BV PTB-/AJA subject Basin 18 Gedinnent Trap Processing 1348 on filtration Placed Set -up and P5 filter ST 10.4m) 'ς Processing just the sediment durry Continue ration with remaining supermate Filtering operat 1402 to Leave had ter C. Her Continuing on. Sign clay debris sedman n 0 hto hotographed 335.109 xture Composi P5 Replaced - 84 ling Sam Rem ter 44 P5 Seven aced into Sevendry. Kenoved Ledi, 505 Fi lter P5 (5-10 aced 21 DOSITO 1.241 peril eru. 5 Co 10511 continu PR 15-10 astof 20 lur Arto veesbeen used 70 ИP (in Se £ nas point nto  $\mathcal{O}$ ere Contin d Drog-shire Attachments





Project Portland Harbor Stormwater Samp Project No. \_1020.005 Date 6/10/09 Location WPCL Field Lab/Basin 18 subject Basin 18 Sediment Trap Processin BY AJA dry. 1535 Very. 1 arte Grow Po c 1. 301-26 1 ener ter in -10 . N N USQ.d 50 SETDONE inside 575 nar 40 dr. man 02 Oncom IND rDASE. 5 1550 angu Presen homogenized osit Borrie #4 555 200 day ROWIN NOCU Gi 15 CN 0 rains anox. an Drecen (NOD) 71 364.2 Comp int Are W 700 163 total ceds Attachments

2009 Inline Solids

		Vater Pollution Control 1 6543 N. Burlington /	SERVICES	
		Portland, OR 97203	5 <b>452</b>	
	INLINESEDMEN	TSAMPENC	EIELDIDA ASSIEE	I.
Project Name: Port	and Aarbor Inlin	e Samp.	Project Number: 10;	20.001
Sampling Team: M55/AJA	Date: / 6/4/09	Arrival Time:	Current Weather Con Overcast W	ditions/Last Rain: wm, <sup>Mu</sup> ggy, Spr.h
Basin: (8	Node: AAX		Subbasin: near yard @ 32.50	
an a			AL OBSERVATION REI	
Describe any flowing or observed in the line?			hater . Standing, No a	<b>L</b> .
Does river appear to location? Describe rate/o		- wo appan	unt odor (undesturbe	
Are sediments observed	I in the line? $Ye$			
Are sample-able quant present in the line?	titles of sediments $\frac{1}{105}$	Seds and with	3-4 riches deep. spaces bin Cobble of	cots of cobb only fine silt/
Describe lateral exter sediments present in the		(Begins abo iments ex	tend up pipe as	Reast 30 ft.
SITE DIAGRAM: Includ	le street intersections/late	als/catch basins/M	H's/driveways cuts and extent	of solids accumulation.
AN		1		
<b>B t</b> •				
· · ·			- sediment extend	From ~ 1' down
			stream of end up outlet pipe, dow	istrican edge of
			is visible	n since as tar a
collected	I sample in			:
	erpendicular removingall hat oxcluding		pooled water (4	" in manhole an
materiol	hat excluding		estending downs	tream, no velocit
forse gra	rels recebbles			
· · ·		WAT		
	- A A A A A A A A A A A A A A A A A A A	Zak	Sed fraps in this 1.	
			- 31 7467	
• •	1	6 perched	6" PVC. lateral	ne

.

Date 6/4/04 SECT	ION 2 - SAM	LE COLLECTI	ON REPOR	T Node:	x261
Sampling Equipment:	Stainless steel spoon & stainless steel bucket				
Equipment Decontamination process:	a Per SOP7.01a □ Other (Describe)				
Sample date: Sample time:	Sample Identif	cation: (IL-XX-NNN	NNN-mmyy) {AX2G1	-0609	2
Sample location description: (number of fee $4  \pounds  \pounds/5$	et from node of a	ntry) rode feu	ver col	bles at	this location
Sample collection technique:	Set from node of entry) from node fewer cobbles at this location One cross section collected approx 4 <sup>ft</sup> from wode. Avoiding gravels and cobbles Mostly light brown, Striations of black mater				
Describe Texture/Particle size:	Sand; Si	lt, and cl	ay 2	9% abbi	les + Coarsa
Describe visual or olfactory evidence of con bulk sediment sample (odor, sheen, discolo	tamination in ration, etc.):	Hydrocarbon Sedimend o	odor 1 listorban	present ce, she	les + Coarsa alude d duing s after en also present
Describe depth of solids in area where sam	ple collected:	3-4" d	eep at	Called	tion X-section
Describe amount and type of debris in same	ole:	None p	resent	· · · ·	
Amount and type of debris removed from fin	nal sample:	None		ſ	
Compositing notes: Filled 8	Tars to	Inl from	55 bac	het. Th	ouroughly your
Sample Jars Collected (number, size, full or	partial)? 1	C	7.11	See Stary	
		80Z,	$T \leq 7$	02	lars
If not enough sample to fill all of the jars, list collected and related analytes sampled (as analyte priority list in work order).	i jars			020	ler 5
collected and related analytes sampled (as	i jars	<u> </u>		02	
collected and related analytes sampled (as analyte priority list in work order).	i jars per		3		
collected and related analytes sampled (as analyte priority list in work order). Lab ID	i jars per	sample collected?	3		
collected and related analytes sampled (as analyte priority list in work order). Lab ID Duplicate sample identification # on COC:	i jars per		3		
collected and related analytes sampled (as analyte priority list in work order). Lab ID	i jars per		3		
collected and related analytes sampled (as analyte priority list in work order). Lab ID Duplicate sample identification # on COC: Any deviations from standard procedures:	i jars per Duplicat		Y/N Dup		
collected and related analytes sampled (as analyte priority list in work order). Lab ID Duplicate sample identification # on COC: Any deviations from standard procedures:	i jars per Duplicat	e sample collected?	Y/N Dup		
collected and related analytes sampled (as analyte priority list in work order). Lab ID Duplicate sample identification # on COC: Any deviations from standard procedures: SEC	t jars per Duplicat	e sample collected?	Y/N Dup		
collected and related analytes sampled (as analyte priority list in work order). Lab ID Duplicate sample identification # on COC: Any deviations from standard procedures: SEC Overview of node showing drainage area	TION 3 - P	e sample collected?	Y/N Dup		

10.101

## DAILY FIELD REPORT

of

Page \_ Inline Sectment Sampling Project No. (020.00( Project \_ Location Wilhelm Trucking Basih 18 Date 614/09 subject Inlike Sed samp field decon of Bichet + Spoon By AJA MJJ Inline Sod trape Samplino Field Decon Notes 125 reparing to blank test our composito spoon that is used Furchet and - sampling mline Sedment Kince bucket Spoon 255 Nalgene carboy. (Chaar rectange X ar tucket - part way we UPDI Filling le running over INP E nectly int bottles (1 pre-cleaned Jalgeno 500-3-1L glass amber bott apped Relignashed to apel 1505 FO095673 Attachments

**DAILY FIELD REPORT** 



Page Project Inlike Sed Sam 1020.001 Project No. Location Bush 18 Date subject Inline Sed Samp basin 13 By\_ omple <u>blank</u> 40 ee ion buch 00 areas 6.1 hose ine 50 1 < 0 Gi 0 hode Fine ding 6610 0 50 Grain Gn  $\sim$ War 0 node äs 6 0 4 Ina ove Dera 50 an 1. a depos ont 0 trated lands M ON 55 Cono Fx arave thes Node wing lac am 1014 lo terio emore com Dos ta Sor Brought 200enized Composi Appoarance Como 05it min 6 Shiroy a ò an Strong hydroba oda 660 CONS  $F_{*}$ <u>.</u>8 Ó Ż Ø Jar 5 c n 02 10 in coole Caner a Stored 18am Attachments

Attachment D Laboratory Results

2007 Sediment Trap and Inline Solids



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

## Laboratory Data QA/QC Review Inline Solids Investigation City Outfall Basin 18

To:FileFrom:Karen Demsey, GSI Water Solutions, Inc.Date:June 6, 2008

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated for chemical analysis of inline solids obtained during source control investigation activities conducted in June 2007 by the City of Portland in Outfall Basin 18 (OF-18). The results of the sampling and analysis are presented in the Technical Memorandum No. OF18-2.

The laboratory analysis of the OF 18 solids samples was conducted by Columbia Analytical Services, Inc., of Kelso, Washington. The samples were analyzed for one or more of the following:

- Total Solids (EPA 160.3M)
- Total Organic Carbon (TOC) (ASTM D1429-82M)
- Metals (EPA 6000 and 7000 Series)
- Organochlorine Pesticides (EPA 8081A)
- Chlorinated herbicides (EPA 8151A)
- Polychlorinated Biphenyls (PCBs) (EPA 8082)
- Polynuclear Aromatic Hydrocarbons (PAHs) (EPA 8270C-SIM)
- Semi-volatile Organic Compounds (including PAHs and Phthalates) (SVOCs) (EPA 8270C).

The laboratory data report for the analysis of these samples is included along with this QA/QC review in Attachment C to Technical Memorandum No. OF18-2.

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

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within accuracy control limits
- Matrix spike and matrix spike duplicate results within control limits
- 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 through the sample collection and delivery process.

## **Analysis Holding Times**

The samples were extracted and analyzed within the acceptable holding times for all analyses.

### **Method Blanks**

Method blanks were processed during the subcontracted analysis of all parameters listed above. Aluminum was detected at a concentration of 10.6 mg/Kg in the method blank for analysis of metals by EPA Method 6020. This concentration is significantly lower than the concentrations detected in the field samples, and interpretation of the data is not affected. No other metals were detected in this method blank. No detections occurred in the method blanks for the other analyses.

### Matrix Spike/Matrix Spike Duplicates

CAS reports there was insufficient volume to perform a matrix spike/matrix spike duplicate (MS/MSD) analysis for chlorinated herbicides and PAHs. A laboratory control sample/duplicate laboratory control sample was analyzed and reported in lieu of the MS/MSD for these samples.

## Laboratory Control /Laboratory Control Duplicate Samples

Laboratory control/laboratory control duplicate samples were processed during the laboratory analyses of SVOCs. CAS reports that the relative percent difference for benzoic acid in the Laboratory Control Sample (LCS) analyses was outside control criteria. However, all spike recoveries in the MS, MSD, and associated replicate laboratory control sample were within acceptance limits, indicating the analytical batch was in control. CAS reports that no further corrective action was appropriate and the data quality was not significantly affected. The results of the LCS/LCDS analyses are not included in the attached laboratory report.

## Other

The following notes were included in the laboratory narrative relative to the Outfall 18 samples; these observations do not affect interpretation of the data as reported in Technical Memorandum No. OF18-2:

<u>Method reporting limits (MRL)</u>. The MRLs were elevated for one or more samples in several of the analyses due to matrix interference, and these data were qualified ("i" flag) by CAS:

- Organochlorine pesticides (EPA 8081A): Samples FO 070806 and FO 070809 required dilution due to the presence of elevated levels of target analytes and non-target background components. The MRLs for all analytes were adjusted by CAS to reflect the dilution. The elevated MRLs could result in a low bias being reported for total DDT in these two samples.
- PCB Aroclors (EPA 8082): MRLs are elevated for at least one analyte in most of the samples due to the presence of non-target background components. The elevated MRLs could result in a low bias being reported for total PCBs.
- Chlorinated herbicides (EPA 8151A): The reporting limit was elevated for all analytes in sample FO 070807 due to relatively high levels of non-target background components.
- SVOCs (EPA Method 8270C): The MRLs for most samples were elevated due to less than optimal sample mass extracted for analysis and the presence of elevated levels of target analytes and non-target compounds.
- PAHs (EPA Method 8270C): The MRLs for sample FO 070807 were elevated due to less than optimal sample mass extracted for analysis.

<u>Semivolatile organic compounds (EPA Method 8270C)</u>. An initial calibration (ICAL) exception was noted for di-n-octyl phthalate and alternative EPA method-specific evaluations were performed using the mean Relative Standard Deviation (RSD). The RSD value was 7.9% and reported to be within the alternative evaluation criteria.

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



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



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

	Project Name: PORT	LAND HARBOR ST	ORMWA	<b>TER SAM</b>	Ρ														
	File Number: 1020.00	5		Matrix:	SEDIME	NT								_	R	equ	ested An	and the second second state and the second state and the second second second second second second second second	
			3						G	ene	ral				Netal	s		Comments	
	If insufficient sample v PCB Congeners, PCB	All Analyses to be per olume, analyses shoul Aroclors,TOC, TS, Pesticide t traps installed: 3/13 - 3/15/	d be perfe s, PAH + Pt	ormed by pri hthalates, Metal	ls, Herbicid	65	Congeners (All 209)	ociors .			Organo-chlorine Pesticides	PAH + Phthalates (Low-level)	les	Total Metals (Al, Sb, As, Cd Cr	cu, Po, Mn, Ni, Ag, Zn) + Hg		All: "\$cuirs analy	Bamples logged in fo IDELAB" to references ses done a CAS. bu engenesi in LAO	r be all Dicta will
	WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	PCB Cc	PCB Arociors	TOC	TS	Organo	PAH+F	Herbicides	Total M	a' la		FILL	6/20/07	
	FO 070804	ST-M1-AAJ944-0607 6936 N FATHOM ST	M1_ST1	6/18/07	1503	с	٢	۲	۲	$   \mathbf{\bullet} $	6	•	6	Ć	$\geq$		111	g (sufficient volume to run i	all analyses)
							¥.	ļ											2
Dasint 18	FO 070805	ST-18-AAT565-0607 NW 35TH & YEON	18_ST1	6/19/07	1148	с		<b>X</b>	•	•	×	×	×	×	8			10.8 g (x if possible	)
	FO 070806	ST-18-AAT557-0607 3950 NW YEON AVE	18_ST2	6/19/07	1602	с	۶	E	6	$\widehat{\bullet}$	۲	•	x	×				44.5 g (x if possible	)
	FO 070807	IL-18-AAT557-0607 3950 NW YEON AVE	18_10	6/19/07	1435	G	•	٢	6	6	•	Ć	$ \mathbf{\bullet} $				Inline sample collected at Sediment Trap installt		t Trap Instalition
	FO 070808	ST-18-AND535-0607 4033 NW YEON AVE	18_ST3	6/20/07	915	с	1	Ì	Ć	•	×	×	×	×				15.8 g (x if possible	)
Ĺ	FO 070809	ST-18-AAT466-0607 4033 NW YEON AVE	18_ST4	6/20/07	1258	C	1	$   \mathbf{\bullet} $	•	۲	$\bullet$	•	•					73.1 g (x if possible	)
							ŕ			24 - 0									12 · · · ·
		2000 E 200 E 20		ALC: 199-1 1-1803-199-19		2017	-nu	ц.	t.	i C	i.	(ş	en	ist.				exite Arechieves	
		Other anal			5 61-6-27	lifed	A	2	Cr4	Ś	cle	cis	ic	27 63	-	er to d	Flatte	Vihimifinass of Riscot 2	Scomples. 126/07
	Relinquished By: A.	Time: 1058	Relinquishe Signatur <del>a</del> :	ed By: 2,		Time:				Relin Signat	ure:	ned B	<u>v:</u> 3.			2	Time:	Relinquished By: 4. Signatura:	Time:
	Printed Names	Date: C/zi/07	Printed Name;			Date:				Printed	l Name:						Date:	Printed Name:	Date;
	Received By: 1.		Received B Signature:	<u>y:</u> 2.	-	Time:				Rece Signal	eived i ure:	<u>By:</u>	3.				Time:	Received By: 4. Signatura:	Timo:
	Printed Namai KNJS DENNJ	3 5 - Portland Harbor Stormwate	Prlated Name:			Date:					d Name:	-					Date:	Printed Name:	Dale:



#### LABORATORY ANALYSIS REPORT



Sample ID: FO07	0805	Sample Collected: 06/19/07 11:48 Sample Received: 06/21/07	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:		ND HARBOR STORMWATER SAMP	Report Page:	Page 1 of 1
	NW 35TH	& YEON / US OF CB INLET AT MH	System ID:	AL05846
Sample Point Code:	18_ST1		EID File # :	1020.005
Sample Type:	COMPOS	TE	LocCode:	PORTHASW
Sample Matrix:	SEDIMEN	Т	Collected By:	JXB/DJH
Comments:			· .	•

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

Validated By:

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



#### LABORATORY ANALYSIS REPORT



Sample ID: FO07	0806	Sample Collected: 06/19/07 Sample Received: 06/21/07	16:02	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAN ST-18-AAT	D HARBOR STORMWATER SA	MP	Report Page:	Page 1 of 1
Address Looddon.		EON AVE / US OF MANHOLE		System ID:	AL05847
Sample Point Code:	18_ST2			EID File # :	1020.005
Sample Type:	COMPOSIT	Ē		LocCode:	PORTHASW
Sample Matrix:	SEDIMENT			Collected By:	JXB/DJH

#### Comments:

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

Validated By:

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



#### LABORATORY ANALYSIS REPORT



Sample ID: FO07		ected: 06/19/07 ived: 06/21/07	14:35	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STC	RMWATER SA	MP	Report Page:	Page 1 of 1
,	3950 NW YEON AVE			System ID:	AL05848
Sample Point Code: Sample Type: Sample Matrix:	18_10 COMPOSITE SEDIMENT	· · · ·		EID File # : LocCode: Collected By:	1020.005 PORTHASW JXB/DJH

#### Comments:

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

Validated By:

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



#### LABORATORY ANALYSIS REPORT



Sample ID: FO07	Sample Collected:         06/20/07         09:15           Sample Received:         06/21/07	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AND535-0607	Report Page:	Page 1 of 1
	4033 NW YEON AVE / 42 INCH LINE US OF MH	System ID:	AL05849
Sample Point Code:	18_ST3	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/DJH

#### Comments:

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

Validated By:

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



#### LABORATORY ANALYSIS REPORT



Sample ID: FO07	809 Sample Collected Sample Received		Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORM	NATER SAMP	Report Page:	Page 1 of 1
,	4033 NW YEON AVE / 48 INCH LIN	NE US OF MH	System ID:	AL05850
Sample Point Code:	18_ST4		EID File # :	1020.005
Sample Type:	COMPOSITE		LocCode:	PORTHASW
Sample Matrix:	SEDIMENT		Collected By:	JXB/DJH

#### Comments:

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

Validated By:

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

(360) 636-1068 fax



August 7, 2007

Analytical Report for Service Request No: K0705409

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

#### **RE:** Portland Harbor Inline Samp

Dear Jennifer:

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

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

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

Respectfully submitted,

#### Columbia/Analytical Services, Inc.

Loan Vo, Ph.D. Project Chemist

LV/lb

Page 1 of \_\_\_\_

#### 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
М	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)	-







4

Client:City of PortlandProject:Portland Harbor Inline SampSample Matrix:Sediment

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

#### CASE NARRATIVE

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

#### Sample Receipt

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

#### **General Chemistry Parameters**

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

#### **Total Metals**

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

#### Organochlorine Pesticides by EPA Method 8081A

#### Continuing Calibration Verification (CCV) Exceptions:

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

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

#### Sample Confirmation Notes:

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

#### **Elevated Method Reporting Limits:**

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

W\_Date\_9/6/67 Approved by

The reporting limit is elevated for all analytes in samples FO 0070806 and FO 070809. 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.

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

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

#### PCB Aroclors by EPA Method 8082

#### Continuing Calibration Verification (CCV) Exceptions:

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

#### Sample Confirmation Notes:

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

#### **Elevated Method Reporting Limits:**

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

#### Sample Notes and Discussion

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

A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1248 through the end of Aroclor 1268. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1248 was identified and quantitated. Aroclor 1268 was identified based on the presence of PCB peaks eluting late in the chromatogram. The remainder of the PCB pattern was identified as Aroclor 1260 because PCB peak height in the middle of the chromatogram was larger than could be attributed to either Aroclor Aroclor 1248, or Aroclor 1268.

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

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

#### Chlorophenoxy Herbicides by EPA Method 8151

#### Continuing Calibration Verification (CCV) Exceptions:

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

Approved by

U Date 9/6/07

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

#### Matrix Spike Recovery Exceptions:

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

#### **Elevated Method Reporting Limits:**

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

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

#### Semivolatile Organic Compounds by EPA Method 8270C

#### Initial Calibration (ICAL) Exceptions:

The primary evaluation criterion was exceeded for Di-n-octyl Phthalate in ICAL 1D CAL6370. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.9%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

#### **Relative Percent Difference Exceptions:**

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

#### **Elevated Method Reporting Limits:**

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

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

#### Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

#### **Elevated Method Reporting Limits:**

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

#### Sample Notes and Discussion

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

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

W Date 9/6/07 Approved by

#### PCB Congeners by EPA Method 1668A

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

Date 9/6/67

Approved by\_\_

#### Analytical Results

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

#### Service Request: K0705409

#### **Total Solids**

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

Units: PERCENT Basis: Wet

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

#### Analytical Report

Service Request : K0705409 Portland, City of Client : Portland Harbor Inline Samp Date Collected : 06/18-20/07 Project Name : Date Received : 06/22/07 Project Number : NA Sample Matrix : SEDIMENT Carbon, Total Organic

Prep Method : Analysis Method : Test Notes :	SOP ASTM D4129-82M	Units : Percent Basis : Dry						
Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
FO 070804	K0705409-002	0.05	0.02	1	6/28/2007	07/19/07	11.1	
FO 070806	K0705409-004	0.05	0.02	1	6/28/2007	07/19/07	10.6	
FO 070807	K0705409-005	0.05	0.02	1	6/28/2007	07/19/07	9.11	
FO 070808	K0705409-006	0.05	0.02	1	6/28/2007	07/19/07	3.56	
FO 070809	K0705409-007	0.05	0.02	]	6/28/2007	07/19/07	5.61	
Method Blank	K0705409-MB	0.05	0.02	1	6/28/2007	07/19/07	ND	

#### - Cover Page -INORGANIC ANALYSIS DATA PACKAGE

Client : Project Name : Project No. :

Comments:

Portland, City of Portland Harbor Inline Samp NA Service Request: K0705409

Sample Name :

FO 070804 FO 070807 FO 070809 Method Blank

#### Lab Code :

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

70/07-

71

Approved By: Da	ate:
-----------------	------

i,

#### **Analytical Report**

Client :Portland, City ofProject Name :Portland Harbor Inline SampProject No. :NAMatrix :Sediment

Service Request : K0705409 Date Collected : 06/19/07 Date Received : 06/22/07 Date Extracted : 06/27-07/06/07

Total Metals

Sample Name :	FO 070807
Lab Code :	K0705409-005

Units : mg/Kg (ppm) Basis : Dry

Analyte	Analysis Method	MRL	Date Analyzed	Sample Result	Result Notes
Aluminum	6010B	900	07/13/07	13800	
Antimony	6020	0.2	06/29/07	9.1	
Arsenic	6020	2	07/13/07	114	
Cadmium	6020	0.09	07/13/07	8.4	
Chromium	6020	0.9	07/13/07	33.9	
Copper	6020	0.5	07/13/07	79.8	
Lead	6020	0.2	07/13/07	128	
Manganese	6010B	90	07/13/07	111000	
Mercury	7471A	0.02	07/09/07	0.12	
Nickel	6020	0.9	07/13/07	36.0	
Silver	6020	0.09	06/29/07	0.35	
Zinc	6010B	200	07/13/07	2470	

#### **Analytical Report**

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

 Service Request :
 K0705409

 Date Collected :
 06/20/07

 Date Received :
 06/22/07

 Date Extracted :
 06/27-07/06/07

#### Total Metals

Sample Name :	FO 070809
Lab Code :	K0705409-007

Units : mg/Kg (ppm) Basis : Dry

Analyte	Analysis Method	MRL	Date Analyzed	Sample Result	Result Notes
Aluminum	6010B	10	07/13/07	11300	
Antimony	6020	0.05	06/29/07	1.68	
Arsenic	6020	0.5	07/13/07	2.8	
Cadmium	6020	0.02	07/13/07	1.30	
Chromium	6020	0.2	07/13/07	62.4	
Copper	6020	0.1	07/13/07	82.1	
Lead	6020	0.05	07/13/07	220	
Manganese	6010B	1	07/13/07	509	
Mercury	7471A	0.02	07/09/07	0.36	
Nickel	6020	0.2	07/13/07	22.8	
Silver	6020	0.02	06/29/07	0.25	
Zinc	6010B	2	07/13/07	584	

#### **Analytical Report**

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

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

#### Total Metals

ame: Method Blank	
: K0705409-MB	

Units : mg/Kg (ppm) Basis : Dry

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

Analytical Results

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

#### **Organochlorine Pesticides**

Sample Name:	FO 070806	Units:	ug/Kg
Lab Code:	K0705409-004	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8081A	Level:	Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	9.3	10	07/02/07	07/19/07	KWG0707161	
beta-BHC	ND		9.3	10	07/02/07	07/19/07	KWG0707161	
gamma-BHC (Lindane)	ND	U	9.3	10	07/02/07	07/19/07	KWG0707161	
delta-BHC	ND	U	9.3	10	07/02/07	07/19/07	KWG0707161	
Heptachlor	66	D	9.3	10	07/02/07	07/19/07	KWG0707161	
Aldrin	16	D	9.3	10	07/02/07	07/19/07	KWG0707161	
Heptachlor Epoxide	16	PD	9.3	10	07/02/07	07/19/07	KWG0707161	
gamma-Chlordane†		D	9.3	10	07/02/07	07/19/07	KWG0707161	
Endosulfan I	22	PD	9.3	10	07/02/07	07/19/07	KWG0707161	
alpha-Chlordane	34	D	9.3	10	07/02/07	07/19/07	KWG0707161	
Dieldrin	40	PD	9.3	10	07/02/07	07/19/07	KWG0707161	
4,4'-DDE	100	D	9.3	10	07/02/07	07/19/07	KWG0707161	
Endrin	ND	U	9.3	10	07/02/07	07/19/07	KWG0707161	
Endosulfan II	16	PD	9.3	10	07/02/07	07/19/07	KWG0707161	
4,4'-DDD	69	D	9.3	10	07/02/07	07/19/07	KWG0707161	
Endrin Aldehyde	ND	U	9.3	10	07/02/07	07/19/07	KWG0707161	
Endosulfan Sulfate	ND	Ui	15	10	07/02/07	07/19/07	KWG0707161	
4,4'-DDT	ND	Ui	44	10	07/02/07	07/19/07	KWG0707161	
Endrin Ketone	ND	U	9.3	10	07/02/07	07/19/07	KWG0707161	
Methoxychlor	ND	Ui	15	10	07/02/07	07/19/07	KWG0707161	
Toxaphene	ND	Ui	1600	10	07/02/07	07/19/07	KWG0707161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	48	32-138	07/19/07	Acceptable
Decachlorobiphenyl	150	23-162	07/19/07	Acceptable

#### **†** Analyte Comments

gamma-Chlordane

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

Comments:

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

Analytical Results

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

#### **Organochlorine Pesticides**

Sample Name:	FO 070807	Units:	ug/Kg
Lab Code:	K0705409-005	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8081A	Level:	Low

Analyte Name	Result	Q MR	Dilution L Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND 1	U 3.7	1	07/02/07	07/27/07	KWG0707161	
beta-BHC	ND	U 4.2	1	07/02/07	07/27/07	KWG0707161	
gamma-BHC (Lindane)	ND	Ui 4.8	1	07/02/07	07/27/07	KWG0707161	
delta-BHC	ND I	Ui 90	. 1	07/02/07	07/27/07	KWG0707161	
Heptachlor	31	3.5	1	07/02/07	07/27/07	KWG0707161	
Aldrin	ND I	U 3.5	1	07/02/07	07/27/07	KWG0707161	
Heptachlor Epoxide	3.6	P 3.5	1	07/02/07	07/27/07	KWG0707161	
gamma-Chlordane†	52	3.5	1	07/02/07	07/27/07	KWG0707161	
Endosulfan I	8.8	3.5	1	07/02/07	07/27/07	KWG0707161	
alpha-Chlordane	11	3.5	1	07/02/07	07/27/07	KWG0707161	
Dieldrin	4.4	P 4.1	1	07/02/07	07/27/07	KWG0707161	
4,4'-DDE	26	3.5	1	07/02/07	07/27/07	KWG0707161	
Endrin	ND I	U 3.5	1	07/02/07	07/27/07	KWG0707161	
Endosulfan II	ND I	U 3.5	1	07/02/07	07/27/07	KWG0707161	
4,4'-DDD	19	3.5	1	07/02/07	07/27/07	KWG0707161	
Endrin Aldehyde	ND 1	U 3.5	1	07/02/07	07/27/07	KWG0707161	
Endosulfan Sulfate	ND I	U 3.5	1	07/02/07	07/27/07	KWG0707161	
4,4'-DDT	17	3.5	1	07/02/07	07/27/07	KWG0707161	
Endrin Ketone	ND I	Ui 7.1	1	07/02/07	07/27/07	KWG0707161	
Methoxychlor	ND U	U 3.5	1	07/02/07	07/27/07	KWG0707161	
Toxaphene	ND I	Ui 240	1	07/02/07	07/27/07	KWG0707161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	60	32-138	07/27/07	Acceptable	
Decachlorobiphenyl	68	23-162	07/27/07	Acceptable	

#### **†** Analyte Comments

gamma-Chlordane

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

#### **Comments:**

Merged

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

Analytical Results

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

#### **Organochlorine Pesticides**

Sample Name:	FO 070809	Units:	ug/Kg
Lab Code:	K0705409-007	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8081A	Level:	Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
beta-BHC	ND Ui	13	10	07/02/07	07/17/07	KWG0707161	
gamma-BHC (Lindane)	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
delta-BHC	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
Heptachlor	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
Aldrin	17 D	7.6	10	07/02/07	07/17/07	KWG0707161	
Heptachlor Epoxide	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
gamma-Chlordane†	<b>31</b> D	7.6	10	07/02/07	07/17/07	KWG0707161	
Endosulfan I	14 PE	<b>)</b> 7.6	10	07/02/07	07/17/07	KWG0707161	
alpha-Chlordane	20 D	7.6	10	07/02/07	07/17/07	KWG0707161	
Dieldrin	18 PE	<b>)</b> 7.6	10	07/02/07	07/17/07	KWG0707161	
4,4'-DDE	57 D	7.6	10	07/02/07	07/17/07	KWG0707161	
Endrin	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
Endosulfan II	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
4,4'-DDD	<b>49</b> D	7.6	10	07/02/07	07/17/07	KWG0707161	
Endrin Aldehyde	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
Endosulfan Sulfate	36 D	7.6	10	07/02/07	07/17/07	KWG0707161	
4,4'-DDT	ND Ui	. 33	10	07/02/07	07/17/07	KWG0707161	
Endrin Ketone	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
Methoxychlor	ND U	7.6	10	07/02/07	07/17/07	KWG0707161	
Toxaphene	ND Ui	510	10	07/02/07	07/17/07	KWG0707161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
etrachloro-m-xylene	59	32-138	07/17/07	Acceptable
Decachlorobiphenyl	110	23-162	07/17/07	Acceptable

#### **†** Analyte Comments

gamma-Chlordane

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

Comments:

 Service Request:
 K0705409

 Date Collected:
 06/20/2007

 Date Received:
 06/22/2007

Analytical Results

**Organochlorine Pesticides** 

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

Sample Name:<br/>Lab Code:Method Blank<br/>KWG0707161-4Units:<br/>ug/Kg<br/>Basis:ug/Kg<br/>Basis:Extraction Method:<br/>Analysis Method:EPA 3540C<br/>8081ALevel:Low

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

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

#### † Analyte Comments

gamma-Chlordane

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

Comments:

Service Request:K0705409Date Collected:NADate Received:NA

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

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

#### **Chlorinated Herbicides**

Sample Name:	FO 070807	Units:	ug/Kg
Lab Code:	K0705409-005	Basis:	Dry
Extraction Method: Analysis Method:	METHOD 8151A	Level:	Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	Ui	120000	100	06/29/07	08/03/07	KWG0707265	
Dicamba	ND	U	3500	10	06/29/07	08/03/07	KWG0707265	
MCPP	ND	U	700000	10	06/29/07	08/03/07	KWG0707265	
MCPA	ND	U	700000	10	06/29/07	08/03/07	KWG0707265	
Dichlorprop	ND	U	3500	10	06/29/07	08/03/07	KWG0707265	
2,4-D	ND	U	3500	10	06/29/07	08/03/07	KWG0707265	
2,4,5-TP (Silvex)	ND	U	3500	10	06/29/07	08/03/07	KWG0707265	
2,4,5-T	ND	U	3500	10	06/29/07	08/03/07	KWG0707265	
2,4-DB	7200	PD	3500	10	06/29/07	08/03/07	KWG0707265	
Dinoseb	ND	U	3500	10	06/29/07	08/03/07	KWG0707265	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2,4-Dichlorophenylacetic Acid	106	18-153	08/03/07	Acceptable	

Comments:

Merged

Analytical Results

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

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

#### **Chlorinated Herbicides**

Sample Name:	Method Blank	Units:	
Lab Code:	KWG0707265-3	Basis:	
Extraction Method: Analysis Method:	METHOD 8151A	Level:	Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
Dicamba	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
MCPP	ND	U	5000	1	06/29/07	07/31/07	KWG0707265	
MCPA	ND	U	5000	1	06/29/07	07/31/07	KWG0707265	
Dichlorprop	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
2,4-D	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
2,4,5-TP (Silvex)	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
2,4,5-T	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
2,4 <b>-</b> DB	ND	U	25	1	06/29/07	07/31/07	KWG0707265	
Dinoseb	ND	U	25	1	06/29/07	07/31/07	KWG0707265	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	86	18-153	07/31/07	Acceptable

Analytical Results

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

## Service Request: K0705409 Date Collected: 06/19/2007 Date Received: 06/22/2007

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

Sample Name:	FO 070806	Units:	ug/Kg
Lab Code:	K0705409-004	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	Factor	Extracted	Analyzed	Lot	Note
Bis(2-chloroethyl) Ether	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Phenol	ND	U	1900	20	07/02/07	07/10/07	KWG0707313	
2-Chlorophenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
1,3-Dichlorobenzene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
1,4-Dichlorobenzene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
1,2-Dichlorobenzene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Benzyl Alcohol	ND	U	1300	20	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroisopropyl) Ether	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2-Methylphenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Hexachloroethane	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
N-Nitrosodi-n-propylamine	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Methylphenol <sup>†</sup>	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Nitrobenzene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Isophorone	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2-Nitrophenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2,4-Dimethylphenol	ND	U	3100	20	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroethoxy)methane	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2,4-Dichlorophenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Benzoic Acid	ND	U	13000	20	07/02/07	07/10/07	KWG0707313	
1,2,4-Trichlorobenzene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Naphthalene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Chloroaniline	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Hexachlorobutadiene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Chloro-3-methylphenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2-Methylnaphthalene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Hexachlorocyclopentadiene	ND	U	3100	20	07/02/07	07/10/07	KWG0707313	
2,4,6-Trichlorophenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2,4,5-Trichlorophenol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2-Chloronaphthalene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2-Nitroaniline	ND	U	1300	20	07/02/07	07/10/07	KWG0707313	
Acenaphthylene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Dimethyl Phthalate	ND		610	20	07/02/07	07/10/07	KWG0707313	
2,6-Dinitrotoluene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	

Analytical Results

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

## Service Request: K0705409 Date Collected: 06/19/2007 Date Received: 06/22/2007

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

Sample Name:	FO 070806	Units:	ug/Kg
Lab Code:	K0705409-004	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
3-Nitroaniline	ND	U	1300	20	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrophenol	ND	U	13000	20	07/02/07	07/10/07	KWG0707313	
Dibenzofuran	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Nitrophenol	ND	U	6100	20	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrotoluene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Fluorene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Chlorophenyl Phenyl Ether	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Diethyl Phthalate	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Nitroaniline	ND	U	1300	20	07/02/07	07/10/07	KWG0707313	
2-Methyl-4,6-dinitrophenol	ND	U	6100	20	07/02/07	07/10/07	KWG0707313	
N-Nitrosodiphenylamine	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
4-Bromophenyl Phenyl Ether	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Hexachlorobenzene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Pentachlorophenol	ND	U	6100	20	07/02/07	07/10/07	KWG0707313	
Phenanthrene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Anthracene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Di-n-butyl Phthalate	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Fluoranthene	640		610	20	07/02/07	07/10/07	KWG0707313	
Pyrene	1200		610	20	07/02/07	07/10/07	KWG0707313	
<b>Butyl Benzyl Phthalate</b>	960	D	610	20	07/02/07	07/10/07	KWG0707313	
3,3'-Dichlorobenzidine	ND	U	6100	20	07/02/07	07/10/07	KWG0707313	
Benz(a)anthracene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Chrysene	670	D	610	20	07/02/07	07/10/07	KWG0707313	
Bis(2-ethylhexyl) Phthalate	29000	D	6100	20	07/02/07	07/10/07	KWG0707313	
Di-n-octyl Phthalate	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Benzo(b)fluoranthene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Benzo(k)fluoranthene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Benzo(a)pyrene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Indeno(1,2,3-cd)pyrene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Dibenz(a,h)anthracene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Benzo(g,h,i)perylene	ND	U	610	20	07/02/07	07/10/07	KWG0707313	

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

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

Sample Name:	FO 070806
Lab Code:	K0705409-004

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	59	10-86	07/10/07	Acceptable
Phenol-d6	59	17-101	07/10/07	Acceptable
Nitrobenzene-d5	60	10-108	07/10/07	Acceptable
2-Fluorobiphenyl	68	10-108	07/10/07	Acceptable
2,4,6-Tribromophenol	80	21-110	07/10/07	Acceptable
Terphenyl-d14	74	26-122	07/10/07	Acceptable

† Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Comments:

Merged

Form 1A - Organic

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

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

Sample Name:	FO 070807	Units:	ug/Kg
Lab Code:	K0705409-005	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	Factor	Extracted	Analyzed	Lot	Note
Bis(2-chloroethyl) Ether	ND		70	1	07/02/07	07/10/07	KWG0707313	
Phenol		U	210	1	07/02/07	07/10/07	KWG0707313	
2-Chlorophenol	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
1,3-Dichlorobenzene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
1,4-Dichlorobenzene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
1,2-Dichlorobenzene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Benzyl Alcohol	ND	U	140	1	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroisopropyl) Ether	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2-Methylphenol	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Hexachloroethane	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
N-Nitrosodi-n-propylamine	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Methylphenol <sup>+</sup>	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Nitrobenzene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Isophorone	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2-Nitrophenol	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2,4-Dimethylphenol	ND	U	350	1	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroethoxy)methane	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2,4-Dichlorophenol	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Benzoic Acid	ND	U	1400	1	07/02/07	07/10/07	KWG0707313	
1,2,4-Trichlorobenzene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Naphthalene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Chloroaniline	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Hexachlorobutadiene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Chloro-3-methylphenol	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2-Methylnaphthalene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Hexachlorocyclopentadiene	ND	U	410	1	07/02/07	07/10/07	KWG0707313	
2,4,6-Trichlorophenol	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2,4,5-Trichlorophenol	78		70	1	07/02/07	07/10/07	KWG0707313	
2-Chloronaphthalene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
2-Nitroaniline	ND	U	140	1	07/02/07	07/10/07	KWG0707313	
Acenaphthylene	ND		70	1	07/02/07	07/10/07	KWG0707313	
Dimethyl Phthalate	ND		70	1	07/02/07	07/10/07	KWG0707313	
2,6-Dinitrotoluene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	

**Comments:** 

38

Analytical Results

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

## Service Request: K0705409 Date Collected: 06/19/2007 Date Received: 06/22/2007

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

Sample Name:	FO 070807	Units:	ug/Kg
Lab Code:	K0705409-005	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
3-Nitroaniline	ND	U	140	1	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrophenol	ND	U	1400	1	07/02/07	07/10/07	KWG0707313	
Dibenzofuran	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Nitrophenol	ND		700	1	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrotoluene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Fluorene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Chlorophenyl Phenyl Ether	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Diethyl Phthalate	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Nitroaniline	ND	U	140	1	07/02/07	07/10/07	KWG0707313	
2-Methyl-4,6-dinitrophenol	ND	U	700	1	07/02/07	07/10/07	KWG0707313	
N-Nitrosodiphenylamine	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
4-Bromophenyl Phenyl Ether	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Hexachlorobenzene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Pentachlorophenol	ND	U	700	1 ~	07/02/07	07/10/07	KWG0707313	
Phenanthrene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Anthracene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Di-n-butyl Phthalate	ND	U	120	1	07/02/07	07/10/07	KWG0707313	
Fluoranthene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Pyrene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Butyl Benzyl Phthalate	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
3,3'-Dichlorobenzidine	ND	U	700	1	07/02/07	07/10/07	KWG0707313	
Benz(a)anthracene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Chrysene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Bis(2-ethylhexyl) Phthalate	1600		700	1	07/02/07	07/10/07	KWG0707313	
Di-n-octyl Phthalate	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Benzo(b)fluoranthene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Benzo(k)fluoranthene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Benzo(a)pyrene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Indeno(1,2,3-cd)pyrene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Dibenz(a,h)anthracene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	
Benzo(g,h,i)perylene	ND	U	70	1	07/02/07	07/10/07	KWG0707313	

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

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

 Sample Name:
 FO 070807

 Lab Code:
 K0705409-005

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2-Fluorophenol	30	10-86	07/10/07	Acceptable	
Phenol-d6	38	17-101	07/10/07	Acceptable	
Nitrobenzene-d5	25	10-108	07/10/07	Acceptable	
2-Fluorobiphenyl	37	10-108	07/10/07	Acceptable	
2,4,6-Tribromophenol	66	21-110	07/10/07	Acceptable	
Terphenyl-d14	73	26-122	07/10/07	Acceptable	

† Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Comments:

Merged

Analytical Results

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

# Service Request: K0705409 Date Collected: 06/20/2007 Date Received: 06/22/2007

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

Sample Name:	FO 070809	Units:	ug/Kg
Lab Code:	K0705409-007	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

		0	MDI	Dilution	Date	Date Analyzed	Extraction Lot	Note
Analyte Name	Result		MRL	Factor	Extracted		KWG0707313	Hote
Bis(2-chloroethyl) Ether	ND		310	20	07/02/07	07/10/07	KWG0707313	
Phenol	ND		910	20	07/02/07	07/10/07	KWG0707313	
2-Chlorophenol	ND		310	20	07/02/07	07/10/07		
1,3-Dichlorobenzene	ND		310	20	07/02/07	07/10/07	KWG0707313	
1,4-Dichlorobenzene	ND		310	20	07/02/07	07/10/07	KWG0707313	
1,2-Dichlorobenzene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Benzyl Alcohol	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroisopropyl) Ether	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2-Methylphenol	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Hexachloroethane	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
N-Nitrosodi-n-propylamine	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Methylphenol <sup>†</sup>	ND		310	20	07/02/07	07/10/07	KWG0707313	
Nitrobenzene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Isophorone	ND		310	20	07/02/07	07/10/07	KWG0707313	
2-Nitrophenol	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2,4-Dimethylphenol	ND	U	1600	20	07/02/07	07/10/07	KWG0707313	
Bis(2-chloroethoxy)methane	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2,4-Dichlorophenol	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Benzoic Acid	ND	U	6100	20	07/02/07	07/10/07	KWG0707313	
1,2,4-Trichlorobenzene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Naphthalene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Chloroaniline	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Hexachlorobutadiene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Chloro-3-methylphenol	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2-Methylnaphthalene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Hexachlorocyclopentadiene	ND	U	1600	20	07/02/07	07/10/07	KWG0707313	
2,4,6-Trichlorophenol	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2,4,5-Trichlorophenol	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2-Chloronaphthalene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
2-Nitroaniline	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
Acenaphthylene	ND		310	20	07/02/07	07/10/07	KWG0707313	
Dimethyl Phthalate	ND		310	20	07/02/07	07/10/07	KWG0707313	
2,6-Dinitrotoluene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	

Comments:

41

Analytical Results

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

# Service Request: K0705409 Date Collected: 06/20/2007 Date Received: 06/22/2007

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

Sample Name:	FO 070809	Units:	ug/Kg
Lab Code:	K0705409-007	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
3-Nitroaniline	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrophenol	ND	U	6100	20	07/02/07	07/10/07	KWG0707313	
Dibenzofuran	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Nitrophenol	ND		3100	20	07/02/07	07/10/07	KWG0707313	
2,4-Dinitrotoluene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Fluorene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Chlorophenyl Phenyl Ether	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Diethyl Phthalate	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Nitroaniline	ND	U	610	20	07/02/07	07/10/07	KWG0707313	
2-Methyl-4,6-dinitrophenol	ND	U	3100	20	07/02/07	07/10/07	KWG0707313	
N-Nitrosodiphenylamine	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
4-Bromophenyl Phenyl Ether	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Hexachlorobenzene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Pentachlorophenol	ND	U	3100	20	07/02/07	07/10/07	KWG0707313	
Phenanthrene	620	D	310	20	07/02/07	07/10/07	KWG0707313	
Anthracene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Di-n-butyl Phthalate	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Fluoranthene	1200		310	20	07/02/07	07/10/07	KWG0707313	
Pyrene	1400	D	310	20	07/02/07	07/10/07	KWG0707313	
<b>Butyl Benzyl Phthalate</b>	1600	D	310	20	07/02/07	07/10/07	KWG0707313	
3,3'-Dichlorobenzidine	ND	U	3100	20	07/02/07	07/10/07	KWG0707313	
Benz(a)anthracene	530	D	310	20	07/02/07	07/10/07	KWG0707313	
Chrysene	830	D	310	20	07/02/07	07/10/07	KWG0707313	
Bis(2-ethylhexyl) Phthalate	16000	D	3100	20	07/02/07	07/10/07	KWG0707313	
Di-n-octyl Phthalate	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Benzo(b)fluoranthene	930	D	310	20	07/02/07	07/10/07	KWG0707313	
Benzo(k)fluoranthene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Benzo(a)pyrene	640	D	310	20	07/02/07	07/10/07	KWG0707313	
Indeno(1,2,3-cd)pyrene	620	D	310	20	07/02/07	07/10/07	KWG0707313	
Dibenz(a,h)anthracene	ND	U	310	20	07/02/07	07/10/07	KWG0707313	
Benzo(g,h,i)perylene	660	D	310	20	07/02/07	07/10/07	KWG0707313	

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/20/2007

 Date Received:
 06/22/2007

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

Sample Name:	FO 070809
Lab Code:	K0705409-007

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	53	10-86	07/10/07	Acceptable
Phenol-d6	58	17-101	07/10/07	Acceptable
Nitrobenzene-d5	58	10-108	07/10/07	Acceptable
2-Fluorobiphenyl	66	10-108	07/10/07	Acceptable
2,4,6-Tribromophenol	73	21-110	07/10/07	Acceptable
Terphenyl-d14	75	26-122	07/10/07	Acceptable

**† Analyte Comments** 

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

**Comments:** 

Merged

Form 1A - Organic

3 of 3

Analytical Results

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

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

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

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0707313-5	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

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

Analytical Results

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

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

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

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0707313-5	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

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

Comments:

Merged

2 of 3

Analytical Results

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

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

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

Sample Name:	Method Blank
Lab Code:	KWG0707313-5

Units:	ug/Kg
<b>Basis</b> :	Dry

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

† Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

**Comments:** 

Merged

Form 1A - Organic

Analytical Results

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

#### **Polynuclear Aromatic Hydrocarbons**

Sample Name:	FO 070806	Units:	
Lab Code:	K0705409-004	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8270C SIM	Level:	Low

Analyte Name	Result	0	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	680	D	38	5	07/02/07	07/16/07	KWG0707314	
2-Methylnaphthalene	99	D	38	5	07/02/07	07/16/07	KWG0707314	
Acenaphthylene	58	D	38	5	07/02/07	07/16/07	KWG0707314	
Acenaphthene	ND	U	38	5	07/02/07	07/16/07	KWG0707314	
Fluorene	87	D	38	5	07/02/07	07/16/07	KWG0707314	
Dibenzofuran	45	D	38	5	07/02/07	07/16/07	KWG0707314	
Phenanthrene	520	D	38	5	07/02/07	07/16/07	KWG0707314	
Anthracene	110	D	38	5	07/02/07	07/16/07	KWG0707314	
Fluoranthene	900	D	38	5	07/02/07	07/16/07	KWG0707314	
Pyrene	1100	D	38	5	07/02/07	07/16/07	KWG0707314	
Benzo(b)fluoranthene	570	D	38	5	07/02/07	07/16/07	KWG0707314	
Benzo(k)fluoranthene	160	D	38	5	07/02/07	07/16/07	KWG0707314	
Benz(a)anthracene	340	D	38	5	07/02/07	07/16/07	KWG0707314	
Chrysene	450	D	38	5	07/02/07	07/16/07	KWG0707314	
Benzo(a)pyrene	410	D	38	5	07/02/07	07/16/07	KWG0707314	
Indeno(1,2,3-cd)pyrene	510	D	160	20	07/02/07	07/14/07	KWG0707314	
Dibenz(a,h)anthracene	180	D	160	20	07/02/07	07/14/07	KWG0707314	
Benzo(g,h,i)perylene	750	D	160	20	07/02/07	07/14/07	KWG0707314	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Fluorene-d10	81	10-123	07/16/07	Acceptable	
Fluoranthene-d10	97	10-136	07/16/07	Acceptable	
Terphenyl-d14	86	32-123	07/16/07	Acceptable	

**Comments:** 

1 of 1

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

#### Analytical Results

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

# Service Request: K0705409 Date Collected: 06/19/2007 Date Received: 06/22/2007

#### **Polynuclear Aromatic Hydrocarbons**

Sample Name:	FO 070807	<b>Units:</b> ug/K	
Lab Code:	K0705409-005	<b>Basis:</b> Dry	
Extraction Method: Analysis Method:	EPA 3541 8270C SIM	Level: Low	1

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
2-Methylnaphthalene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Acenaphthylene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Acenaphthene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Fluorene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Dibenzofuran	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Phenanthrene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Anthracene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Fluoranthene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Pyrene	38	18	1	07/02/07	07/18/07	KWG0707314	
Benzo(b)fluoranthene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Benzo(k)fluoranthene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Benz(a)anthracene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Chrysene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Benzo(a)pyrene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Indeno(1,2,3-cd)pyrene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Dibenz(a,h)anthracene	ND U	18	1	07/02/07	07/18/07	KWG0707314	
Benzo(g,h,i)perylene	24	18	1	07/02/07	07/18/07	KWG0707314	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	10-123	07/18/07	Acceptable
Fluoranthene-d10	78 81	10-136 32-123	07/18/07 07/18/07	Acceptable Acceptable
Terphenyl-d14	81	52-125	0//16/07	Acceptable

Analytical Results

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

#### Polynuclear Aromatic Hydrocarbons

Sample Name:	FO 070809	Units:	00
Lab Code:	K0705409-007	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8270C SIM	Level:	Low

Analyte Name	Result Q	MRL	Dilutio Facto		Date Analyzed	Extraction Lot	Note
Naphthalene	<b>240</b> D	19	5	07/02/07	07/16/07	KWG0707314	
2-Methylnaphthalene	<b>49</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Acenaphthylene	<b>50</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Acenaphthene	<b>51</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Fluorene	50 D	19	5	07/02/07	07/16/07	KWG0707314	
Dibenzofuran	<b>40</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Phenanthrene	<b>690</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Anthracene	150 D	19	5	07/02/07	07/16/07	KWG0707314	
Fluoranthene	<b>1600</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Pyrene	1300 D	19	5	07/02/07	07/16/07	KWG0707314	
Benzo(b)fluoranthene	820 D	19	5	07/02/07	07/16/07	KWG0707314	
Benzo(k)fluoranthene	<b>240</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Benz(a)anthracene	520 D	19	5	07/02/07	07/16/07	KWG0707314	
Chrysene	840 D	19	. 5	07/02/07	07/16/07	KWG0707314	
Benzo(a)pyrene	<b>570</b> D	19	5	07/02/07	07/16/07	KWG0707314	
Indeno(1,2,3-cd)pyrene	700 D	76	20	07/02/07	07/14/07	KWG0707314	
Dibenz(a,h)anthracene	150 D	76	20	07/02/07	07/14/07	KWG0707314	
Benzo(g,h,i)perylene	720 D	76	20	07/02/07	07/14/07	KWG0707314	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Fluorene-d10	72	10-123	07/16/07	Acceptable	
Fluoranthene-d10	85	10-136	07/16/07	Acceptable	
Terphenyl-d14	77	32-123	07/16/07	Acceptable	

Comments:

 Service Request:
 K0705409

 Date Collected:
 06/20/2007

 Date Received:
 06/22/2007

Analytical Results

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

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

#### Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	Units: u	
Lab Code:	KWG0707314-3	Basis: D	
Extraction Method: Analysis Method:	EPA 3541 8270C SIM	Level: L	Low

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

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

**Revised Laboratory Report for PCB Aroclors** 

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

#### **Polychlorinated Biphenyls (PCBs)**

Sample Name:	FO 070805	Units:	ug/Kg
Lab Code:	K0705409-003	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8082	Level:	Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	53	1	07/02/07	07/24/07	KWG0707164	esenenskondelsomensk
Aroclor 1221	ND	Ui	140	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1232	ND	Ui	100	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1242	ND	Ui	70	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1248	ND	U	53	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1254	ND	Ui	95	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1260	ND	Ui	78	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1262	ND	Ui	110	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1268	ND	Ui	68	1	07/02/07	07/24/07	KWG0707164	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Decachlorobiphenyl	51	33-141	07/24/07	Acceptable	

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/19/2007

 Date Received:
 06/22/2007

#### **Polychlorinated Biphenyls (PCBs)**

Sample Name:	FO 070806	Units:	ug/Kg
Lab Code:	K0705409-004	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8082	Level:	Low

		Dilution	Date	Date	Extraction	
Result Q	MRL	Factor	Extracted	Analyzed	Lot	Note
ND U	93	10	07/02/07	07/26/07	KWG0707164	
ND U	190	10	07/02/07	07/26/07	KWG0707164	
ND U	93	10	07/02/07	07/26/07	KWG0707164	
ND U	93	10	07/02/07	07/26/07	KWG0707164	
800 D	93	10	07/02/07	07/26/07	KWG0707164	
ND U	93	10	07/02/07	07/26/07	KWG0707164	
400 D	93	10	07/02/07	07/26/07	KWG0707164	
ND U	93	10	07/02/07	07/26/07	KWG0707164	
180 Pl	D 93	10	07/02/07	07/26/07	KWG0707164	
	ND U ND U ND U ND U 800 D ND U 400 D ND U	ND U         93           ND U         190           ND U         93           ND U         93	Result QMRLFactorND U9310ND U19010ND U19010ND U9310ND U9310ND U9310ND U9310ND U9310ND U9310ND U9310MD U9310	ResultQMRLFactorExtractedNDU931007/02/07NDU1901007/02/07NDU931007/02/07NDU931007/02/07800D931007/02/07NDU931007/02/07NDU931007/02/07NDU931007/02/07MDU931007/02/07NDU931007/02/07	ResultQMRLFactorExtractedAnalyzedNDU931007/02/0707/26/07NDU1901007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07NDU931007/02/0707/26/07	Result         Q         MRL         Factor         Extracted         Analyzed         Lot           ND         U         93         10         07/02/07         07/26/07         KWG0707164           ND         U         190         10         07/02/07         07/26/07         KWG0707164           ND         U         190         10         07/02/07         07/26/07         KWG0707164           ND         U         93         10         07/02/07         07/26/07         KWG0707164           MO         D         93         10         07/02/07         07/26/07         KWG0707164           MD         U         93         10         07/02/07         07/26/07         KWG0707164           ND         U         93         1

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	141	33-141	07/26/07	Acceptable

Analytical Results

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

Service Request: K0705409 Date Collected: 06/19/2007 Date Received: 06/22/2007

### Polychlorinated Biphenyls (PCBs)

Sample Name:	FO 070807	Units:	ug/Kg
Lab Code:	K0705409-005	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8082	Level:	Low

Analyte Name	Result	0	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND		67	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1221	ND	<b>~</b> -	93	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1232	ND	Ui	190	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1242	ND	Ui	140	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1248	ND	Ui	86	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1254	250		35	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1260	93		35	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1262	ND	Ui	62	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1268	ND	U	35	1	07/02/07	07/24/07	KWG0707164	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	66	33-141	07/24/07	Acceptable

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/20/2007

 Date Received:
 06/22/2007

#### **Polychlorinated Biphenyls (PCBs)**

Sample Name:	FO 070808	Units: u	0 0
Lab Code:	K0705409-006	Basis: D	
Extraction Method: Analysis Method:	EPA 3540C 8082	Level: L	.0W

Analyte Name	Result	Qľ	/IRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND 1	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1221	ND	U	31	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1232	ND	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1242	ND	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1248	ND	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1254	ND	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1260	ND	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1262	ND	U	16	1	07/02/07	07/24/07	KWG0707164	
Aroclor 1268	ND	U	16	1	07/02/07	07/24/07	KWG0707164	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	71	33-141	07/24/07	Acceptable

Analytical Results

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

 Service Request:
 K0705409

 Date Collected:
 06/20/2007

 Date Received:
 06/22/2007

### **Polychlorinated Biphenyls (PCBs)**

Sample Name:	FO 070809	Units:	ug/Kg
Lab Code:	K0705409-007	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8082	Level:	Low

Analyte Name	Result Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND U	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1221	ND U	16	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1232	ND U	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1242	ND U	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1248	190	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1254	ND U	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1260	210	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1262	ND U	7.6	1	07/02/07	07/26/07	KWG0707164	
Aroclor 1268	ND Ui	8.6	1	07/02/07	07/26/07	KWG0707164	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Decachlorobiphenyl	95	33-141	07/26/07	Acceptable	

Analytical Results

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

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

#### **Polychlorinated Biphenyls (PCBs)**

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0707164-4	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8082	Level:	Low

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

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

Prod Code: 8	082 PCB_LL				Tier: Collect Da	I te: 0	6/18/2007		Matrix: Receive Date	SEDIMENT 06/22/2007	-
•	WG0708010	*****			Prep Lot:		CWG0707164	4	Report Grou	<b>ip:</b> K0705409	
Analysis Method: 8	082				Prep Meth Prep Date:		EPA 3540C 07/02/2007				
Prep Ref: 6	13931			ter anger and the term process							
Title: P	CASH1\ACQUDA olychlorinated Bipl \GC09\DATA\072	henyls	(PCBs	)	2407.B\0720	007_F.M			Calibration I Report List I Method ID: Quant base		
Data File #2:\\Acqu Date:0'Run Type:S	AGC09\DATA\072 cash1\acqudata\GC 7/24/2007 15:12 MPL 20705409-002				0724R009.I Quant Dat		7/25/2007 1	2:19	Instrument: Vial: Dilution: Soln Conc. U	GC09.i 7 1.0 J <b>nits:</b> ng/mL	
Signal #1: D	DB-35MS			indu and a second second	Signal #2:	Ι	DB-XLB	99 - C	****		-
urrogate Compoi	ınds		chruster concerned concerned to com					ocasio-market and a second			
Parameter Name	RT #1		RT #2		Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobipheny	1 18.59	+0.02	20.19	+0.00	605621 <b>%Re</b>	300143m covery =	93.78 940K	60.92 61OK	Limits =	33-141	940K 
arget Compound	<u>s</u>						I	Final Conc. U	nits: ug	g/Kg Dry Weight	
Parameter Name	RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016							#1	1744	₩.₩	# <i>L</i>	npt
					0	0	74.89	125.54	20Ui	34Ui	20Ui
Aroclor 1016 {1}	6.72	-0.01	6.70		0 17341m	0 10 <b>245m</b>					
Aroclor 1016 {1} Aroclor 1016 {2}				<sup>-0.05</sup> c -0.07 c			74.89	125.54	20Ui	34Ui	
• • •	7.36	<sup>+0.07</sup> c <sup>+0.00</sup> c	7.70	<sup>-0.07</sup> c	17341m	10245m	74.89 121.19	125.54 117.20	20Ui 4.5Ui	34Ui 4.5Ui	
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4}	7.36 7.70 8.17	+0.07c +0.00c +0.03c	7.70 8.08 8.33	-0.07 c +0.08 c +0.04 c	17341m 0m 4895m 12885m	10245m 13992m 19578m 15906m	74.89 121.19 0.0000 35.08 69.02	125.54 117.20 78.34 164.33 142.29	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	
Aroclor 1016 {2} Aroclor 1016 {3}	7.36 7.70 8.17	<sup>+0.07</sup> c <sup>+0.00</sup> c	7.70 8.08 8.33	-0.07 c +0.08 c +0.04 c	17341m 0m 4895m	10245m 13992m 19578m	74.89 121.19 0.0000 35.08	125.54 117.20 78.34 164.33	20Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	20Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221	7.36 7.70 8.17 8.45	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50	-0.07 c +0.08 c +0.04 c	17341m Om 4895m 12885m 10102m 0	10245m 13992m 19578m 15906m 0m 0	74.89 121.19 0.0000 35.08 69.02 74.27 126.44	125.54 117.20 78.34 164.33 142.29 0.0000 111.95	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 34Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui	
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1}	7.36 7.70 8.17 8.45 4.06	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32	-0.07 c +0.08 c +0.04 c	17341m 0m 4895m 12885m 10102m 0 1008m	10245m 13992m 19578m 15906m 0m 0 3129m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42	125.54 117.20 78.34 164.33 142.29 0.0000 1111.95 65.34	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 34Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui 4.5Ui	20Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221	7.36 7.70 8.17 8.45 4.06	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50	-0.07 c +0.08 c +0.04 c	17341m Om 4895m 12885m 10102m 0	10245m 13992m 19578m 15906m 0m 0 3129m 0m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 34Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui	20Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3}	7.36 7.70 8.17 8.45 4.06 5.01 5.23	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32 5.24 5.77	-0.07 c +0.08 c +0.04 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	20Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4}	7.36 7.70 8.17 8.45 4.06 5.01 5.23	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32 5.24	-0.07 c +0.08 c +0.04 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29 120.21	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	20Ui 30Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.44	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32 5.24 5.77 5.84	-0.07 c +0.08 c +0.04 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29 120.21 110.27	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui	20Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1}	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.44	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32 5.24 5.24 5.77 5.84 6.04	-0.07 c +0.08 c +0.04 c -0.09 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15	125.54         117.20         78.34         164.33         142.29         0.0000         111.95         65.34         0.0000         150.29         120.21         110.27         44.42	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui 4.5Ui 30Ui 4.5Ui	20Ui 30Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1} Aroclor 1232 {1}	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.24 5.54 6.26	+0.07 <sub>C</sub> +0.00 <sub>C</sub> +0.03 <sub>C</sub> +0.00 <sub>C</sub>	7.70 8.08 8.33 8.50 4.32 5.24 5.77 5.84 6.04 6.70	-0.07 c +0.08 c +0.04 c -0.09 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m 0m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m 10245m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15 0.0000	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29 120.21 110.27 44.42 219.23	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui 4.5Ui 8.6Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	20Ui 30Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1} Aroclor 1232 {1} Aroclor 1232 {3}	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.44 5.54 6.26 7.10	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32 5.24 5.24 5.77 5.84 6.04 6.70 7.00	-0.07 c +0.08 c +0.04 c -0.09 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m 10245m 2413m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15 0.0000 33.35	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29 120.21 110.27 44.42 219.23 35.89	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	20Ui 30Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3}	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.44 5.54 6.26 7.10	+0.07c +0.00c +0.03c +0.00c	7.70 8.08 8.33 8.50 4.32 5.24 5.24 5.77 5.84 6.04 6.70 7.00	-0.07 c +0.08 c +0.04 c -0.09 c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m 0m 8818m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m 10245m 2413m 13992m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15 0.0000 33.35 0.0000	125.54         117.20         78.34         164.33         142.29         0.0000         111.95         65.34         0.0000         150.29         120.21         110.27         44.42         219.23         35.89         141.55	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	20Ui 30Ui 8.6Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1222 {4} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3}	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.44 5.54 6.26 7.10 7.36	+0.07 <sub>C</sub> +0.00 <sub>C</sub> +0.03 <sub>C</sub> +0.00 <sub>C</sub> C C C	7.70 8.08 8.33 8.50 4.32 5.24 5.24 5.77 5.84 6.04 6.70 7.70	-0.07 c +0.08 c +0.04 c -0.09 c c c c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m 0m 8818m 0m 0	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m 10245m 2413m 13992m 0	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15 0.0000 33.35 0.0000 57.69	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29 120.21 110.27 44.42 219.23 35.89 141.55 124.27	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui	20Ui 30Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3}	7.36 7.70 8.17 8.45 4.06 5.01 5.23 5.44 5.54 6.26 7.10 7.36	+0.07 <sub>C</sub> +0.00 <sub>C</sub> +0.03 <sub>C</sub> +0.00 <sub>C</sub> C C C	7.70 8.08 8.33 8.50 4.32 5.24 5.77 5.84 6.04 6.70 7.70	-0.07 c +0.08 c +0.04 c -0.09 c c c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m 0m 8818m	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m 10245m 2413m 13992m	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15 0.0000 33.35 0.0000	125.54         117.20         78.34         164.33         142.29         0.0000         111.95         65.34         0.0000         150.29         120.21         110.27         44.42         219.23         35.89         141.55         124.27         116.35	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui	20Ui 30Ui 8.6Ui
Aroclor 1016 {2} Aroclor 1016 {3} Aroclor 1016 {3} Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 {1} Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3}	- 7.36 7.70 8.17 8.45 - 4.06 5.01 - 5.23 - 5.44 - 5.54 - 6.26 - 7.10 - 7.36 - 6.26 - 7.10	+0.07c +0.00c +0.03c +0.00c C C C C C C C C C	7.70 8.08 8.33 8.50 4.32 5.24 5.24 5.24 5.77 5.84 6.04 6.70 7.70 6.70 7.70	-0.07 c +0.08 c +0.04 c -0.09 c c c c	17341m 0m 4895m 12885m 10102m 0 1008m 7138m 3523m 14000m 0 5381m 0m 8818m 0m 0	10245m 13992m 19578m 15906m 0m 0 3129m 0m 7857m 4314m 0 4926m 10245m 2413m 13992m 0	74.89 121.19 0.0000 35.08 69.02 74.27 126.44 15.42 188.93 42.32 259.07 32.25 31.15 0.0000 33.35 0.0000 57.69	125.54 117.20 78.34 164.33 142.29 0.0000 111.95 65.34 0.0000 150.29 120.21 110.27 44.42 219.23 35.89 141.55 124.27	20Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 8.6Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui	34Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 4.5Ui 30Ui	20Ui 30Ui 8.6Ui

U: Undetected at or above MDL J: Analyte detected above MDL, but below MRL B: Hit above MRL also found in Method Blank

E: Analyte concentration above high point of ICAL N: Presumptive evidence of compound

Printed: 11/27/2007 17:19:35  $u:\Stealth\Crystal.rpt\quant2.rpt$ 

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

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

J:\GC09\DATA\072407.B\0724F009.D

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:	J:\GC09\D \\cash1\acc 07/24/200 SMPL K0705409	qudata\GC 7 15:12				724R009.) Quant Da		07/25/2007	12:19	Instrumen Vial: Dilution: Soln Conc.	7 1.0	
Signal #1:	DB-35MS					Signal #2:		DB-XLB				
arget Compoun	ds				*****	841941249249497492974 <del>-94</del> 2888-8449			Final Conc.	Units:	ug/Kg Dry Weight	
Parameter Name		RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {	4}	7.61		8.08	с	10539m	19578m	63.70	212.14	4.5Ui	4.5Ui	
Aroclor 1242 {	5}	8.17	с	8.19		12885m	11879m	90.76	164.61	4.5Ui	4.5Ui	
Aroclor 1248	,					0	0	47.65	66.29	13Ui	18Ui	13Ui /
Aroclor 1248 {	1}	7.70	с	8.33	с	4895m	15906m	31.04	126.59	4.5Ui	4.5Ui	
Aroclor 1248 {	2}	8.17	c	8.50	с	12885m	0m	58.71	0.0000	4.5Ui	4.5Ui	
Aroclor 1248 {		8.45	c	9.42		10102m	9272m	52.51	32.83	4.5Ui	4.5Ui	
Aroclor 1248 {	4}	8.82		9.56		11328m	7569m	40.30	39.45	4.5Ui	4.5Ui	
Aroclor 1248 {	5}	8.92		9.83	с	19764m	()m	55.68	0.0000	4.5Ui	4.5Ui	
Aroclor 1254	.,					0	0	55.55	524.11	15Ui	140Ui	15Ui 🗸
Aroclor 1254 {	1}	9.17		9.83	с	11651m	0 <b>m</b>	37.65	0.0000	4.5Ui	4.5Ui	
Aroclor 1254 {		9.87		10.35		()m	116467m	0.0000	939.32	4.5Ui	4.5Ui	
Aroclor 1254 {	-	10.13		10.64		35637m	29221m		115.42	4.5Ui	4.5Ui	
Aroclor 1254 {-		10.53		11.02	с	22274m	0m	57.57	0.0000	4.5Ui	4.5Ui	
Aroclor 1254 {		10.76	c	11.21		0m	105703m	0.0000	517.60	4.5Ui	4.5Ui	
Aroclor 1254	55	10.70	•	11.441		0	0	70.93	74.95	19Ui	20Ui	19Ui -
Aroclor 1260 {	1}	10.43	+0.00	11.02	<sup>+0.03</sup> c	20199m	()m		0.0000	4.5Ui	4.5Ui	
		10.76	+0.01	11.53	+0.00	()m	25247m	0.0000	95.16	4.5Ui	4.5Ui	
Aroclor 1260 { Aroclor 1260 {		11.55		12.21		50903m	30600m		92.62	4.5Ui	4.5Ui	
Aroclor 1260 {		12.34		12.21	с	19670m	6261m		35.28	4.5Ui	4.5Ui	
		12.89		13.89	-0.01 a	25752m	31391m		76.75	4.5Ui	4.5Ui	
Aroclor 1260 { Aroclor 1262	5}	12.89	C	13.89	t	23732m 0	0	85.05	92.65	$(22)_{i}$	24	24
Aroclor 1262 {	11	11.55	с	12.43	с	50903m	6261m		22.91	31	6.0J	R
Aroclor 1262 {	· ·	12.34		13.02		19670m	23147m		110.50	15	29	
Aroclor 1262 {	-	12.89 13.82	c	13.89 14.90	с	25752m 36361m	31391m 57192m		66.43 160.54	10J 33	18 42	
Aroclor 1262 {												
Aroclor 1262 {	5}	14.06	с	15.15	c	()m	25476m		102.89	4.5U	27	0 117
Aroclor 1268	1 \	140-		10.10	_	0	0	30.74	36.67	(8.1.)	9.7J	9.7J
Aroclor 1268 {	1}	14.06	с	15.15	с	()m	25476m	0.0000	42.35	4.50	11J	
Aroclor 1268 {		14.78		16.00		225m	3194m		6.52	4.5U	4.5U	
Aroclor 1268 {		15.25		16.41		7866m	8422m		62.38	13J	16	
Aroclor 1268 {	4}	15.88		17.25		12706m	7459m	• 44.46	35.41	12J	9.3J	marzz
Aroclor 1268 {	5}			18.83		()m	()m	0.0000	0.0000 The -/+ after Re	4.5U etention Time symt	4.5U polize the direction of the F	₹T shift
							• •			v		
Prep Amount:	20.00 g	3			lution:		1.0					
Prep Final Vol:	2 ml 37.9 %			U	nit Facto	r:	1					

Final Concentration =

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

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

Printed: 11/27/2007 17:19:35 u:\Stealth\Crystal.rpt\quant2.rpt

D: Result from dilution d: Compound manually deleted NR: Analyte not reported from this analysis

Bottle ID: Prod Code: 80	982 PCB_LL				Tier: Collect Da	] te: (	[ 06/19/2007		Matrix: Receive Date	SEDIMENT : 06/22/2007	[
	WG0708010 982				Prep Lot: Prep Meth		KWG070716 EPA 3540C	4	Report Grou	<b>p:</b> K0705409	
-	.3932				Prep Date		07/02/2007				
Title: Po	CASH1\ACQUDA Dychlorinated Bip GC09\DATA\072	phenyl	ls (PCBs	5)	2407.B\072(	007_F.M			Calibration I Report List I Method ID: Quant base		
Data File #2:\\dAcqu Date:07Run Type:S1	GC09\DATA\072 cash1\acqudata\G 7/24/2007 15:38 MPL 0705409-003				0724R010.I Quant Dat		07/25/2007 1	12:19	Instrument: Vial: Dilution: Soln Conc. U	GC09.i 8 1.0 (nits: ng/mL	
Signal #1: D	B-35MS				Signal #2:	]	DB-XLB				
urrogate Compou						~					
Parameter Name	R1 #1		RT #2		Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.58	3 +0.01	20.19	0.00	327557m %Re	178453 covery =	50.72 51OK	36.22 360K	Limits =	33-141	510K
arget Compounds	r					- Etabo // Harrison	]	Final Conc. U	nits: ug	Kg Dry Weight	
Parameter Name	R1 #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016					0	0	33.62	40.76	36Ui	44Ui	36Ui
Aroclor 1016 {1}	6.82		6.68		()m	2122m	0.0000	24.28	9.1Ui	9.1Ui	
Aroclor 1016 {2}	7.37				0m	7913m	0.0000	44.31	9.1Ui	9.1Ui	
Aroclor 1016 {3}	7.70				2638m 8663m	0m 6000m	18.91	0.0000 53.68	9.1Ui	9.1Ui	
Aroclor 1016 {4} Aroclor 1016 {5}	8.15 8.45	5 <sup>+0.01</sup> 5 <sup>+0.01</sup>	⊭ 8.29 5 8.50	<sup>0.00</sup> с <sup>-0.09</sup> с	8663m 4835m	6000m ()m	46.40 35.55	53.68 0.0000	9.1Ui 9.1Ui	9.1Ui 9.1Ui	
	0.4.		0.50		0	0	125.66	207.60	140Ui	220Ui	140Ui
Aroclor 1221 Aroclor 1221 {1}			4.32		0	0 8087	0.0000	168.87	9.1Ui	9.1Ui	14001
Aroclor 1221 {1} Aroclor 1221 {2}	4.94	ļ	5.26		3734	6980	98.82	300.53	9.1Ui	9.1Ui	
Aroclor 1221 {3}	5.24		5.65		21718	18747	260.83	358.60	9.1Ui	9.1Ui	
	5.43		5.84		936	86	17.32	2.40	9.1Ui	9.1Ui	
Aroclor 1221 {4}	5.45				0	0	95.32	93.67	110Ui	100Ui	100Ui
Aroclor 1221 {4} Aroclor 1232	5.43				0	v					
• •	5.55		6.04		10915m	1707m	63.19	15.39	9.1Ui	9.1Ui	
Aroclor 1232		5	6.04 6.68				63.19 0.0000	15.39 45.42	9.1Ui 9.1Ui	9.1Ui 9.1Ui	
Aroclor 1232 Aroclor 1232 {1}	5.55	5		с	10915m	1707m					
Aroclor 1232 Aroclor 1232 {1} Aroclor 1232 {2}	5.55	5	6.68	c c	10915m 0m	1707m 2122m	0.0000	45.42	9.1Ui	9.1Ui	
Aroclor 1232 Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3}	5.55 6.31 7.16	5	c 6.68	c c	10915m Om 33706m	1707m 2122m 13543m 11113m 0	0.0000 127.46 0.0000 66.05	45.42 201.43 112.42 72.16	9.1Ui 9.1Ui 9.1Ui 70Ui	9.1Ui 9.1Ui 9.1Ui 77Ui	70Ui
Aroclor 1232 Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3} Aroclor 1232 {4}	5.55 6.31 7.16	5 5 7 0	c 6.68	с с	10915m Om 33706m Om	1707m 2122m 13543m 11113m	0.0000 127.46 0.0000	45.42 201.43 112.42	9.1Ui 9.1Ui 9.1Ui	9.1Ui 9.1Ui 9.1Ui	70Ui
Aroclor 1232 Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242	5.55 6.31 7.16 7.37 6.31 7.16	5 5 7 6 5 6	<ul> <li>6.68</li> <li>7.02</li> <li>7.70</li> <li>6.68</li> <li>6.68</li> <li>7.02</li> </ul>	с с с	10915m Om 33706m Om 0	1707m 2122m 13543m 11113m 0 2122m 13543m	0.0000 127.46 0.0000 66.05 0.0000 71.08	45.42 201.43 112.42 72.16 24.11 133.28	9.1Ui 9.1Ui 9.1Ui 9.1Ui 70Ui 9.1Ui 9.1Ui	9.1Ui 9.1Ui 9.1Ui 77Ui	70Ui
Aroclor 1232 Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242 {4} Aroclor 1242 {1}	5.55 6.31 7.16 7.37 6.31	5 5 7 6 5 6	<ul> <li>6.68</li> <li>7.02</li> <li>7.70</li> <li>6.68</li> </ul>	с с с	10915m 0m 33706m 0m 0 0m	1707m 2122m 13543m 11113m 0 2122m	0.0000 127.46 0.0000 66.05 0.0000	45.42 201.43 112.42 72.16 24.11	9.1Ui 9.1Ui 9.1Ui 70Ui 9.1Ui	9.1Ui 9.1Ui 9.1Ui 77Ui 9.1Ui	70Ui

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

Printed: 11/27/2007 17:19:48  $u:\Stealth\Crystal.rpt\quant2.rpt$ 

D: Result from d ion

d: Compound manually deleted NR: Analyte not reported from this analysis

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:	J:\GC09\D \\cash1\acc 07/24/200 SMPL K0705409	qudata\GC 7 15:38				)724R010.D Quant Date	:	07/25/2007	12:19	Instrumen Vial: Dilution: Soln Conc.	<b>8</b> 1.0	
Signal #1:	DB-35MS					Signal #2:		DB-XLB				
arget Compour	ıds								Final Conc.	Units:	ug/Kg Dry Weight	
Parameter Name		RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {	4}			7.92		() <b>m</b>	()m	0.0000	0.0000	9.1Ui	9.1Ui	
Aroclor 1242 {	5}	8.15	с	8.09	с	8663m	()m	61.02	0.0000	9.1Ui	9.1Ui	
Aroclor 1248	,					0	0	47.72	145.05	51Ui	160Ui	51Ui -
Aroclor 1248 {	1}	7.70	c	8.29	c	2638m	6000m	16.73	47.76	9.1Ui	9.1Ui	
Aroclor 1248 {	2}	8.15	с	8.50	с	8663m	()m	39.48	0.0000	9.1Ui	9.1Ui	
Aroclor 1248 {		8.45	с	9.48		4835m	37264m		131.94	9.1Ui	9.1Ui	
Aroclor 1248 {	4}	8.83				24719m	()m	87.93	0.0000	9.1Ui	9.1Ui	
Aroclor 1248 {	5}	8.92		9.85	с	24608m	36476m		255.47	9.1Ui	9.1Ui	
Aroclor 1254						0	0	89.26	137.47	95Ui	150Ui	95Ui-
Aroclor 1254 {	1}	9.17		9.85	c	15696m	36476m	50.72	151.43	9.1Ui	9.1Ui	
Aroclor 1254 {	2}	9.90		10.35		0 <b>m</b>	()m		0.0000	9.1Ui	9.1Ui	
Aroclor 1254 {		10.13		10.64		30759m	18471m		72.96	9.1Ui	9.1Ui	
Aroclor 1254 {	4}	10.53		10.99	c	20491m	17358m	52.96	150.48	9.1Ui	9.1Ui	
Aroclor 1254 {	5}	10.75	c	11.25		36106m	35741m		175.01	9.1Ui	9.1Ui	
Aroclor 1260						0	0	72.98	107.22	78Ui	120Ui	78Ui -
Aroclor 1260 {	1}	10.43		10.99		23055m	17358m	59.28	73.68	9.1Ui	9.1Ui	
Aroclor 1260 {	2}			11.53		36106m	31422m		118.44	9.1Ui	9.1Ui	
Aroclor 1260 {	· ·			12.21		()m	51320m		155.33	9.1Ui	9.1Ui	
Aroclor 1260 {	4}			12.42		19040m	12929m	67.52	72.85	9.1Ui	9.1Ui	
Aroclor 1260 {	5}	12.89	<sup>0.00</sup> c	13.89	<sup>-0.01</sup> c	49619m	47372m		115.82	9.1Ui	9.1Ui	
Aroclor 1262						0	0	107.99	94.68	110		110
Aroclor 1262 {	1}	11.55	с	12.42	c	()m	12929m	0.0000	47.31	9.1U		
Aroclor 1262 {	-	12.35		13.02		19040m	25159m		120.11	60	130	
Aroclor 1262 {		12.89	c	13.89	с	49619m	47372m		100.25	79	110	
Aroclor 1262 {	4}	13.86		14.88		36043m	50668m	123.72	142.23	130	150	
Aroclor 1262 {	5}	14.06	с	15.15	с	92511m	15722m		63.49	190	67	
Aroclor 1268	• `			1		0	0	85.88	63.29	91	67)i	91 RI
Aroclor 1268 {	1}	14.06	c	15.15	c	92511m	15722m	113.03	26.14	120	28J	
Aroclor 1268 {		14.77				871m	()m		0.0000	9.1U	9.1U	
Aroclor 1268 {	· ·	15.25		16.40		20351m	16649m		123.31	130	130	RI
Aroclor 1268 {	4}	15.78		17.24		53626m	11262m	187.64	53.47	200	57	K
Aroclor 1268 {	5}	17.24		18.82		9065m	72228m	4.76	50.25	9.1U	53	m .1.10
									The -/+ after Re	tention Time symb	polize the direction of the R	1 shift
rep Amount:	8.63 g			Di	lution:	1	.0					
Prep Final Vol:	5 ml			Uı	uit Facto	r: 1						

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

Printed: 11/27/2007 17:19:48 u:\Stealth\Crystal.rpt\quant2.rpt

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

Bottle ID: Prod Code: 80	082 PCB_LL			Tier: Collect Dat		I 06/19/2007		Matrix: Receive Date:	SEDIMEN 06/22/2007	[
	WG0708132		. <u> </u>	Prep Lot:		KWG0707164	1	Report Grouj	<b>K</b> 0705409	
Analysis Method: 8(	)82			Prep Methe Prep Date:		EPA 3540C 07/02/2007				
Prep Ref: 61	.3933	****		Thep Date.	4			1744 WAR WAR HAVE BOD OF STATE OF STATE OF STATE OF STATE	ana an	*****
Title: Po	CASH1\ACQUD olychlorinated B GC09\DATA\07	ipheny	ls (PCBs)	2607.B\0720	07_F.M			Calibration II Report List II Method ID: Quant based		
Data File #1: J:	GC09\DATA\07	2607.H	3\0726F009.D					Instrument:	GC09.i	
Data File #2: \\(	Cash1\Acqudata	GC09\	data\072607_r.1	o\0726R009.I	C			Vial:	5	
-	//26/2007 20:37			Quant Date	:	07/31/2007 1	3:47	Dilution:	10.0	
	VPL							Soln Conc. Un	nits: ng/mL	
Lab ID: K	0705409-004									
Signal #1: D	B-35MS			Signal #2:		DB-XLB				
urrogate Compou	nds									
Parameter Name	R #		RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.5	7 +0.01	20.18 0.00	91294	46573	14.14	9.45			14101
j-	1010				overy =	1410K	950K	Limits =	33-141	
arget Compounds							Final Conc. U	nits: 110	Kg Dry Weight	
urger compounds	R	т	RT	Resp	Resp	****				
Parameter Name	#		#2	#1	#2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016				0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1016 {1}				0 <b>d</b>	0d	0.0000	0.0000	<b>32</b> U	32U	
Aroclor 1016 {2}				0 <b>d</b>	0d	0.0000	0.0000	32U	32U	
Aroclor 1016 {3}				0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	32U	<b>32</b> U	
Aroclor 1016 {4}				()d	0d	0.0000	0.0000	32U	<b>32</b> U	
Aroclor 1016 {5}	· · · ·			0 <b>d</b>	0d	0.0000	0.0000	32U	32U	
Aroclor 1221				0	0	0.0000	0.0000	32U	<b>32</b> U	32U
Aroclor 1221 {1}				() d	0d	0.0000	0.0000	32U	32U	
Aroclor 1221 {2}				()d	() d	0.0000	0.0000	32U	32U	
Aroclor 1221 {3}				0 <b>d</b>	() d	0.0000	0.0000	32U	<b>32</b> U	
Aroclor 1221 {4}				0 <b>d</b>	0d	0.0000	0.0000	32U	32U	
Aroclor 1232				0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1232 {1}				0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	32U	32U	
				0d	0d	0.0000	0.0000	32U	32U	
Aroclor 1232 {2}						0.0000	0.0000	32U	32U	
Aroclor 1232 {2} Aroclor 1232 {3}				()d	() d	0.0000				
Aroclor 1232 {3} Aroclor 1232 {4}				0d	()d	0.0000	0.0000	<b>32</b> U	32U	
Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242				Od O	0d 0	0.0000 0.0000	0.0000	32U	32U 32U	<b>32</b> U
Aroclor 1232 {3} Aroclor 1232 {4}				0d	()d	0.0000			32U	<b>32</b> U
Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242				Od O	0d 0	0.0000 0.0000	0.0000	32U	32U 32U	<b>32</b> U
Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242 Aroclor 1242 {1}				60 0 0d	0d 0 0d	0.0000 0.0000 0.0000	0.0000 0.0000	32U 32U	32U 32U 32U	32U

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

Printed: 11/27/2007 17:20:05  $u:\Stealth\Crystal.rpt\quant2.rpt$ 

d: Compound manually deleted NR: Analyte not reported from this analysis

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:		udata\GC09 20:37	B\0726F009.D \data\072607_r.b	0726R009 Quant Da		07/31/2007	13:47	Instrumen Vial: Dilution: Soln Conc	5 10.0	
Signal #1:	DB-35MS			Signal #2:	244000344000114000114780400	DB-XLB	1011-10-10-10-10-00-0-0-0-0-0-0-0-0-0-0			
<sup>r</sup> arget Compoun	ds						Final Conc.	Units:	ug/Kg Dry Weight	
Parameter Name		RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4	4}			()d	0d	0.0000	0.0000	<b>32</b> U	<b>32</b> U	
Aroclor 1242 {:	5}			() d	()d	0.0000	0.0000	<b>32</b> U	32U	
Aroclor 1248	,			0	0	302.11	432.71	560D	800D	800D
Aroclor 1248 {	1}	7.70	8.29	46526m	47005	294.99	374.08	550D	690D	
Aroclor 1248 {2	2}	8.14	8.59	63481m	75981	289.26	591.26	530D	1100D	
Aroclor 1248 {		8.44	9.45	48816m	122258	253.72	432.88	470D	800D	
Aroclor 1248 {	•	8.82	9.56	83844m	63811	298.26	332.60	550D	620D	
Aroclor 1248 {:		8.92	9.85	132870m	0	374.30	0.0000	690D	32U	
Aroclor 1248 (	- )			0	0	0.0000	0.0000	32U	32U	32U
Aroclor 1254 {	1}			0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	32U	<b>32</b> U	
Aroclor 1254 {2				()d		0.0000	0.0000	32U	32U	
Aroclor 1254 {	-			0d	0d		0.0000	32U 32U	320 32U	
Aroclor 1254 {	· ·			0d	0d		0.0000	32U	32U	
Aroclor 1254 {:					0d	0.0000	0.0000	32U	32U	
Aroclor 1254 {.	, , , , , , , , , , , , , , , , , , ,			0	0	216.54	218.58	400D	400D	400D /
Aroclor 1260 {	1}	10.43 +0.00	10.99	78989m	50524	203.11	214.46	380D	400D	
Aroclor 1260 {2	-	10.75	11.53	111706m	62246	251.46	234.61	460D	430D	
Aroclor 1260 {2		11.55	$12.21^{0.00}$	109689m	77678	255.41	235.11	400D 470D	430D	
Aroclor 1260 {	· ·	11.33 <sup>-0.01</sup>		49324m	38050	174.90	233.11	470D 320D	400D	
		12.89	13.89	117104m	79474	197.82	194.31	370D	360D	
Aroclor 1260 {: Aroclor 1262	)}	12.07	13.07	0	0	0.0000	0.0000	370D 32U	32U	32U
Aroclor 1262 {	13			0d	0d		0.0000	32U 32U	32U 32U	540
					)d		0.0000			
Aroclor 1262 {2 Aroclor 1262 {2				0d 0d	00 0d		0.0000	32U 32U	32U 32U	
Aroclor 1262 {	,			0d	b0 b0		0.0000	32U 32Ú	32U 32U	
			· · ·	0d	0d		0.0000			
Aroclor 1262 {: Aroclor 1268	)}			0 <b>u</b> 0	00	59.59	98.04	32U 110D	32U 180D	180PD
Aroclor 1268	13	14.04	15.15	0	73376	0.0000	121.98	32U	230D	1001.13
				22983	24470	35.14	49.95			
Aroclor 1268 {2 Aroclor 1268 {2	·	14.86 15.23	16.02 16.40	13487	24470 19976	81.28	49.93 147.96	65JD 150D	92JD 270D	
Aroclor 1268 {		15.23	10.40	0	19970	0.0000	0.0000	130D 32U	32U	
				· · · · · · · · · · · · · · · · · · ·						
Aroclor 1268 {:	<b>&gt;</b> }	17.24	18.78	118776	103877	62.34	72.27 The -/+ after Re	120D tention Time syml	130D bolize the direction of the R	T shift
Duon Amount.	20.02 -		D94		10.0					
Prep Amount: Prep Final Vol: Solids:	20.03 g 2 ml 54.0 %		Dilution: Unit Facto		10.0 1					

Final Concentration =

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

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

Printed: 11/27/2007 17:20:05 u:\Stealth\Crystal.rpt\quant2.rpt

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

\*: Result fails acceptance criteria

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

Bottle ID: Prod Code:	8082 PCB_LL	1+++++++++++++++++++++++++++++++++++++		arta a di a di A Malifi da si	Tier: Collect Da	I te: (	)6/19/2007		Matrix: Receive Date:	SEDIMENT 06/22/2007	-
-	KWG0708010 8082		<u></u>	*****	Prep Lot: Prep Meth		CWG0707164 EPA 3540C	4	Report Group	<b>•</b> K0705409	
-	513934				Prep Date		07/02/2007				
Title:	\\CASH1\ACQUDA Polychlorinated Bip J:\GC09\DATA\072	henyls	(PCBs	5)	2407.B\072(	007_F.M			Calibration II Report List II Method ID: Quant based		
Data File #2: Acqu Date: Run Type:	J:\GC09\DATA\072 \\cash1\acqudata\GC 07/24/2007 16:05 SMPL K0705409-005				0724R011.I Quant Dat		)7/25/2007 1	2:19	Instrument: Vial: Dilution: Soln Conc. Ui	GC09.i 9 1.0 nits: ng/mL	
Signal #1:	DB-35MS				Signal #2:	I	DB-XLB				
urrogate Compo					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
Parameter Name	RT #1		RT #2		Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphen	yl 18.57		20.19	0.00	424692 %Re	264042 covery =	65.76 66OK	53.59 540K	Limits =	33-141	660K
arget Compound	ls						I	Final Conc. U	nits: ug	Kg Dry Weight	
Parameter Name	RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1016					0	0	95.63	145.61	67Ui	110Ui	67Ui •
Aroclor 1016 {1			6.77		() <b>m</b>	14132m	0.0000	161.68	24Ui	24Ui	
Aroclor 1016 {2	-		7.71		14450m	10277m	51.76	57.55	24Ui	24Ui	
Aroclor 1016 {3	,	<sup>0.00</sup> c		-0.07 c	12106m	()m	86.74	0.0000	24Ui	24Ui	
Aroclor 1016 {4	·			<sup>0.00</sup> c	24846m 15092m	27791m 11543m	133.08 110.95	248.62 114.59	24Ui	24Ui 24Ui	
Aroclor 1016 {5	} 8.44	с	8.08						24Ui		
Aroclor 1221			1 27		0 581	0 975m	228.94 8.89	132.63 20.36	160Ui	93Ui	93Ui 1
1 1 1001 (1	·		4.37 5.27		12184	5562m	322.46	20.30	24Ui 24Ui	24Ui 24Ui	
Aroclor 1221 {1	3 5.02						0		2101	2101	
Aroclor 1221 {2	,						0.0000	128.05	2411:	OATE	
Aroclor 1221 {2 Aroclor 1221 {3	} 5.24		5.79		0	7217m	0.0000	138.05	24Ui 24Ui	24Ui 24Ui	
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4	} 5.24						0.0000 355.49 363.05	138.05 0.0000 268.69	24Ui	24Ui	190Ui -
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1222 {4	} 5.24 } 5.45		5.79		0 19211 0	7217m 0m 0	355.49 363.05	0.0000 268.69	24Ui 260Ui	24Ui 190Ui	190Ui -
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1232 Aroclor 1232 {1	<pre>     5.24     5.45     5.66 </pre>		5.79		0 19211 0 0m	7217m 0m 0 13989m	355.49 363.05 0.0000	0.0000 268.69 126.14	24Ui 260Ui 24Ui	24Ui 190Ui 24Ui	190Ui -
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1232 Aroclor 1232 {1 Aroclor 1232 {2	<pre>     5.24     5.45     5.66     6.25 </pre>	c	5.79	c	0 19211 0	7217m 0m 0	355.49 363.05	0.0000 268.69	24Ui 260Ui	24Ui 190Ui	190Ui -
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1222 {4 Aroclor 1232 {1 Aroclor 1232 {2 Aroclor 1232 {2 Aroclor 1232 {3	<pre>     5.24     5.45     5.66     6.25     7.16 </pre>	c c	5.79 6.04 6.64 7.02	c c	0 19211 0 0m 13727m 229512m	7217m 0m 0 13989m 26915m 0m	355.49 363.05 0.0000 93.46 867.89	0.0000 268.69 126.14 575.97 0.0000	24Ui 260Ui 24Ui 24Ui 24Ui 24Ui	24Ui 190Ui 24Ui 24Ui 24Ui	190Ui -
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1222 {4 Aroclor 1232 {1 Aroclor 1232 {2 Aroclor 1232 {3 Aroclor 1232 {3 Aroclor 1232 {4	<pre>     5.24     5.45     5.66     6.25     7.16 </pre>	c c	5.79 6.04 6.64 7.02	c	0 19211 0 0m 13727m	7217m 0m 0 13989m 26915m	355.49 363.05 0.0000 93.46	0.0000 268.69 126.14 575.97	24Ui 260Ui 24Ui 24Ui 24Ui 24Ui	24Ui 190Ui 24Ui 24Ui 24Ui 24Ui 24Ui	
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1222 {4 Aroclor 1232 {1 Aroclor 1232 {2 Aroclor 1232 {3 Aroclor 1232 {3 Aroclor 1232 {4	<pre>     5.24     5.45     5.66     6.25     7.16     7.29 </pre>	с с с	5.79 6.04 6.64 7.02 7.71	c c	0 19211 0 0m 13727m 229512m 14450m	7217m 0m 0 13989m 26915m 0m 10277m	355.49 363.05 0.0000 93.46 867.89 127.81	0.0000 268.69 126.14 575.97 0.0000 103.97	24Ui 260Ui 24Ui 24Ui 24Ui 24Ui	24Ui 190Ui 24Ui 24Ui 24Ui	190Ui -
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1221 {4 Aroclor 1232 {1 Aroclor 1232 {2 Aroclor 1232 {3 Aroclor 1232 {3 Aroclor 1232 {4 Aroclor 1242 {1	<pre>     5.24     5.45     5.45     5.66     6.25     7.16     7.29     6.25 </pre>	с с с с	5.79 6.04 6.64 7.02 7.71 6.64	с с с	0 19211 0 0m 13727m 229512m 14450m 0 13727m	7217m 0m 0 13989m 26915m 0m 10277m 0 26915m	355.49 363.05 0.0000 93.46 867.89 127.81 195.84 54.39	0.0000 268.69 126.14 575.97 0.0000 103.97 191.22 305.67	24Ui 260Ui 24Ui 24Ui 24Ui 24Ui 140Ui 24Ui	24Ui 190Ui 24Ui 24Ui 24Ui 24Ui 140Ui 24Ui	
Aroclor 1221 {2 Aroclor 1221 {3 Aroclor 1221 {4 Aroclor 1222 {4 Aroclor 1232 {1 Aroclor 1232 {2 Aroclor 1232 {3 Aroclor 1232 {3 Aroclor 1232 {4	<pre> } 5.24 } 5.45 } 5.66 } 6.25 } 7.16 } 6.25 } 6.25 } 7.16</pre>	с с с с	5.79 6.04 6.64 7.02 7.71	с с с	0 19211 0 0m 13727m 229512m 14450m 0	7217m 0m 0 13989m 26915m 0m 10277m 0	355.49 363.05 0.0000 93.46 867.89 127.81 195.84	0.0000 268.69 126.14 575.97 0.0000 103.97 191.22	24Ui 260Ui 24Ui 24Ui 24Ui 24Ui 140Ui	24Ui 190Ui 24Ui 24Ui 24Ui 24Ui 24Ui 140Ui	

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

Printed: 11/27/2007 17:20:13 u:\Stealth\Crystal.rpt\quant2.rpt

d: Compound manually deleted NR: Analyte not reported from this analysis

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

J:\GC09\DATA\072407.B\0724F011.D

Page 1 of 2

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:	J:\GC09\DA \\cash1\acqu 07/24/2007 SMPL K0705409	udata\GC 16:05				0724R011. Quant Da		)7/25/2007	12:19	Instrument: Vial: Dilution: Soln Conc.	9 1.0	
Signal #1:	DB-35MS					Signal #2:	: 1	OB-XLB				
arget Compoun	ıds					******			Final Conc.	Units: u	g/Kg Dry Weight	
Parameter Name		RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {	4}			7.94	с	()m	0 <b>m</b>	0.0000	0.0000	<b>2</b> 4Ui	24Ui	
Aroclor 1242 {	5}	8.14	с	8.09		24846m	0m	175.01	0.0000	24Ui	24Ui	
Aroclor 1248						0	0	122.09	564.89	86Ui	400Ui	86Ui -
Aroclor 1248 {	1}	7.70	с	8.29	c	12106m	27791m	76.76	221.18	24Ui	24Ui	
Aroclor 1248 {2	2}	8.14	с			24846m	173346m	113.22	1,349	24Ui	24Ui	
Aroclor 1248 {		8.44	с			15092m	66712m	78.44	236.21	24Ui	24Ui	
Aroclor 1248 {	4}	8.82		9.56		43452m	29131m	154.57	151.84	24Ui	24Ui	
Aroclor 1248 {:	5}	8.92		9.85	с	66539m	123696m	187.45	866.31	24Ui	24Ui	
Aroclor 1254						0	0	243.87	365.74	170	250	250 RP
Aroclor 1254 {	1}	9.18		9.85	c	47771m	123696m	154.37	513.53	110	360	
Aroclor 1254 {	2}	9.89		10.39		100473m	0m	493.61	0.0000	340	24U	
Aroclor 1254 {	<i>,</i>	10.13		10.63		93350m	94432m	187.13	372.99	130	260	
Aroclor 1254 {	4}	10.53		10.99	c	52728m	33581m	136.27	291.11	95	200	
Aroclor 1254 {:	5}	10.75	с	11.25		46699m	58267m	247.94	285.32	170	200	
Aroclor 1260						0	0	97.06 <sup>ccv</sup>		68	93	93 🧹
Aroclor 1260 {	1}	10.43	+0.00	10.99	с	31232m	33581m	80.31	142.55	56	99	
Aroclor 1260 {2	2}	10.75	с	11.53		46699m	45426m	105.13	171.22	73	120	
Aroclor 1260 {	3}	11.55		12.21		65838m	54274m	153.30	164.27	110	110	
Aroclor 1260 {	4}	12.35	<sup>0.00</sup> c	12.42	<sup>0.00</sup> c	18345m	17250m	65.05	97.19	45	68	
Aroclor 1260 {	5}	12.89	с	13.89	<sup>0.00</sup> c	48240m	37759m	81.49	92.32	57	64	
Aroclor 1262						0	0	88.71	90.69	$\binom{62}{6}$	63	63
Aroclor 1262 {	1}	11.55	с	12.42	с	65838m	17250m	152.98	63.12	110	44	
Aroclor 1262 {	2}	12.35	с	13.01		18345m	30178m	54.63	144.07	38	100	
Aroclor 1262 {		12.89	c	13.89	с	48240m	37759m	72.17	79.90	50	56	
Aroclor 1262 {-	4}	13.83		14.89		18298m	33451m	62.81	93.90	44	65	
Aroclor 1262 {	5}	14.05	с	15.15	с	52666m	17946m	100.95	72.48	70	50	
Aroclor 1268	,					0	0	37.21	50.96	(26J)	35	35
Aroclor 1268 {	1}	14.05	с	15.15	c	52666	17946m	64.35	29.83	45	24U	
Aroclor 1268 {	2}	14.86		15.96		6044	()m	9.24	0.0000	24U	24U	
Aroclor 1268 {		15.26		16.43		5491	8135m	33.09	60.25	24U	42	
Aroclor 1268 {	4}	15.87		17.24		15396	19651m	53.87	93.30	38	65	-
Aroclor 1268 {	5}	17.24		18.80		48537	29391m	25.48	20.45	<b>2</b> 4U	24U	
									The -/+ after Ret	ention Time symbo	olize the direction of the R	T shift.
Prep Amount:	40.00 g			D	ilution:		1.0					
Prep Final Vol: Solids:	2 ml 7.18 %			U	nit Facto	or:	1					

Final Concentration =

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

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

Printed: 11/27/2007 17:20:13 u:\Stealth\Crystal.rpt\quant2.rpt

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

Bottle ID: Prod Code:	8082 PCB_L	L		Tier: Collect Dat	] e: (	[ 06/20/2007		Matrix: Receive Dat	te:	SEDIMENT 06/22/2007	
Analysis Lot: Analysis Method:	KWG070801	0		Prep Lot:		KWG0707164		Report Gro	up:	K0705409	
·	8082			Prep Mether Prep Date:		EPA 3540C 07/02/2007					
Prep Ref:	613935										c
Quant Method: Title: MB Ref:	Polychlorinat	ed Biphen	\GC09\DATA\072 1yls (PCBs) 7.B\0723F024.D	2407.B\0720	07_F.M			Calibration Report List Method ID Quant bas	ID:	CAL6451 LJ2797 MJ150 eport List	
Data File #1: Data File #2:	\\cash1\acqud	lata\GC09	7.B\0724F012.D \data\072407_r.b\				• 10	Instrument Vial:	:	GC09.i 10	
Acqu Date: Run Type: Lab ID:	07/24/2007 SMPL K0705409-00			Quant Date	e: (	07/25/2007 12	2:19	Dilution: Soln Conc.	Units:	1.0 ng/mL	
Signal #1:	DB-35MS			Signal #2:	]	DB-XLB					
urrogate Comp	ounds	*****	***************************************								
Parameter Name		RT #1	RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2				Rpt
Decachlorobipher	nyl	18.57	20.18 -0.01	442853 %Rec	351276 covery =	68.57 690K	71.30 710K	Limits =	33	-141	7101
arget Compoun	ads				-	F	inal Conc. U	nits: u	ıg/Kg D	ry Weight	
Parameter Name	4 - A A A A A A A A A A A A A A A A A A	RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/I	≺g #2	Rpt
Aroclor 1016				0	0	0.0000	0.0000	<b>2</b> .9U	2	9U	<b>2</b> .9U
Aroclor 1016 {	•			0 <b>d</b>	0d	0.0000	0.0000	2.9U		.9U	
Aroclor 1016 {2	2}			0 <b>d</b>	0d	0.0000	0.0000	2.9U	2	2.9U	
Aroclor 1016 {3				0 <b>d</b>	0d	0.0000	0.0000	2.9U		2.9U	
Aroclor 1016 {-	-			b() bd	b()	0.0000	0.0000	2.9U		2.9U	
Aroclor 1016 {:	D}			()d	0d	0.0000	0.0000	2.9U		2.9U	
									~	2.9U	2.9U
Aroclor 1221				0	0	0.0000	0.0000	2.9U			
Aroclor 1221 Aroclor 1221 {				() <b>d</b>	0 <b>d</b>	0.0000	0.0000	2.9U	2	2.9U	
Aroclor 1221 Aroclor 1221 { Aroclor 1221 {	2}			0d 0d	0d 0d	0.0000 0.0000	0.0000	2.9U 2.9U	2	2.9U 2.9U	
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 {	2} 3}			0d 0d 0d	0d 0d 0d	0.0000 0.0000 0.0000	0.0000 0.0000 0.0000	2.9U 2.9U 2.9U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.9U 2.9U 2.9U	
Aroclor 1221 Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 {	2} 3}			0d 0d 0d 0d	b() b() b() b() b()	0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U	22	2.9U 2.9U 2.9U 2.9U 2.9U	2.90
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 {	2} 3} 4}			0d 0d 0d 0d 0	0d 0d 0d 0d 0	0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	22	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2.9U
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1232 { Aroclor 1232 {	2} 3} 4} 1}			0d 0d 0d 0d 0 0	0d 0d 0d 0d 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	22	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2.9U
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 {	2} 3} 4} 1} 2}			0d 0d 0d 0d 0	0d 0d 0d 0d 0	0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2.9U
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 {	2} 3} 4} 1} 2} 3}			0d 0d 0d 0d 0d 0d 0d	0d 0d 0d 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	222222222222222222222222222222222222222	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2.9U
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1222 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 {	2} 3} 4} 1} 2} 3}			0d 0d 0d 0d 0 0 0 0 0 0 0 0 0	b() b() b() b() 0 b() d() d()	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U		2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1222 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 {	2} 3} 4} 1} 2} 3} 4}			0d 0d 0d 0d 0d 0d 0d 0d	b0 b0 b0 0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2.9U 2.9U
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1242 { Aroclor 1242 {	2} 3} 4} 1} 2} 3} 4} 1}			0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d 0 d	0d 0d 0d 0 0 0d 0d 0d 0 0 0 0 0 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	
Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1221 { Aroclor 1222 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 { Aroclor 1232 {	2} 3} 4} 1} 2} 3} 4} 1} 2}			0d 0d 0d 0d 0d 0d 0d 0d 0d 0d	0d 0d 0d 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U		2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U 2.9U	

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

Printed: 11/27/2007 17:20:22 u:\Stealth\Crystal.rpt\quant2.rpt

Nestar Hon Galaxies
 Compound manually deleted
 NR: Analyte not reported from this analysis

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:						724R012.E Quant Dat		07/25/2007	12:19	Instrumer Vial: Dilution: Soln Conc		GC09.i 10 1.0 ng/mL	
Signal #1:	DB-35M	S				Signal #2:		DB-XLB					
arget Compour	nds								Final Conc.	Units:	ug/Kg I	Dry Weight	
Parameter Name		RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/	Kg #2	Rpt
Aroclor 1242 {	4}					0d	()d	0.0000	0.0000	2.9U		2.9U	
Aroclor 1242 {	5}					0 <b>d</b>	0d	0.0000	0.0000	2.9U		2.9U	
Aroclor 1248						0	0	0.0000	0.0000	<b>2</b> .9U		<b>2</b> .9U	2.9U
Aroclor 1248 {	1}					<b>b</b> 0	) d	0.0000	0.0000	2.9U		2.9U	
Aroclor 1248 {	-					0 <b>d</b>	()d		0.0000	2.9U		2.9U	
Aroclor 1248 {	-					0d	0d		0.0000	2.9U		2.9U	
Aroclor 1248 {	4}					0 <b>d</b>	0d	0.0000	0.0000	2.9U		2.9U	
Aroclor 1248 {	5}					0 <b>d</b>	0d		0.0000	2.9U		2.9U	
Aroclor 1254	• >	0.17		0.05		0	0	36.91	84.22	12Ui		26Ui	12Ui 1
Aroclor 1254 {		9.17		9.85		5129m	5340	16.58	22.17	2.9Ui		2.9Ui	
Aroclor 1254 {	-	9.91		10.40		5931m	22495	29.14	181.42	2.9Ui		2.9Ui	
Aroclor 1254 {		10.12 10.57		10.64 10.99	с	10276m 31473m	10493 15687	20.60 81.34	41.45 136.00	2.9Ui 2.9Ui		2.9Ui 2.9Ui	
Aroclor 1254 {						<del>.</del>							
Aroclor 1254 {	5}	10.76	с	11.25		()m	8177	0.0000	40.05	2.9Ui		2.9Ui	1077
Aroclor 1260 Aroclor 1260 {	1)	10.44	+0.02	10.99	с	0 35071m	0 15687	40.10 90.18	45.45 66.59	13Ui 2.9Ui		14Ui 2.9Ui	13Ui -
Aroclor 1260 {				11.52 12.16	-0.01 -0.06	()m ()m	19772 0	0.0000 0.0000	74.52 0.0000	2.9Ui 2.9Ui		2.9Ui 2.9Ui	
Aroclor 1260 {     Aroclor 1260 {	· ·			12.10		5918m	5215	20.99	29.38	2.901 2.9Ui		2.901 2.9Ui	
				13.89		5405m	4629	9.13	11.32	2.901 2.9Ui			
Aroclor 1260 { Aroclor 1262	5}	12.89	C	15.89		0	4029	9.13 25.60	0.0000	2.901 7.7J		2.9Ui 2.9U	2.9U
Aroclor 1262 {	13	11.55	с			0	0d		0.0000	2.9U		2.9U	2.70
Aroclor 1262 {		12.34	c			5918	0d	17.63	0.0000	5.3J		2.9U	
Aroclor 1262 {	,	12.34	c			5405	0d 0d		0.0000	2.9U		2.90 2.9U	
Aroclor 1262 {		13.84				5534	0d	19.00	0.0000	5.7J		2.9U	
Aroclor 1262 {		14.05	с			30109	0d	57.71	0.0000	17		2.9U	
Aroclor 1268	- )					0	0	15.95	0.0000	4.8J		2.9U	2.9U -
Aroclor 1268 {	1}	14.05	c			30109	()d	36.79	0.0000	11J	:	<b>2</b> .9U	
Aroclor 1268 {	2}	14.86				695	0d	1.06	0.0000	2.9U		2.9U	
Aroclor 1268 {		15.23				3948	0 <b>d</b>	23.79	0.0000	7.2J	:	2.9U	
Aroclor 1268 {	4}	15.86	<u></u> .			4577	0d	16.02	0.0000	4.8J		2.9U	
Aroclor 1268 {	5}	17.23				3969	0d	2.08	0.0000	<b>2</b> .9U		2.9U	
									The -/+ after Ret	ention Time sym	bolize the d	irection of the R	T shift
Prep Amount: Prep Final Vol: Solids:	11.24 2 ml 59.1 %				lution: iit Factor		1.0 1						

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

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

Printed: 11/27/2007 17:20:22 u:\Stealth\Crystal.rpt\quant2.rpt

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

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

J:\GC09\DATA\072407,B\0724F012,D

Bottle ID: Prod Code: 80	082 PCB_LL	4-1			Tier: Collect Da	I te: (	)6/20/2007		Matrix: Receive D		SEDIMENT 06/22/2007	- -
•	WG0708132				Prep Lot:		KWG0707164	4	Report G	roup:	K0705409	
Analysis Method: 8(	082				Prep Meth Prep Date:		EPA 3540C 07/02/2007					
Prep Ref: 61	13936	1000-000-000-000-000	a general the state of the second state of the			•			nga amang Mangalan Mangalan Kangalan Kangalan Kangalan Kangalan Kangalan Kangalan Kangalan Kangalan Kangalan Ka	ZILVIDO40W201Z01EFe003EWR#M	<b>91</b> 0129999999999999999999999999999999999	
Title: Po	CASH1\ACQUDA blychlorinated Bipl \GC09\DATA\072	henyls	(PCBs)		607.B\0720	007_F.M			Calibratio Report Li Method II Quant ba	st ID: D:	CAL6451 LJ2797 MJ150 eport List	
Data File #1:	GC09\DATA\072	607 B\(	0726F01	0 D				n	Instrumer	nt:	GC09.i	
	Cash1\Acqudata\G				0726R010.	D			Vial:		6	
	7/26/2007 21:04			_	Quant Dat		07/31/2007 1	4:05	Dilution:		1.0	
-	MPL								Soln Conc	. Units:	ng/mL	
Lab ID: K	0705409-007											
Signal #1: D	B-35MS				Signal #2:	I	DB-XLB					
urrogate Compou	nds				******			MANCONCT				
Parameter Name	RT #1	da	RT #2		Resp #1	Respe #2	ng/mL #1	ng/mL #2		9- <b>89-9-</b> 8-6-6-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-9-		Rpt
Decachlorobiphenyl	18.58	+0.02	20.19 +0	0.01	615414	349082	95.29	70.86	······································			9501
j-					%Re	covery =	95OK	710K	Limits =	- 33-	-141	
arget Compounds	1						]	Final Conc. U	nits:	ug/Kg D	ry Weight	
	RT	*****	RT		Resp	Resp	ng/mL	ng/mL	ug/Kg	ug/K	-	
Parameter Name	#1		#2		#1	#2	#1	#2	#1		¥2	Rpt
Aroclor 1016					0	0	0.0000	0.0000	<b>2</b> .6U	2	.6U	2.6U
Aroclor 1016 {1}					0d	0 <b>d</b>		0.0000	<b>2</b> .6U	2	.6U	
Aroclor 1016 {2}						0 <b>u</b>	0.0000	0.0000	1.00			
					0 <b>d</b>	0 <b>d</b>	0.0000 0.0000	0.0000	2.6U	2	.6U	
Aroclor 1016 {3}	******		<u> </u>		0d 0d						6U 6U	
Aroclor 1016 {3} Aroclor 1016 {4}						0 <b>d</b>	0.0000	0.0000	2.6U	2		
					()d	0d Od	0.0000	0.0000	2.6U 2.6U	2	.6U	
Aroclor 1016 {4}					0d 0d	0d 0d 0d	0.0000	0.0000 0.0000 0.0000	2.6U 2.6U 2.6U	2 2 2	.6U .6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5}					0d 0d 0d	0d 0d 0d	0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U	2 2 2 2 2	.6U .6U .6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221			- A		0d 0d 0d	0d 0d 0d 0d	0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2	.6U .6U 6U 6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2}					0d 0d 0d 0 0	0d 0d 0d 0d 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1}	· · · · · · · · · · · · · · · · · · ·				0d 0d 0d 0 0 0 0 0 0 0 0	0d 0d 0d 0d 0 0 0 0d 0d	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3}					0d 0d 0d 0 0d 0d 0d	0d b0 0d 0d 0d 0d 0d 0d 0d	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U	2.6U 2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232					() d () d () d () d () d () d () d	0d 0d 0d 0d 0d 0d 0d 0d 0d	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U	
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4}	· · · · · · · · · · · · · · · · · · ·				() d () d () d () d () d () d () d () d	0d b0 0d 0d 0d 0d 0d 0d 0 0 0 0 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U	
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 Aroclor 1232 {1}	· · · · · · · · · · · · · · · · · · ·				0d 0d 0d 0d 0d 0d 0d 0d 0 0d	0d b0 0d 0d 0d 0d 0d 0d 0 0d 0 0d 0 0d	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U	
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {4} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3}	·····				0d 0d 0d 0d 0d 0d 0d 0d 0 0d 0d 0d	b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U .6U	
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 Aroclor 1232 {1} Aroclor 1232 {2}	· · · · · · · · · · · · · · · · · · ·				0d 0d 0d 0d 0d 0d 0d 0 0 0 0 0 0 0 0 0	0d b0 0d 0d 0d 0d 0 0 0 0 0 0 0 0 0 0 0	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U .6U	
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {4} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3} Aroclor 1232 {4}	······				0d 0d 0d 0d 0d 0d 0d 0 0d 0d 0d 0d	b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U .6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {4} Aroclor 1232 {1} Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242 {1}	· · · · · · · · · · · · · · · · · · ·				0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0	b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U .6U	2.6U
Aroclor 1016 {4} Aroclor 1016 {5} Aroclor 1221 Aroclor 1221 {1} Aroclor 1221 {2} Aroclor 1221 {3} Aroclor 1221 {4} Aroclor 1232 {1} Aroclor 1232 {1} Aroclor 1232 {2} Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242	· · · · · · · · · · · · · · · · · · ·				0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0d 0	b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b0 b	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U 2.6U	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	.6U .6U .6U .6U .6U .6U .6U .6U .6U .6U	2.6U

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

Printed: 11/27/2007 17:20:30  $u:\Stealth\Crystal.rpt\quant2.rpt$ 

d: Compound manually deleted NR: Analyte not reported from this analysis

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:		qudata\GC0 7 21:04	7.B\0726F010.D 99\data\072607_1			)7/31/2007	14:05	Instrume Vial: Dilution: Soln Con	6 1.0	
Signal #1:	DB-35MS			Signal #2:	:	DB-XLB				
arget Compoun	ds						Final Conc.	Units:	ug/Kg Dry Weigh	t
Parameter Name		RT #1	RT #2	Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {4	ŀ}			0 <b>d</b>	0d	0.0000	0.0000	<b>2</b> .6U	<b>2</b> .6U	
Aroclor 1242 {	5}			()d	0d	0.0000	0.0000	<b>2</b> .6U	2.6U	
Aroclor 1248				0	0	988.79	1,241	150	190	190
Aroclor 1248 {1	.}	7.70	8.29	159896	171394m	1,014	1,364	150	210	
Aroclor 1248 {2	2}	8.14	8.59	225153	()m	1,026	0.0000	150	2.6U	
Aroclor 1248 {3	<i>,</i>	8.45	9.45	108551	273419m	564.19	968.10	85	150	
Aroclor 1248 {4	-}	8.83	9.56	248094	266768m	882.55	1,390	130	210	
Aroclor 1248 {	5}	8.92	9.85	517386	() <b>m</b>	1,458	0.0000	220	2.6U	
Aroclor 1254				0	0	0.0000	0.0000	2.6U	2.6U	2.6U
Aroclor 1254 {	}			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {2				0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	<b>2</b> .6U	2.6U	
Aroclor 1254 {3	-			0d	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {4	•}			b()	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1254 {	5}			0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	2.6U	<b>2</b> .6U	
Aroclor 1260				0	0	942.25	1,392	140	210	210 🦯
Aroclor 1260 {	}	10.43 +		332936	317761m	856.10	1,349	130	200	
Aroclor 1260 {2	2}	10.75 +	11.53	499089	429174m	1,124	1,618	170	240	
Aroclor 1260 {3	-	11.50	12.21	0	6144 <b>2</b> 9m	0.0000	1,860	<b>2</b> .6U	280	
Aroclor 1260 {4	ł}	12.35 +	12.43 +0.00	199205	179613m	706.37	1,012	110	150	
Aroclor 1260 {5	5}	12.89 +0	13.89 +0.00	641112	459406m	1,083	1,123	160	170	
Aroclor 1262				0	0	0.0000	0.0000	2.6U	<b>2</b> .6U	2.6U
Aroclor 1262 {	.}			() <b>d</b>	()d	0.0000	0.0000	<b>2</b> .6U	2.6U	
Aroclor 1262 {2	!}			0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	<b>2</b> .6U	<b>2</b> .6U	
Aroclor 1262 {3	3}			0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	<b>2</b> .6U	<b>2</b> .6U	
Aroclor 1262 {4	ł}			() <b>d</b>	0d	0.0000	0.0000	2.6U	2.6U	
Aroclor 1262 {	5}			0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	2.6U	2.6U	
Aroclor 1268				0	0	56.77	128.90	(8.5)	19	<b>19</b> P
Aroclor 1268 {	}	14.06	15.15	0	150876	0.0000	250.81	2.60	38	
Aroclor 1268 {2	2}	14.86	16.04	14949	9454	22.86	19.30	3.4J	2.9J	
Aroclor 1268 {3		15.25	16.42	19491	0	117.46	0.0000	18	2.6U	
Aroclor 1268 {	•}	15.88	17.25	0	0	0.0000	0.0000	2.6U	2.6U	
Aroclor 1268 {	5}	17.24	18.82	57151	167590	30.00	116.59 The -/+ after Ret	4.5J ention Time syn	18 abolize the direction of the	RT shift
									LE CALLY MAY GALVENOUT OF UNV.	wanaki
Prep Amount:	20.04 g		Dilution		1.0					
Prep Final Vol: Solids:	2 ml 66.3 %		Unit Fa	ctor:	1					

Final Concentration =

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

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

Printed: 11/27/2007 17:20:30  $u:\Stealth\Crystal.rpt\quant2.rpt$ 

D: Result from dilution m: Manual integration performed d: Compound manually deleted NR: Analyte not reported from this analysis \*: Result fails acceptance criteria

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

c: check for co-elution

Bottle ID: Prod Code: 8(	)82 PCB_LL			Tier: Collect Dat		I 06/19/2007	Shirt of the second	Matrix: Receive Da	SEDIMEI 06/22/200	
-	WG0708132	********		Prep Lot:		KWG0707164	4	Report Gr	oup: K070540	9
Analysis Method: 8(	082			Prep Metho		EPA 3540C				
Prep Ref: 6	13930			Prep Date:		07/02/2007			Na haran a sa s	
Title: Po	CASH1\ACQUDA olychlorinated Bij \GC09\DATA\072	phenyl	s (PCBs)	72607.B\0720	07_F.M			Calibration Report Lis Method ID Quant ba	t ID: LJ2797	
Data File #1: J:	\GC09\DATA\072	2607.F	3\0726F011.D		4			Instrumen	t: GC09.i	
	Cash1\Acqudata\C			b\0726R011.I	)			Vial:	7	
	7/26/2007 21:30		-	Quant Date		07/31/2007 1	3:50	Dilution:	1.0	
	MPL							Soln Conc.	Units: ng/mL	
Lab ID: K	0705409-008									
Signal #1: D	B-35MS									
urrogate Compou	unds									
Parameter Name	R] #1		RT #2	Resp #1	Respe #2	ng/mL #1	ng/mL #2			Rpt
Decachlorobiphenyl	18.58	3 +0.02	20.19 +0.00	659118	367428m	102.06	74.58			10201
1 5				%Rec	overy =	10 <b>2</b> 0K	750K	Limits =	33-141	
arget Compounds	2					]	Final Conc. U	nits:	ug/Kg Dry Weigł	nt
			RT	Resp	Resp	ng/mL	ng/mL	ug/Kg	ug/Kg	
Parameter Name	#1		#2	#1	#2	#1	#2	ug/Kg #1	#2	Rpt
Aroclor 1016				0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1016 {1}				0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {2}				0 <b>d</b>	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {3}				0 <b>d</b>	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {4}				0 <b>d</b>	()d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1016 {5}				0d	()d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221				0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1221 {1}				0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221 {2}				0d	()d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221 {3}				()d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1221 {4}				0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232				0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1232 {1}				() d	()d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232 {2}				0 <b>d</b>	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1232 {3}				0 <b>d</b>	()d	0.0000	0.0000	5.4U	5.4U	
AIUCIUI 1252 {5}				~ .	0d	0.0000	0.0000	5.4U	5.4U	
				0 <b>d</b>	04					
Aroclor 1232 {3} Aroclor 1232 {4} Aroclor 1242				0 <b>d</b>	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1232 {4}						0.0000 0.0000	0.0000 0.0000	5.4U 5.4U	5.4U 5.4U	5.4U
Aroclor 1232 {4} Aroclor 1242 Aroclor 1242 {1}				0	0					5.4U
Aroclor 1232 {4} Aroclor 1242				0 0d	0 0d	0.0000	0.0000	5.4U	5.4U	5.4U

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

Printed: 11/27/2007 17:20:38  $u:\Stealth\Crystal.rpt\quant2.rpt$ 

d: Compound manually deleted NR: Analyte not reported from this analysis

Data File #1: Data File #2: Acqu Date: Run Type: Lab ID:	J:\GC09\DATA\072607.B\0726F011.D \\Cash1\Acqudata\GC09\data\072607_r.b 07/26/2007 21:30 SMPL K0705409-008					00726R011.D Quant Date: 07/31/2007			13:50	Instrume Vial: Dilution: Soln Con	7 1.0	
Signal #1:	DB-35MS					Signal #2	: I	B-XLB				
arget Compoun	ds	*****	*************						Final Conc.	Units:	ug/Kg Dry Weight	
Parameter Name		RT #1		RT #2		Resp #1	Resp #2	ng/mL #1	ng/mL #2	ug/Kg #1	ug/Kg #2	Rpt
Aroclor 1242 {-	4}					0 <b>d</b>	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1242 {	5}					()d	()d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1248	·					0	0	302.02	414.78	190	260	190 -
Aroclor 1248 {	1}	7.70		8.29		43270m	43753m	274.34	348.20	170	220	
Aroclor 1248 {	2}	8.14		8.59		67629m	62723m	308.16	488.09	190	300	
Aroclor 1248 {		8.45		9.45		35684m	102853m	185.47	364.17	120	230	
Aroclor 1248 {	4}	8.82		9.56		82881m	87998m	294.83	458.67	180	290	
Aroclor 1248 {	5}	8.92		9.85		158776m	()m	447.28	0.0000	280	5.4U	
Aroclor 1254	- )					0	0	0.0000	0.0000	5.4U	5.4U	5.4U
Aroclor 1254 {	1}					0 <b>d</b>	0 <b>d</b>	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {	-					0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {						0d	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {-						0 <b>d</b>	0d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1254 {							()d	0.0000	0.0000	5.4U	5.4U	
Aroclor 1260	5					0	0	567.53	701.31	350	440	440
Aroclor 1260 {	1}	10.43	+0.00	10.99		187209m	180671m	481.38	766.90	300	480	
Aroclor 1260 {		10.75	+0.00	11.53		297332m	228027m	669.33	859.46	420	540	
Aroclor 1260 {	-	11.56		12.21	+0.00	0m	0m	0.0000	0.0000	5.4U	5.4U	
Aroclor 1260 {	· ·	12.35		12.43	+0.00	130688m	102892m	463.41	579.74	290	360	
		12.89	+0.00	13.89		388343m	245062m	656.02	599.15	410	370	
Aroclor 1260 { Aroclor 1262	5}	12.69		13.09		0	243002m 0	0.0000	0.0000	410 5.4U	5.4U	5.4U
Aroclor 1262 {	11					0d	0d	0.0000	0.0000	5.4U	5.4U	5.40
						0.4						
Aroclor 1262 {						0d 0d	0d Od	0.0000 0.0000	0.0000 0.0000	5.4U	5.4U 5.4U	
Aroclor 1262 { Aroclor 1262 {						0d Odi	0d 0d	0.0000	0.0000	5.4U 5.4U		
`		· · · · · · · · · · · · · · · · · · ·					i k					
Aroclor 1262 {	5}					0d	0 <b>d</b>	0.0000	0.0000	5.4U		1000
Aroclor 1268	1.)	14.04		15 15		0 0 <b>m</b>	0 143291	125.68 0.0000	199.20 238.20	(18)	120	<b>120</b> P
Aroclor 1268 {		14.06		15.15						3.4U	150	
Aroclor 1268 {		14.86		16.03		46889m	71893	71.70	146.75	45	92	
Aroclor 1268 {	-	15.24		16.40		33133m	0	199.67	0.0000	120	5.4U	
Aroclor 1268 {	4}	15.88		17.25		()m	0	0.0000	0.0000	5.4U	5.4U	
Aroclor 1268 {	5}	17.24		18.81		201365m	305662	105.69	212.64 The -/+ after Ret	66 ention Time syn	130 abolize the direction of the R	T shift
rep Amount: rep Final Vol: olids:	6.25 g 2 ml 51.3 %				lution: nit Factor		1.0 1					

Final Concentration =

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

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

Printed: 11/27/2007 17:20:38 u:\Stealth\Crystal.rpt\quant2.rpt

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

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

2009 Sediment Traps



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

# Laboratory Data QA/QC Review Inline Solids Investigation City Outfall Basin 18

To:FileFrom:Karen Demsey, GSI Water Solutions, Inc.Date:August 19, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated for chemical analysis of inline solids obtained during source control investigation activities conducted in winter 2009 by the City of Portland in Outfall Basin 18 (OF-18). Six stormwater sediment trap samples were collected in OF-18 and submitted for analysis. The results of the sampling and analysis are presented in the Technical Memorandum No. OF18-2.

The laboratory analyses of the OF 18 solids samples were conducted by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed below:

- BES WPCL
  - o Total Solids (EPA 160.3M)
  - Metals (EPA 6000 and 7000 Series)
  - o Polychlorinated Biphenyls (PCBs) (EPA 8082)
- Test America (TA)
  - Total Organic Carbon (TOC) (ASTM D1429-82M)
  - Percent Dry Weight (solids) (ASTM D2216-80)
  - Chlorinated herbicides (EPA 8151A)
  - Polynuclear Aromatic Hydrocarbons (PAHs) (EPA 8270M-SIM)
  - Phthalates (EPA 8270-SIM)
- Columbia Analytical Services (CAS)
  - Total Organic Carbon (TOC) (ASTM D1429-82M)

- Organochlorine Pesticides (EPA 8081A)
- Analytical Resources, Inc. (ARI)
  - o Grain Size (ASTM D421)

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.

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

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within accuracy control limits
- Matrix spike and matrix spike duplicate results within control limits
- 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 through the sample collection and delivery process.

## **Analysis Holding Times**

The sample extraction holding time was exceeded for the herbicide analysis of samples FO095694, FO095695, and FO095697. The WPCL laboratory report notes that the results for the herbicides analysis of these samples may be low estimates due to compound degradation. The remaining samples were extracted and analyzed within the acceptable holding times for all analyses.

## **Method Blanks**

Method blanks were analyzed for all chemical analyses. No analytes were detected in the method blanks.

## **Surrogate Recoveries**

Surrogate recoveries were completed during the analysis of all organic compounds. Surrogate spike recoveries for phthalates in samples FO095693, FO095695, and FO095696 were not

reported. TA reports that these samples required dilution due to the nature of the sample matrix, which reduced the surrogate spike concentrations to a level where the recovery calculation does not provide useful information.

The lower control criteria were exceeded for both surrogates in the initial method blank for analysis of organochlorine pesticides. CAS reanalyzed the method blank, and the reanalysis met control criteria. Control criteria also were exceeded for one surrogate during the analysis of organochlorine pesticides in sample FO095696 due to matrix interference. CAS reports that because the secondary surrogate was within control limits, no further corrective action was appropriate.

# Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed for organochlorine pesticides, chlorinated herbicides, PAHs, and phthalates. MS/MSD recoveries for one or more analytes were above acceptance limits during analysis of chlorinated herbicides and PAHs. Laboratory control samples for these analyses were within acceptance limits indicating the analytical batch was in control. MS/MSD recoveries for the remaining analyses were within acceptance limits.

# Laboratory Control Sample

Laboratory control samples were processed during the analyses of organochlorine pesticides, chlorinated herbicides, PAHs, phthalates, and TOC. LCS recoveries all were within acceptance limits.

## Other

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. CAS reports that the higher of the two values was reported when no evidence of matrix interference was observed, and the lower of the two values was reported when there was apparent matrix interference affecting the alternate column that produced the higher value. WPCL has flagged these results as estimates (EST) in their summary report.

Method reporting limits (MRLs) were elevated for PCB Aroclor analyses of samples FO095693, FO095695 and FO095696. WPCL reports that in the case of sample FO095693, the MRLs were raised due to the low level of solids in the sample; traces of Aroclors 1254 and 1260 were evident in this sample but at concentrations below the MRLs, and the results are reported as not detected at a concentration greater than the MRL. For samples FO095695 and FO095696, the MRL for Aroclor 1248 was raised due to non-target interfering compounds (possibly organochlorine pesticides).

The MRLs for several organochlorine pesticides were elevated for all field samples due to matrix interference (presence of non-target background components). CAS reports that sample FO095693 required dilution due to the presence of elevated levels of target analytes during organochlorine pesticides analysis, and the MRLs were adjusted to reflect the dilution.



Analytical Resources, Incorporated Analytical Chemists and Consultants

June 26, 2009

Mr. Howard Holmes Test America, Inc. 9405 SW Nimbus Ave. Beaverton, OR 97008

## Subject: Project No.: PSF0519 ARI Project No.: PD28

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

Dubina

Guenna Smith Geotechnical Division Manager 206-695-6246 guennas@arilabs.com

Enclosures

cc: File PD28.

## SUBCONTRACT ORDER

**TestAmerica Portland** 

**PSF0519** 

SENDING LABORATORY	<u>.</u>		RECEIVI	NG LABORATO	DRY:	
TestAmerica Portland			Analytic	al Resources,	Inc (ARI)	
9405 SW Nimbus Ave.				134th Place, S		
Beaverton, OR 97008				a, WA 98168		
Phone: (503) 906-9200				(206) 621-649	0	
Fax: (503) 906-9210				6-621-7523	•	
Project Manager: Howard	l Holmes			Location: OR -	OREGON	
				Temperature:	°C	Ice: Y / N
needs Excel EDD						
Analysis	Units	Due	Expires		Comments	;
_						
Sample ID: PSF0519-02	Soil		Sampled: 06	/09/09 15:00		
Grain Size (ASTM) - SUB	ug/l	06/30/09	12/06/09 15:00		sub to Anal	ytical Resources Inc (ARI
Containers Supplied:						,
8 oz. jar (A)						
Sample ID: PSF0519-03	Soil					<u> </u>
Grain Size (ASTM) - SUB	ug/l	06/30/09	<u>Sampled: 06/</u> 12/07/09 13:15	10/09 13:15		
	ugn	00/30/09	12/07/09 13.15		sub to Anal	ytical Resources Inc (ARI
Containers Supplied:						
8 oz. jar (A)						
Sample ID: PSF0519-05	Soil		Sampled: 06/	09/09 00.00		
Grain Size (ASTM) - SUB	ug/l	06/30/09	12/06/09 00:00	05/05 00:00	sub to Anal	tical Resources Inc (ARI)
Containers Supplied:						,
8 oz. jar (A)						

une Released By

Cell Mog Www Date/Time

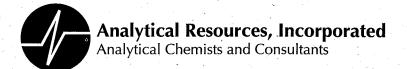
Date/Time

Received By

109 1010 Ù Date/Time

Released By

**Received By** 



Client: Test America, Inc.

ARI Project No.: PD28

Client Project: PSF0519

## **Case Narrative**

- 1. Three samples were received on June 18, 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: Geotechnical Laboratory Manager

Date: 626/09

lnc.	
Test America,	PSF0519

Percent Finer (Passing) Than the Indicated Size

	_		<b>r</b> –		<b>.</b>	
1.3	,	0	1	0.0 -	1	2
3.2	0	0.0		_	L C	c x
7	ò	ō		4	L C	0,0
6	40	а. С	10.0	0.01	0.01	0.0
13	10.0	0.01	0.00	20.0	101	
22	 11 0	C	76.4	t.07	1 1 1	2.0
32	21 A	2.14	36.1		27 B	2.44
#200 (75)	64.6	2.12	58.4	r.	65.0	2.22
#100 (150)	77 9	2	692	4	78.4	r 5
#60 (250)	83.7	5	78.4	5	84.2	1.1.5
#40 (425)	88.2		2.06	,	88.5	2.22
#20 (850)	91.7		97.6		918	22
#10 (2000)	96.5		99.7		95.9	
#4 (4750)	99.3		100.0		98.9	
3/8"	100.0		100.0		100.0	
1/2"	100.0		100.0		100.0	
3/4"	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	
2"	100.0		100.0		100.0 100.0 100.0	
а"	100.0		100.0		100.0	
Sieve Size (microns)	PSF0519-02		PSF0519-03		PSF0519-05	

Testing performed according to ASTM D421/D422

Test America, Inc. PSF0519 Percent Retained in Each Size Fraction

Description		%Coars	%Coarse Gravel			% Gravel		% Coarse Sand		% Medium Sand	%	% Fine Sand	g	% Very Coarse	% Coarse Me	% Medium	% Fine Silt	% Fine Silt	% Very Fine Silt	% Clay
Particle Size (microns)	3-2"	3-2" 2-1 1/2" 1 1/2"-1" 1-3/4" 3/4-1/2" 1/2-3/8" 3/8"-4750	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4750	4750- 2000	2000-850	2000-850 850-425	425-250	250-150	150-75	75-32	32-22	22-13	13-9	9-7	1	<3.2
PSF0519-02	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.8	4.8	3.5	4.5	59	13.0	43.0	с У У	41	V L	4 4		0
00 01 0000	0	( (	4									,	1	2	>	÷	r.	t.	ţ	0
PSFU519-03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.2	6.8	12.4	60	107	22.3	70	и и	01	10	5	* * *
10 01200		_		0								;			5	2.5	1.	i	2	-
1 CU-81CU-12-	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.0	4.1	3.3	4.3	5.8	13.5	42.2	7.1	5.0	0.7	14	00	х 2

PD28

Percent Finer Than Clay Silt **Grain Size Distribution by Hydrometer Particle Diameter** Sand Gravel 

. . . . . .

(360) 636-1068 fax



August 4, 2009

Analytical Report for Service Request No: K0905407

Jennifer Shackelford Portland, City of 1120 SW Fifth Avenue # 1000 Portland, OR 97204

#### **RE:** Portland Harbor Stormwater Sample

Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on June 16, 2009. For your reference, these analyses have been assigned our service request number K0905407.

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.

RIOSIE

Pradeep Divvela **Project Chemist** 

PD/ln

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
М	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)	<b>.</b>	







Portland, City of Client: Portland Harbor Stormwater Sample **Project:** Sample Matrix: Sludge

Service Request No.: Date Received:

K0905407 06/16/09

#### CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), and Laboratory Control Sample (LCS).

#### Sample Receipt

Six soil samples were received for analysis at Columbia Analytical Services on 06/16/09. 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

#### **Surrogate Exceptions:**

The lower control criterion was exceeded for Tetrachloro-m-xylene and Decachlorobiphenyl in method blank KWG0905290-10. Since the problem indicated a potential negative bias in the Method Blank, all associated field samples containing target analytes were re-extracted and re-analyzed past the recommended hold time. The Method Blank met control criteria for the reanalysis. The results for the field samples were comparable for both determinations, which indicated the problem with the initial analysis was restricted to the Method Blank. Therefore, the results from the original analysis were reported. Note that sample FO095693 was extracted three times and all three analyses were in agreement. Also, insufficient sample remained for re-extraction for sample FO095692.The data was flagged to indicate the problem.

The control criteria were exceeded for Tetrachloro-m-xylene in sample FO095696 due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. However, the secondary surrogate Decachlorobiphenyl was within control limits. No further corrective action was appropriate.

#### **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.

	The second secon	08/04/ps	
Approved by	21	Date	

A

#### **Elevated Detection Limits:**

The detection limit was elevated for several analytes in all field 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.

Sample FO095693 required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

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

	R	08/04/05
Approved by	4	Date

ŝ

# Analytical Report

Client : Project Name : Project Number : Sample Matrix :		Date	ice Request : e Collected : te Received :	06/11/09
		Carbon, Total Organic (TOC)		
Prep Method :	SOP		Units : Posis :	Percent

Analysis Method Test Notes :	ASTM D4129-82M					Basis : Dry		
Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
FO095692 Method Blank	K0905407-001 K0905407-MB	0.05 0.05	0.0 <b>2</b> 0.0 <b>2</b>	1 1	6/18/2009 NA	06/ <b>22</b> /09 06/ <b>22</b> /09	16.9 ND	

# QA/QC Report

Client : Project Name : Project Number : Sample Matrix :	Portland, City of Portland Harbor Stormwat NA SLUDGE, SOLID	er Sample			Date C Date I Date F	Collected : Received : Prepared :	K090540 6/11/200 6/16/200 06/18/09 06/22/09	9	
			Duplicate Summary Inorganic Parameters						
Sample Name : Lab Code :	FO095692 K0905407-001DUP					Units : Basis :	Percent Dry		
Test Notes : Analyte		Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result		Relative Percent Difference	Result Notes
Carbon, Total Organ	ic (TOC)	SOP	ASTM D4129-82M	0.05	16.9	17.0	17.0	<1	

# QA/QC Report

Client : Project Name : Project Number : Sample Matrix :		rbor Stormwater	Sample			Date C Date I Date P	Collected : Received : Prepared :	K0905407 6/11/2009 6/16/2009 06/18/09 06/22/09		
			Matrix Spil Inorganic				s.,			
Sample Name : Lab Code :	FO09569 K090540	2 7-001MS	-, -1	<del>.</del> .			Units Basis	: Percent : Dry		
Test Notes : Analyte		Prep Method	Analysis Method	MRL	Spike Level	Sample Result		Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organ	nic (TOC)	SOP	ASTM D4129-82M	0.05	25.2	16.9	41.6	98	75-114	

# QA/QC Report

Client : Project Name : Project Number : Sample Matrix :	Portland, City of Portland Harbor Stormwate NA SEDIMENT	er Sample		Date Date Date 1	e Request Collected Received Prepared Analyzed	I: NA I: NA I: NA		
			ory Control Sample So Inorganic Parameters					
Sample Name : Lab Code : Test Notes :	Lab Control Sample K0905407-LCS				Unit Basi	_	ıt	
Test Notes .		Prep	Analysis			Percent	CAS Percent Recovery Acceptance	Result
Analyte		Method	Method	True Value	Result	Recovery		Notes
Carbon, Total Organi	c (TOC)	SOP	ASTM D4129-82M	0.42	0.46	110	74-123	

QA/QC Report

Client : Portland, City of Project : Portland Harbor Stormwater Sample Service Request : K0905407 Date Collected : NA Date Received : NA

Carbon, Total Organic (TOC) ASTM D4129-82M Units: Percent

# CONTINUING CALIBRATION VERIFICATION (CCV)

	Date	True	Measured	Percent
	Analyzed	Value	Value	Recovery
CCV1 Result	6/22/2009	20.0	19.6	98
CCV2 Result	6/22/2009	20.0	20.1	101
CCV3 Result	6/22/2009	20.0	19.7	99
CCV4 Result	6/22/2009	20.0	19.5	98

QA/QC Report

Client : Portland, City of Project : Portland Harbor Stormwater Sample Service Request : K0905407 Date Collected : NA Date Received : NA

Carbon, Total Organic (TOC) ASTM D4129-82M Units: Percent

# CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	6/22/2009	0.05	ND
CCB2 Result	6/22/2009	0.05	0.03 J
CCB3 Result	6/22/2009	0.05	0.03 J
CCB4 Result	6/22/2009	0.05	0.02 J

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

 Service Request:
 K0905407

 Date Collected:
 06/11/2009

 Date Received:
 06/16/2009

#### **Organochlorine Pesticides**

Sample Name:	FO095692	Units:	ug/Kg
Lab Code:	K0905407-001	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND	U	5.7	0.63	1	06/18/09	06/26/09	KWG0905290	
beta-BHC	ND	U	5.7	1.1	1	06/18/09	06/26/09	KWG0905290	+ 1.
gamma-BHC (Lindane)	12	Р	5.7	0.46	1	06/18/09	06/26/09	KWG0905290	
delta-BHC	ND	Ui	5.7	5.7	1	06/18/09	06/26/09	KWG0905290	
Heptachlor	9.4	Р	5.7	0.69	1	06/18/09	06/26/09	KWG0905290	
Aldrin	ND	Ui	5.7	5.7	1	06/18/09	06/26/09	KWG0905290	
Heptachlor Epoxide	ND	U	5.7	0.48	1	06/18/09	06/26/09	KWG0905290	
gamma-Chlordane†	20		5.7	0.52	1	06/18/09	06/26/09	KWG0905290	
Endosulfan I	ND	Ui	9.3	9.3	1	06/18/09	06/26/09	KWG0905290	
alpha-Chlordane	ND	Ui	11	11	1	06/18/09	06/26/09	KWG0905290	
Dieldrin	ND	Ui	5.7	5.6	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDE	3.4	JP	5.7	0.63	1	06/18/09	06/26/09	KWG0905290	
Endrin	ND	Ui	5.7	0.81	1	06/18/09	06/26/09	KWG0905290	
Endosulfan II	ND	Ui	5.7	5.7	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDD	ND	Ui	5.9	5.9	1	06/18/09	06/26/09	KWG0905290	
Endrin Aldehyde	ND	Ui	5.7	5.7	1	06/18/09	06/26/09	KWG0905290	
Endosulfan Sulfate	ND	Ui	5.7	5.7	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDT	ND	Ui	19	19	1	06/18/09	06/26/09	KWG0905290	
Endrin Ketone	ND	Ui	5.7	3.6	1	06/18/09	06/26/09	KWG0905290	
Methoxychlor	14		5.7	1.1	1	06/18/09	06/26/09	KWG0905290	
Toxaphene	ND	Ui	370	370	1	06/18/09	06/26/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	85	25-125	06/26/09	Acceptable	
Decachlorobiphenyl	93	22-142	06/26/09	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:** 

Merged

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

 Service Request:
 K0905407

 Date Collected:
 06/09/2009

 Date Received:
 06/16/2009

#### **Organochlorine Pesticides**

Sample Name:	FO095693	Units:	ug/Kg
Lab Code:	K0905407-002	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND	Ui	2.2	2.2	1	06/18/09	06/26/09	KWG0905290	
beta-BHC	ND	Ui	2.2	2.2	1	06/18/09	06/26/09	KWG0905290	
gamma-BHC (Lindane)	ND	Ui	7.9	7.9	1	06/18/09	06/26/09	KWG0905290	
delta-BHC	ND	Ui	4.8	4.8	1	06/18/09	06/26/09	KWG0905290	
Heptachlor	300	D	11	1.4	5	06/18/09	06/26/09	KWG0905290	
Aldrin	78		2.2	0.35	1	06/18/09	06/26/09	KWG0905290	
Heptachlor Epoxide	ND	Ui	6.3	6.3	1	06/18/09	06/26/09	KWG0905290	
gamma-Chlordane†	350	D	11	0.99	5	06/18/09	06/26/09	KWG0905290	
Endosulfan I	ND	Ui	5.2	5.2	1	06/18/09	06/26/09	KWG0905290	
alpha-Chiordane	52		2.2	0.22	1	06/18/09	06/26/09	KWG0905290	
Dieldrin	3.8	Р	2.2	0.31	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDE	66		2.2	0.24	1	06/18/09	06/26/09	KWG0905290	
Endrin	ND	Ui	3.2	3.2	1	06/18/09	06/26/09	KWG0905290	
Endosulfan II	ND	Ui	18	18	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDD	55		2.2	0.24	1	06/18/09	06/26/09	KWG0905290	
Endrin Aldehyde	ND	Ui	3.6	3.6	1	06/18/09	06/26/09	KWG0905290	
Endosulfan Sulfate	2.4		2.2	0.24	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDT	ND	Ui	23	23	1	06/18/09	06/26/09	KWG0905290	
Endrin Ketone	8.8	Р	2.2	0.21	1	06/18/09	06/26/09	KWG0905290	1998 A 1996 - Hanna Ar ann an Anna an An
Methoxychlor	ND	Ui	3.7	3.7	1	06/18/09	06/26/09	KWG0905290	
Toxaphene	ND	Ui	790	790	1	06/18/09	06/26/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	115	25-125	06/26/09	Acceptable	
Decachlorobiphenyl	118	22-142	06/26/09	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:** 

Merged

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

#### **Organochlorine Pesticides**

Sample Name:	FO095694	Units:	ug/Kg
Lab Code:	K0905407-003	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND	U	1.0	0.11	1	06/18/09	06/26/09	KWG0905290	
beta-BHC	ND	Ui	1.0	1.0	1	06/18/09	06/26/09	KWG0905290	
gamma-BHC (Lindane)	ND	U	1.0	0.080	1	06/18/09	06/26/09	KWG0905290	
delta-BHC	ND	Ui	1.0	0.20	1	06/18/09	06/26/09	KWG0905290	
Heptachlor	ND	U	1.0	0.12	1	06/18/09	06/26/09	KWG0905290	
Aldrin	0.66	J	1.0	0.16	1	06/18/09	06/26/09	KWG0905290	
Heptachlor Epoxide	ND	Ui	1.0	0.11	1	06/18/09	06/26/09	KWG0905290	
gamma-Chlordane†	ND	U	1.0	0.090	1	06/18/09	06/26/09	KWG0905290	
Endosulfan I	0.083	JP	1.0	0.063	1	06/18/09	06/26/09	KWG0905290	
alpha-Chlordane	0.24	J	1.0	0.10	1	06/18/09	06/26/09	KWG0905290	
Dieldrin	ND	U	1.0	0.14	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDE	1.5		1.0	0.11		06/18/09	06/26/09	KWG0905290	
Endrin	ND	Ui	1.0	0.29	1	06/18/09	06/26/09	KWG0905290	
Endosulfan II	ND	U	1.0	0.14	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDD	ND	Ui	1.0	1.0	1	06/18/09	06/26/09	KWG0905290	
Endrin Aldehyde	ND	Ui	1.0	0.27	1	06/18/09	06/26/09	KWG0905290	
Endosulfan Sulfate	ND	Ui	1.0	1.0	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDT	ND	Ui	1.1	1.1	1	06/18/09	06/26/09	KWG0905290	
Endrin Ketone	ND	U	1.0	0.093	1	06/18/09	06/26/09	KWG0905290	
Methoxychlor	3.7		1.0	0.19	1	06/18/09	06/26/09	KWG0905290	
Toxaphene	ND	Ui	50	43	1	06/18/09	06/26/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	92	25-125	06/26/09	Acceptable	
Decachlorobiphenyl	88	22-142	06/26/09	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:** 

Merged

 Service Request:
 K0905407

 Date Collected:
 06/09/2009

 Date Received:
 06/16/2009

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

# Service Request: K0905407 Date Collected: 06/10/2009 Date Received: 06/16/2009

#### **Organochlorine Pesticides**

Sample Name:	FO095695	Units:	0 0
Lab Code:	K0905407-004	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	0.52 JP	1.9	0.21	1	06/18/09	06/26/09	KWG0905290	
beta-BHC	ND U	1.9	0.34	1	06/18/09	06/26/09	KWG0905290	
gamma-BHC (Lindane)	<b>12</b> P	1.9	0.16	1	06/18/09	06/26/09	KWG0905290	
delta-BHC	ND Ui	2.9	2.9	1	06/18/09	06/26/09	KWG0905290	
Heptachlor	26	1.9	0.23	1	06/18/09	06/26/09	KWG0905290	
Aldrin	24	1.9	0.31	1	06/18/09	06/26/09	KWG0905290	
Heptachlor Epoxide	ND Ui	1.9	0.26	1	06/18/09	06/26/09	KWG0905290	****
gamma-Chlordane†	29	1.9	0.17	1	06/18/09	06/26/09	KWG0905290	
Endosulfan I	9.1	1.9	0.12	1	06/18/09	06/26/09	KWG0905290	
alpha-Chlordane	21	1.9	0.19	1	06/18/09	06/26/09	KWG0905290	
Dieldrin	24	1.9	0.27	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDE	61	1.9	0.21	1	06/18/09	06/26/09	KWG0905290	
Endrin	ND Ui	1.9	0.44	1	06/18/09	06/26/09	KWG0905290	
Endosulfan II	ND Ui	5.6	5.6	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDD	72	1.9	0.21	1	06/18/09	06/26/09	KWG0905290	
Endrin Aldehyde	ND Ui	1.9	1.9	1	06/18/09	06/26/09	KWG0905290	
Endosulfan Sulfate	<b>2.4</b> P	1.9	0.21	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDT	ND Ui	33	33	1	06/18/09	06/26/09	KWG0905290	
Endrin Ketone	<b>12</b> P	1.9	0.18	1	06/18/09	06/26/09	KWG0905290	
Methoxychlor	ND Ui	1.9	1.9	1	06/18/09	06/26/09	KWG0905290	
Toxaphene	ND Ui	470	470	- 1	06/18/09	06/26/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	86	25-125	06/26/09	Acceptable	
Decachlorobiphenyl	86	22-142	06/26/09	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:** 

Merged

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

 Service Request:
 K0905407

 Date Collected:
 06/10/2009

 Date Received:
 06/16/2009

#### **Organochlorine Pesticides**

-----

Sample Name:	FO095696	Units:	ug/Kg
Lab Code:	K0905407-005	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND	Ui	8.9	8.9	1	06/18/09	06/26/09	KWG0905290	
beta-BHC	ND	Ui	23	23	1	06/18/09	06/26/09	KWG0905290	
gamma-BHC (Lindane)	ND	Ui	12	12	1	06/18/09	06/26/09	KWG0905290	
delta-BHC	ND	Ui	3.7	3.7	1	06/18/09	06/26/09	KWG0905290	
Heptachlor	12	Р	3.7	0.44	1	06/18/09	06/26/09	KWG0905290	
Aldrin	ND	Ui	29	29	1	06/18/09	06/26/09	KWG0905290	
Heptachlor Epoxide	ND	Ui	8.6	8.6	1	06/18/09	06/26/09	KWG0905290	
gamma-Chlordane†	ND	Ui	25	25	1	06/18/09	06/26/09	KWG0905290	
Endosulfan I	8.4		3.7	0.23	1	06/18/09	06/26/09	KWG0905290	
alpha-Chlordane	ND	Ui	23	23	1	06/18/09	06/26/09	KWG0905290	
Dieldrin	ND	Ui	13	13	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDE	68		3.7	0.40	1	06/18/09	06/26/09	KWG0905290	
Endrin	ND	Ui	3.7	3.7	1	06/18/09	06/26/09	KWG0905290	
Endosulfan II	ND	Ui	20	20	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDD	45		3.7	0.40	1	06/18/09	06/26/09	KWG0905290	
Endrin Aldehyde	ND	Ui	3.7	3.7	1	06/18/09	06/26/09	KWG0905290	
Endosulfan Sulfate	4.0	Р	3.7	0.40	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDT	95	Р	3.7	0.62	1	06/18/09	06/26/09	KWG0905290	
Endrin Ketone	ND	Ui	3.7	3.7	1	06/18/09	06/26/09	KWG0905290	
Methoxychlor	ND	Ui	4.0	4.0	1	06/18/09	06/26/09	KWG0905290	
Toxaphene	ND	Ui	970	970	1	06/18/09	06/26/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	150	25-125	06/26/09	Outside Control Limits
Decachlorobiphenyl	89	22-142	06/26/09	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:** 

Merged

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

#### **Organochlorine Pesticides**

Sample Name:	FO095697	Units:	ug/Kg
Lab Code:	K0905407-006	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND Ui	1.2	0.25	1	06/18/09	06/26/09	KWG0905290	
beta-BHC	ND U	1.2	0.21	1	06/18/09	06/26/09	KWG0905290	
gamma-BHC (Lindane)	ND Ui	1.2	0.76	1	06/18/09	06/26/09	KWG0905290	
delta-BHC	ND Ui	1.2	1.2	1	06/18/09	06/26/09	KWG0905290	
Heptachlor	ND Ui	1.2	0.33	1	06/18/09	06/26/09	KWG0905290	
Aldrin	<b>0.94</b> J	1.2	0.19	1	06/18/09	06/26/09	KWG0905290	
Heptachlor Epoxide	0.13 JP	1.2	0.098	1	06/18/09	06/26/09	KWG0905290	
gamma-Chlordane†	0.34 JP	1.2	0.11	1	06/18/09	06/26/09	KWG0905290	
Endosulfan I	0.21 JP	1.2	0.074	1	06/18/09	06/26/09	KWG0905290	
alpha-Chlordane	0.55 JP	1.2	0.12	1	06/18/09	06/26/09	KWG0905290	
Dieldrin	ND U	1.2	0.17	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDE	1.3	1.2	0.13	1	06/18/09	06/26/09	KWG0905290	
Endrin	ND Ui	1.2	0.12	1	06/18/09	06/26/09	KWG0905290	
Endosulfan II	ND Ui	1.2	1.2	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDD	ND Ui	1.2	0.80	1	06/18/09	06/26/09	KWG0905290	
Endrin Aldehyde	ND Ui	1.2	0.27	1	06/18/09	06/26/09	KWG0905290	
Endosulfan Sulfate	ND Ui	1.2	1.2	1	06/18/09	06/26/09	KWG0905290	
4,4'-DDT	ND Ui	1.2	1.2	1	06/18/09	06/26/09	KWG0905290	
Endrin Ketone	ND Ui	1.2	0.40	1	06/18/09	06/26/09	KWG0905290	
Methoxychlor	ND U	1.2	0.23	1	06/18/09	06/26/09	KWG0905290	
Toxaphene	ND Ui	58	28	1	06/18/09	06/26/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	86	25-125	06/26/09	Acceptable	
Decachlorobiphenyl	77	22-142	06/26/09	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:** 

Merged

1

 Service Request:
 K0905407

 Date Collected:
 06/09/2009

 Date Received:
 06/16/2009

Analytical Results

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

#### Service Request: K0905407 Date Collected: NA Date Received: NA

## **Organochlorine Pesticides**

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0905290-10	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND U	0.50	0.11	1	06/18/09	06/25/09	KWG0905290	
beta-BHC	ND U	0.50	0.18	1	06/18/09	06/25/09	KWG0905290	
gamma-BHC (Lindane)	ND U	0.50	0.080	1	06/18/09	06/25/09	KWG0905290	
delta-BHC	ND U	0.50	0.074	1	06/18/09	06/25/09	KWG0905290	·
Heptachlor	ND U	0.50	0.12	1	06/18/09	06/25/09	KWG0905290	
Aldrin	ND U	0.50	0.16	1	06/18/09	06/25/09	KWG0905290	
Heptachlor Epoxide	ND U	0.50	0.084	1	06/18/09	06/25/09	KWG0905290	
Endosulfan I	ND U	0.50	0.063	1	06/18/09	06/25/09	KWG0905290	
Dieldrin	<b>0.24</b> J	0.50	0.14	1	06/18/09	06/25/09	KWG0905290	
4,4'-DDE	ND U	0.50	0.11	1	06/18/09	06/25/09	KWG0905290	
Endrin	ND U	0.50	0.094	1	06/18/09	06/25/09	KWG0905290	
Endosulfan II	ND U	0.50	0.14	1	06/18/09	06/25/09	KWG0905290	
4,4'-DDD	ND U	0.50	0.11	1	06/18/09	06/25/09	KWG0905290	
Endrin Aldehyde	ND U	0.50	0.12	1	06/18/09	06/25/09	KWG0905290	
Endosulfan Sulfate	ND U	0.50	0.11	1	06/18/09	06/25/09	KWG0905290	
4,4'-DDT	ND U	0.50	0.17	1	06/18/09	06/25/09	KWG0905290	
Toxaphene	ND U	25	4.8	1	06/18/09	06/25/09	KWG0905290	
Chlordane	ND U	5.0	1.9	1	06/18/09	06/25/09	KWG0905290	
2,4'-DDE	ND U	0.50	0.16	1	06/18/09	06/25/09	KWG0905290	
2,4'-DDD	ND U	0.50	0.13	1	06/18/09	06/25/09	KWG0905290	
2,4'-DDT	ND U	0.50	0.058	1	06/18/09	06/25/09	KWG0905290	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	16	25-125	06/25/09	Outside Control Limits
Decachlorobiphenyl	18	22-142	06/25/09	Outside Control Limits

#### Comments:

Merged

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Soil

#### Service Request: K0905407 Date Collected: NA Date Received: NA

#### **Organochlorine Pesticides**

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0905589-4	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3540C 8081A	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	0.50	0.11	1	06/26/09	07/09/09	KWG0905589	
beta-BHC	ND U	0.50	0.18	1	06/26/09	07/09/09	KWG0905589	
gamma-BHC (Lindane)	ND U	0.50	0.080	1	06/26/09	07/09/09	KWG0905589	
delta-BHC	ND U	0.50	0.074	1	06/26/09	07/09/09	KWG0905589	
Heptachlor	ND U	0.50	0.12	1	06/26/09	07/09/09	KWG0905589	
Aldrin	ND U	0.50	0.16	1	06/26/09	07/09/09	KWG0905589	
Heptachlor Epoxide	ND U	0.50	0.084	1	06/26/09	07/09/09	KWG0905589	
gamma-Chlordane†	ND U	0.50	0.090	1	06/26/09	07/09/09	KWG0905589	
Endosulfan I	ND U	0.50	0.063	1	06/26/09	07/09/09	KWG0905589	
alpha-Chlordane	ND U	0.50	0.10	1	06/26/09	07/09/09	KWG0905589	
Dieldrin	ND U	0.50	0.14	1	06/26/09	07/09/09	KWG0905589	
4,4'-DDE	ND Ui	0.50	0.50	1	06/26/09	07/09/09	KWG0905589	
Endrin	ND U	0.50	0.094	1	06/26/09	07/09/09	KWG0905589	
Endosulfan II	ND U	0.50	0.14	1	06/26/09	07/09/09	KWG0905589	
4,4'-DDD	ND U	0.50	0.11	1	06/26/09	07/09/09	KWG0905589	
Endrin Aldehyde	ND U	0.50	0.12	1	06/26/09	07/09/09	KWG0905589	
Endosulfan Sulfate	ND U	0.50	0.11	1	06/26/09	07/09/09	KWG0905589	
4,4'-DDT	ND U	0.50	0.17	1	06/26/09	07/09/09	KWG0905589	
Endrin Ketone	ND U	0.50	0.093	1	06/26/09	07/09/09	KWG0905589	
Methoxychlor	ND U	0.50	0.19	1	06/26/09	07/09/09	KWG0905589	
Toxaphene	ND U	25	4.8	1	06/26/09	07/09/09	KWG0905589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	76	25-125	07/09/09	Acceptable	
Decachlorobiphenyl	72	22-142	07/09/09	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:** 

Merged

QA/QC Report

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Sludge, solid

#### Surrogate Recovery Summary Organochlorine Pesticides

Extraction Method:	EPA 3541
Analysis Method:	8081A

Units: PERCENT Level: Low

Sample Name	Lab Code	<u>Sur1</u>		<u>Sur2</u>	
FO095692	K0905407-001	85		93	
FO095693	K0905407-002	115		118	
FO095694	K0905407-003	92		88	
FO095695	K0905407-004	86		86	
FO095696	K0905407-005	150	*	89	
FO095697	K0905407-006	86		77	
Method Blank	KWG0905290-10	16	*	18	*
Method Blank	KWG0905589-4	76		72	
Batch QC	K0905405-001	79		87	
Batch QCMS	KWG0905290-1	74		81	
Batch QCDMS	KWG0905290-2	69		75	
Batch QCMS	KWG0905290-7	61		66	
Batch QCDMS	KWG0905290-8	63		77	
Lab Control Sample	KWG0905290-3	80		82	
Lab Control Sample	KWG0905589-3	76		71	

## 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.

21

QA/QC Report

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

#### Matrix Spike/Duplicate Matrix Spike Summary Organochlorine Pesticides

Sample Name:	Batch QC	Units:	ug/Kg
Lab Code:	K0905405-001	Basis:	Dry
Extraction Method:	EPA 3541	Level:	
Analysis Method:	8081A	Extraction Lot:	

	Sample	Batch QCMS KWG0905290-1 Matrix Spike			Batch QCDMS KWG0905290-2 Duplicate Matrix Spike			%Rec		RPD
Analyte Name	Result	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
alpha-BHC	ND	19.9	19.7	101	19.3	19.7	98	36-145	3	40
beta-BHC	ND	19.5	19.7	99	18.6	19.7	95	38-148	4	40
gamma-BHC (Lindane)	ND	20.4	19.7	104	19.3	19.7	<b>98</b>	33-154	6	40
delta-BHC	ND	22.1	19.7	112	20.7	19.7	105	40-164	7	40
Heptachlor	ND	19.8	19.7	101	18.6	19.7	94	38-145	6	40
Aldrin	ND	18.2	19.7	92	17.4	19.7	88	37-143	5	40
Heptachlor Epoxide	ND	18.3	19.7	93	17.1	19.7	87	29-150	7	40
gamma-Chlordane	ND	20.2	19.7	103	18.9	19.7	96	27-149	7	40
Endosulfan I	ND	17.4	19.7	89	16.7	19.7	85	18-133	4	40
alpha-Chlordane	ND	20.6	19.7	105	19.6	19.7	99	33-141	5	40
Dieldrin	ND	20.7	19.7	105	19.5	19.7	99	37-146	6	40
4,4'-DDE	ND	20.8	19.7	106	19.3	19.7	98	32-156	7	40
Endrin	ND	23.0	19.7	117	21.7	19.7	110	34-161	6	40
Endosulfan II	ND	19.5	19.7	99	18.7	19.7	95	19-147	4	40
4,4'-DDD	ND	21.2	19.7	108	19.9	19.7	101	26-161	6	40
Endrin Aldehyde	ND	14.7	19.7	75	13.3	19.7	67	11-147	10	40
Endosulfan Sulfate	ND	21.2	19.7	108	19.8	19.7	101	28-149	7	40
4,4'-DDT	ND	23.1	19.7	118	21.6	19.7	110	22-174	7	40
Endrin Ketone	ND	20.5	19.7	104	19.3	19.7	98	36-149	6	40
Methoxychlor	ND	24.4	19.7	124	23.2	19.7	118	37-162	5	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.

 Service Request:
 K0905407

 Date Extracted:
 06/18/2009

 Date Analyzed:
 06/25/2009

QA/QC Report

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

 Service Request:
 K0905407

 Date Extracted:
 06/18/2009

 Date Analyzed:
 06/25/2009 

 06/26/2009
 06/26/2009

#### Matrix Spike/Duplicate Matrix Spike Summary Organochlorine Pesticides

Sample Name: Lab Code:	Batch QC K0905405-0	01							Units: Basis:		
Extraction Method: Analysis Method:	EPA 3541 8081A							Extract	Level: ion Lot:		005290
		Sample	KV	atch QCMS VG0905290- Aatrix Spike	7	KV	ntch QCDMS VG0905290- ate Matrix S	8	%Rec		RPD
Analyte Name		Result	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
Toxaphene		ND	172	199	86	197	196	101	10-184	14	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.

QA/QC Report

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

#### Lab Control Spike Summary Organochlorine Pesticides

<b>Extraction Method:</b>	EPA 3541
Analysis Method:	8081A

Units: ug/Kg Basis: Dry Level: Low Extraction Lot: KWG0905290

 Service Request:
 K0905407

 Date Extracted:
 06/18/2009

 Date Analyzed:
 06/25/2009

	KW	Control Samp /G0905290-3 Control Spike		%Rec
Analyte Name	Result	Expected	%Rec	Limits
alpha-BHC	22.7	20.0	113	45-150
beta-BHC	23.9	20.0	119	47-149
gamma-BHC (Lindane)	22.7	20.0	113	48-146
delta-BHC	24.3	20.0	122	59-162
Heptachlor	22.0	20.0	110	47-142
Aldrin	20.4	20.0	102	43-141
Heptachlor Epoxide	20.1	20.0	101	48-140
Endosulfan I	19.1	20.0	95	36-124
Dieldrin	22.4	20.0	112	50-142
4,4'-DDE		20.0		51-149
Endrin	24.6	20.0	123	54-155
Endosulfan II	20.8	20.0	104	42-130
4,4'-DDD	23.2	20.0	116	51-152
Endrin Aldehyde	19.8	20.0	99	31-139
Endosulfan Sulfate	22.1	20.0	110	48-143
4,4'-DDT	24.9	20.0	125	59-151
Toxaphene	316	248	127	37-155
Chlordane	249	248	101	61-142
2,4'-DDE	29.4	24.8	119	36-145
2,4'-DDD	28.7	24.8	116	36-148
2,4' <b>-</b> DDT	28.8	24.8	116	34-148

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.

QA/QC Report

Client:	Portland, City of
Project:	Portland Harbor Stormwater Sample
Sample Matrix:	Soil

#### Lab Control Spike Summary Organochlorine Pesticides

Extraction Method: Analysis Method: EPA 3540C 8081A Units: ug/Kg Basis: Dry Level: Low Extraction Lot: KWG0905589

Service Request: K0905407

 Date Extracted:
 06/26/2009

 Date Analyzed:
 07/08/2009

	Lab Control Sample KWG0905589-3 Lab Control Spike			%Rec
Analyte Name	Result	Expected	%Rec	Limits
alpha-BHC	22.7	20.0	114	45-150
beta-BHC	22.4	20.0	112	47-149
gamma-BHC (Lindane)	22.4	20.0	112	48-146
delta-BHC	23.8	20.0	119	59-162
Heptachlor	21.9	20.0	109	47-142
Aldrin	20.8	20.0	104	43-141
Heptachlor Epoxide	19.0	20.0	95	48-140
gamma-Chlordane	21.0	20.0	105	42-145
Endosulfan I	20.0	20.0	100	36-124
alpha-Chlordane	19.1	20.0	95	42-145
Dieldrin	20.9	20.0	105	50-142
4,4'-DDE	20.4	20.0	102	51-149
Endrin	23.5	20.0	118	54-155
Endosulfan II	18.7	20.0	94	42-130
4,4'-DDD	21.7	20.0	109	51-152
Endrin Aldehyde	16.7	20.0	84	31-139
Endosulfan Sulfate	18.8	20.0	94	48-143
4,4'-DDT	23.4	20.0	117	59-151
Endrin Ketone	19.8	20.0	99	41-158
Methoxychlor	24.2	20.0	121	55-153

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

Page

Columbia Columbia Columbia	CHAIN OF CUSTODY	SR#: 1040°	LON
An Employee - Owned Company An Employee - Owned Company A Employee - Owned Company	5 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068 PAGE		~~   \$
PROJECT NUMBER POLYAND HALDER SHERMUNATOR			
PROJECT MANAGER JENNIFER SWACKELFORD	818 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		
lity of rattand	WI VI	VI LIKN	
CITY/STATE/ZIP (		N+20 110-20 10-20 10-20	
DRESS		N (9), 10 0, 10 0, 10 1, 10 1, 10 1, 10	
FAX#		10,000 CO	
		D'H	
MPLEI.D. DATE TIME LABI.D. MATRIX	1987 - 19	N d	
HOCOGENERA MILLOROS 2 1			5= 54.2"6
F0095693 6961359 2	×		2654=
ED COISUAT 1 1 1500 2 2	×		=56.57
FOOD 5695 101000 1315 5 1			Jeb. 5m=
6	X		201:65=
Enconstruction - holder - 15-12			15.95-1
REPORT REQUIREMENTS	Circle which metals are to be analyzed:		
por	Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb	Mg Mn Mo Ni K Ag Na Se Sr Tl Sn	N Zn Hg
Blank, Surrogate, as	Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb	Mg Mn Mo Ni K Ag Na Se Sr Tl	Sn V Zn Hg
	*INDICATE STATE HYDROCARBON PROCEDURE: AK CA	WI NORTHWEST OTHER: (CIRCLE	LE ONE)
Report Dup., MS, MSD as TURN required	PLECIAL INSTRUCTIONS/COMMENTS: PLECIAL AUN UN -LENEL 5081	anolysis Thank y	. YC
(includes all raw data)	Dlunded sample	leas run	
V EDD	before woing volume for	TUC. TRANKS!	
	- (* Ellase was to had solids read	its provided due to lin	LLA Sam
ELINQUISHED BY: 6/16/09 /040 DUNK Pate/Time O. H. Rignature	RECEIVED BY: 0 16 04 10:40 ANA RELINQUISHED BY: PANATIME BY:	12:30 RECEIVED BY: /	e/14/09 123
Printed Name	Firm Firm	Printed Name Firm	

Client / Project; C- Of HU Service Reguest K09		
1 1 a 1 1 a		
Received: $\frac{11500}{00}$ Opened: $\frac{11500}{00}$ By: $\frac{11}{00}$		
	d Delive	red
2. Samples were received in: (circle) Cooler Box Envelope Other	(A)A	
3. Were <u>custody seals</u> on coolers? Y N If yes, how many and where?		
If present, were custody seals intact? Y N If present, were they signed and dated?	Y	Ν
4. Is shipper's air-bill filed? If not, record air-bill number:	Y	N
5. Temperature of cooler(s) upon receipt (°C):		
Temperature Blank (°C):		
Thermometer ID:		
6. If applicable, list Chain of Custody Numbers:		
7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves OtherA	$\lambda$	
8. Were custody papers properly filled out (ink, signed, etc.)? NA	Ø	N
9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA	Ø	Ν
10. Were all sample labels complete (i.e analysis, preservation, etc.)?   NA	Ð	Ν
11. Did all sample labels and tags agree with custody papers? Indicate in the table below	Y	Ν
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA	Ý	Ν
13. Were the pH-preserved bottles tested* received at the appropriate pH? Indicate in the table below	Y	N
14. Were VOA vials received without headspace? Indicate in the table below.	Y	Ν
15. Are CWA Microbiology samples received with >1/2 the 24hr, hold time remaining from collection?	Y	Ν
16. Was C12/Res negative?	Y	N
Sample ID on Bottle Sample ID on COC Sample ID on Bottle Sample ID on C	coc	
Bottle Count Out of Head- Volume Reagent Lot	itials T	

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pН	Reagent	Volume added	Reagent Lot Number	Initials	Time
÷										

\*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN). Additional Notes, Discrepancies, & Resolutions:

		Columbia An Cooler Receipt	•			PCPA	
Cli	ent / Project: CHY of Vort	land	Serv	ice Request K09_	5407		
	ceived: 61609	Opened: 616-09	By:	bu_			
1.	Samples were received via?	US Mail Fed Ex U	VPS DHL	GH GS	PDX Courier	Hand Delive	ered
2.	Samples were received in: (circl	e) Cooler Box	Envelope	Other		NA	
3.	Were <u>custody seals</u> on coolers?	NA Y N	If yes, ho	w many and where	2 1Front		
	If present, were custody seals in	tact? Y N	If pres	ent, were they sign	ed and dated?	(Y)	Ν
4.	Is shipper's air-bill filed? If not	, record air-bill number:				NA Y	Ν
5.	Temperature of cooler(s) upon	receipt (°C):	+.6				
	Temperature Blank (°C):	. 3	2				
	Thermometer ID:	Smo	259				
6.	If applicable, list Chain of Custo	dy Numbers:			······		
7.	Packing material used. Inserts	s Baggies Bubble Wrap	Gel Packs V	Vet Ice Sleeves	Other		
8.	Were custody papers properly fil	lled out (ink, signed, etc.)?					N
9.	Did all bottles arrive in good co	ondition (unbroken)? Indi	cate in the table	below.		NA Y	N
10.	Were all sample labels complete	e (i.e analysis, preservation, e	etc.)?			NA Y	Ν
11.	Did all sample labels and tags ag	gree with custody papers? In	ndicate in the tab	le below		NA Y	N
12.	Were appropriate bottles/cont	ainers and volumes receive	ed for the tests in	ndicated?			Ν
13.	Were the pH-preserved bottles to	ested* received at the appror	oriate pH? Indica	ate in the table belo	w	NA Y	N
14.	Were VOA vials received witho	ut headspace? Indicate in th	e table below.		~	NA Y	N
15.	Are CWA Microbiology sample	les received with $>1/2$ the 2	4hr. hold time r	emaining from col	llection?	NA Y	Ν
16.	Was C12/Res negative?					NA Y	Ν
	Sample ID on Bottle	Sample ID on COC	Sam	ple ID on Bottle	Sample	ID on COC	
				· · · · · · · · · · · · · · · · · · ·			
		1 		T# # 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>		

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	рН	Reagent	Volume added	Reagent Lot Number	Initials	Time

\*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN). Additional Notes, Discrepancies, & Resolutions:\_\_\_\_\_



ORELAP#: OR100021

July 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 06/16/09 14:30. The following list is a summary of the Work Orders contained in this report, generated on 07/17/09 12:07.

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

Work OrderProjectProjectNumberPSF0519Portland Harbor36238

TestAmerica Portland

£U.

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.



#### THE LEADER IN ENVIRONMENTAL TESTING

## City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

Portland Harbor 36238 Jennifer Shackelford

Report Created: 07/17/09 12:07

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 095693	PSF0519-01	Soil	06/09/09 13:59	06/16/09 14:30
FO 095694	PSF0519-02	Soil	06/09/09 15:00	06/16/09 14:30
FO 095695	PSF0519-03	Soil	06/10/09 13:15	06/16/09 14:30
FO 095696	PSF0519-04	Soil	06/10/09 15:55	06/16/09 14:30
FO 095697	PSF0519-05	Soil	06/09/09 00:00	06/16/09 14:30

TestAmerica Portland

lun Haulus

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.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/17/09 12:07
	Analytical Case Na	rrative	

TestAmerica - Portland, OR

#### PSF0519

8151 Herbicides

The herbicde samples in batch 9060755 had to be re-extracted in batch 9070017 due to containination in the Method Blank. Samples were re-extracted past hold. Sample results were flagged and reported.

TestAmerica Portland

ung Hei

Howard Holmes, Project Manager



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

6543 N. Burlington Ave. Portland, OR 97203

**Portland Harbor** Project Name: 36238 Report Created: Project Number: Project Manager: Jennifer Shackelford 07/17/09 12:07

		Ch	lorinated	l Herbi		er EPA		8151A N	lodified		
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0519-02RE1	(FO 095694)			So	il		Samp	led: 06/09/	09 15:00		H4, RL1, N
2,4-D		8151mod	ND		142	ug/kg dry	4x	9070017	07/01/09 10:51	07/08/09 19:23	
2,4-DB		"	ND		142	"	"			"	
2,4,5-T		"	ND		142	"	"			"	
2,4,5-TP (Silvex)		"	ND		142	"	"			"	
Dalapon		"	ND		142	"	"			"	
Dicamba		"	ND		142	"	"			"	
Dichlorprop		"	ND		142	"	"			"	
Dinoseb		"	ND		142	"	"			"	
MCPA		"	ND		14200	"	"	"	"	"	
MCPP		"	ND		14200	"	"	"	"	"	
Surrogate(s):	2,4-Dichloropheny	vlacetic acid			114%		30 - 140 %	"			"

Soil Sampled: 06/10/09 13:15 H4, RL1, N1 PSF0519-03RE1 (FO 095695) 8151mod 607 20x 9070017 07/01/09 10:51 07/08/09 20:02 2,4-D ug/kg dry -----ND .. 607 .. .. ., 2,4-DB ... .. ND -----.. 2,4,5-T .. 607 ND -----2,4,5-TP (Silvex) 607 -----ND Dalapon ND -----607 607 ... Dicamba ND -----607 Dichlorprop ND -----Dinoseb 607 ND -----MCPA 60700 -----ND MCPP -----60700 ND

121%

Surrogate(s): 2,4-Dichlorophenylacetic acid

30 - 140 %

"

PSF0519-05RE1	(FO 095697)			H4, RL1, N					
2,4-D	8151mod	ND	 142	ug/kg dry	4x	9070017	07/01/09 10:51	07/08/09 20:41	
2,4-DB	"	ND	 142	"		"			
2,4,5-T	"	ND	 142	"		"	"	"	
2,4,5-TP (Silvex)	"	ND	 142			"		"	
Dalapon	"	ND	 142			"		"	
Dicamba	"	ND	 142			"		"	
Dichlorprop	"	ND	 142			"		"	
Dinoseb	"	ND	 142	"		"	"	"	
MCPA	"	ND	 14200	"		"	"	"	

TestAmerica Portland

lun Hæulu

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.

,,



6543 N. Burlington Ave. Portland, OR 97203

Project Name: Project Number: Project Manager:

**Portland Harbor** 36238 Jennifer Shackelford

Report Created: 07/17/09 12:07

	Ch	lorinated	l Herbi	-	er EPA	Method 8 tland	8151A N	Aodified			
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed		Notes
PSF0519-05RE1	(FO 095697)		So	il		Samp	led: 06/09/	09 00:00			H4, RL1, N1
МСРР	8151mod	ND		14200	ug/kg dry	4x	9070017	07/01/09 10:51	07/08/09 20:41		
Surrogate(s):	2,4-Dichlorophenylacetic acid			107%		30 - 140 %	"			"	

30 - 140 %

TestAmerica Portland

Hæulu um

Howard Holmes, Project Manager



#### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

**Portland Harbor** 36238

36238 Jennifer Shackelford Report Created: 07/17/09 12:07

	Po	lynuclea	r Arom		<b>mpound</b> nerica Por	-	PA 8270	M-SIM			
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PSF0519-01 (FO 095693)			Soi	il		Samp	led: 06/09/	09 13:59			RL
Acenaphthene	EPA 8270m	ND		146	ug/kg dry	5x	9060620	06/17/09 15:10	06/23/09 14:45		
Acenaphthylene		ND		146		"	"	"			
Anthracene		247		146		"	"	"	"		
Benzo (a) anthracene		163		146		"	"	"			
Benzo (a) pyrene		186		146			"	"	"		
Benzo (b) fluoranthene		235		146	"	"	"	"			
Benzo (ghi) perylene		267		146			"	"	"		
Benzo (k) fluoranthene		164		146		"	"	"			
Chrysene		426		146			"	"			
Dibenzo (a,h) anthracene		ND		146			"				
Fluoranthene		491		146		"	"	"			
Fluorene		ND		146		"	"				
Indeno (1,2,3-cd) pyrene		150		146		"	"	"	"		
Naphthalene		ND		146		"	"				
Phenanthrene		463		146		"	"	"			
Pyrene	"	586		146	"		"	"	"		
Surrogate(s): Fluorene-d10				78.6%		24 - 125 %	"			"	
Pyrene-d10				51.0%		41 - 141 %	"			"	
Benzo (a) pyrei	ne-d12			62.7%		38 - 143 %	"			"	
PSF0519-02 (FO 095694)			Soi	il		Samp	led: 06/09/	/09 15:00			
Acenaphthene	EPA 8270m	ND		23.6	ug/kg dry	1x	9060620	06/17/09 15:10	06/23/09 15:16		
Acenaphthylene		ND		23.6			"	"	"		
Anthracene		ND		23.6		"	"	"			

TestAmerica Portland

Benzo (a) anthracene

Benzo (b) fluoranthene

Benzo (k) fluoranthene

Dibenzo (a,h) anthracene

Indeno (1,2,3-cd) pyrene

Benzo (ghi) perylene

Benzo (a) pyrene

Chrysene

Fluorene

Fluoranthene

Naphthalene

Phenanthrene

Hæulu

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.

Howard Holmes, Project Manager

23.6

23.6

23.6

23.6

23.6

23.6

23.6

23.6 23.6

23.6

23.6

23.6

...

..

ND

ND

ND

ND

ND 29.0

ND

33.6

ND

ND

ND

ND

..

-----

-----

-----

-----

-----

-----

-----

-----

-----

-----

-----

-----



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

6543 N. Burlington Ave. Portland, OR 97203

Project Name: Project Number: Project Manager:

36238

**Portland Harbor** 

Jennifer Shackelford

Report Created: 07/17/09 12:07

		Po	lynuclea	r Aron		<b>mpound</b> nerica Por	<b>ds per El</b> tland	PA 8270	M-SIM				
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed		Notes	
PSF0519-02	(FO 095694)			Sa	il		Samp	led: 06/09/	/09 15:00				
Pyrene		EPA 8270m	25.1		23.6	ug/kg dry	1x	9060620	06/17/09 15:10	06/23/09 15:16			
Surrogate(s):	Fluorene-d10				68.4%		24 - 125 % 41 - 141 %	"			"		
	Pyrene-d10 Benzo (a) pyrene	-d12			50.2% 61.0%		41 - 141 % 38 - 143 %	"			"		
	Benzo (u) pyrene	412											
PSF0519-03	(FO 095695)			So	oil		Samp	led: 06/10/	09 13:15				RL.
Acenaphthene		EPA 8270m	ND		203	ug/kg dry	10x	9060620	06/17/09 15:10	06/18/09 17:44			
Acenaphthylene			ND		203		"	"	"	"			
Anthracene			ND		203		"	"	"	"			
Benzo (a) anthrac	ene		429		203	"	"	"	"	"			
Benzo (a) pyrene			390		203	"	"	"	"	"			
Benzo (b) fluorant	thene		393		203	"	"	"	"	"			
Benzo (ghi) peryle	ne		372		203	"	"	"	"	"			
Benzo (k) fluorant	thene		372		203		"	"	"	"			
Chrysene			568		203		"	"	"	"			
Dibenzo (a,h) anthi	racene		ND		203	"	"	"		"			
Fluoranthene			1070		203		"	"		"			
Fluorene			ND		203		"	"		"			
Indeno (1,2,3-cd)	pyrene		295		203		"	"		"			
Naphthalene			ND		203		"	"	"	"			
Phenanthrene			611		203		"	"	"	"			
Pyrene		"	781		203	"		"	"	"			
Surrogate(s):	Fluorene-d10				77.0%		24 - 125 %	"			"		
	Pyrene-d10				64.9%		41 - 141 %	"			"		
	Benzo (a) pyrene	-d12			74.1%		38 - 143 %	"			"		
PSF0519-04	(FO 095696)			So	oil		Samp	led: 06/10/	09 15:55				RL.
Acenaphthene	· · · · · · · · · · · · · · · · · · ·	EPA 8270m	ND		223	ug/kg dry	10x	9060620	06/17/09 15:10	06/18/09 18:15			
Acenaphthylene			ND		223	"	"		"	"			
Anthracene			ND		335		"		"	"		RL1	
Benzo (a) anthrac	ene		267		223		"		"	"			
Benzo (a) pyrene			284		223		"		"	"			
Benzo (b) fluorant	thene	"	360		223		"	"	"	"			
Benzo (ghi) peryle		"	451		223		"		"	"			
Benzo (k) fluorant		"	257		223		"		"	"			
Chrysene			706		223		"		"	"			

TestAmerica Portland

Haulu un

Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.



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

6543 N. Burlington Ave. Portland, OR 97203

Project Name: Project Number: Project Manager:

**Portland Harbor** 36238 Jennifer Shackelford

Report Created: 07/17/09 12:07

		Po	lynuclea	ar Arom		<b>mpoune</b> nerica Por	<b>ls per E</b> l tland	PA 8270	M-SIM				
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed		Notes	
PSF0519-04	(FO 095696)			So	il		Samp	led: 06/10/	09 15:55				RL.
Dibenzo (a,h) an	thracene	EPA 8270m	ND		223	ug/kg dry	10x	9060620	06/17/09 15:10	06/18/09 18:15			
Fluoranthene		"	934		223		"	"		"			
Fluorene		"	ND		447		"	"	"	"		RL1	
Indeno (1,2,3-cd	) pyrene	"	ND		223		"	"	"	"			
Naphthalene		"	ND		223		"	"	"	"			
Phenanthrene		"	1250		223		"	"	"	"			
Pyrene		"	1210		223	"		"	"	"			
Surrogate(s	): Fluorene-d10				118%		24 - 125 %	"			"		
	Pyrene-d10				82.6%		41 - 141 %	"			"		
	Benzo (a) pyrer	ne-d12			102%		38 - 143 %	"			"		
PSF0519-05	(FO 095697)			So	il		Samp	led: 06/09/	09 00:00				
Acenaphthene		EPA 8270m	ND		23.5	ug/kg dry	1x	9060620	06/17/09 15:10	06/23/09 15:47			
Acenaphthylene			ND		23.5		"	"	"	"			
Anthracene			ND		23.5		"	"	"	"			
Benzo (a) anthra	cene		ND		23.5		"	"	"	"			
Benzo (a) pyrene	:		ND		23.5		"	"	"	"			
Benzo (b) fluora	nthene		ND		23.5		"	"	"	"			
Benzo (ghi) pery	lene	"	ND		23.5		"	"		"			
Benzo (k) fluora	nthene	"	ND		23.5		"	"		"			
Chrysene		"	ND		23.5		"	"		"			
Dibenzo (a,h) an	thracene	"	ND		23.5		"	"		"			
Fluoranthene		"	ND		23.5		"	"		"			
Fluorene		"	ND		23.5		"	"		"			
Indeno (1,2,3-cd	) pyrene	"	ND		23.5		"	"		"			
Naphthalene		"	ND		23.5		"	"	"	"			
Phenanthrene		"	ND		23.5		"	"	"	"			
Pyrene		"	ND		23.5	"	"	"	"	"			
Surrogate(s	): Fluorene-d10				66.0%		24 - 125 %	"			"		
	Pyrene-d10				48.9%		41 - 141 %	"			"		
	Benzo (a) pyren	ne-d12			60.9%		38 - 143 %	"			"		

TestAmerica Portland

Hæulu um

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	07/17/09 12:07

			Phtha		er EPA nerica Por	8270-SI tland	Μ					
Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed		Notes	
PSF0519-01 (FO 095693)			Soi	1		Samp	led: 06/09/	/09 13:59				RL
Dimethyl phthalate	EPA 8270m	ND		2910	ug/kg dry	50x	9060620	06/17/09 15:10	06/25/09 06:37			
Diethyl phthalate		ND		2910		"		"	"			
Di-n-butyl phthalate	"	ND		2910		"	"					
Butyl benzyl phthalate		ND		2910		"			"			
Bis(2-ethylhexyl)phthalate		26900		2910		"			"			
Di-n-octyl phthalate	"	ND		4370	"	"	"	"	"		RL1	
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			"	Z3	
p-Terphenyl-d14				NR		10 - 150 %	"			"	Z3	
PSF0519-02 (FO 095694)			Soi	1		Samp	led: 06/09/	/09 15:00				
Dimethyl phthalate	EPA 8270m	ND		47.1	ug/kg dry	1x	9060620	06/17/09 15:10	06/26/09 18:12			
Diethyl phthalate	"	ND		47.1		"	"		"			
Di-n-butyl phthalate	"	ND		47.1		"	"		"			
Butyl benzyl phthalate	"	54.7		47.1		"	"					
Bis(2-ethylhexyl)phthalate		256		47.1		"			"			
Di-n-octyl phthalate	"	ND		70.7	"	"	"	"	"		RL1	
Surrogate(s): 2-Fluorobiphenyl				46.2%		10 - 150 %	"			"		
p-Terphenyl-d14				113%		10 - 150 %	"			"		
PSF0519-03 (FO 095695)			Soi	1		Samp	led: 06/10	/09 13:15				RL.
Dimethyl phthalate	EPA 8270m	ND		2030	ug/kg dry	50x	9060620	06/17/09 15:10	06/25/09 23:20			
Diethyl phthalate	"	ND		2030		"	"					
Di-n-butyl phthalate		ND		2030		"			"			
Butyl benzyl phthalate	"	ND		2030		"	"					
Bis(2-ethylhexyl)phthalate	"	7430		2030		"	"					
Di-n-octyl phthalate	"	ND		2030	"	"	"	"	"			
Surrogate(s): 2-Fluorobiphenyl p-Terphenyl-d14				NR NR		10 - 150 % 10 - 150 %	"			"	Z3 Z3	
PSF0519-04 (FO 095696)			Soi	1		Samp	led: 06/10/	/09 15:55				RL.
Dimethyl phthalate	EPA 8270m	ND		2230	ug/kg dry	50x	9060620	06/17/09 15:10	06/25/09 23:56			
Diethyl phthalate	"	ND		2230	"	"	"	"	"			
J F		ND										

Di-n-octyl phthalate TestAmerica Portland

Di-n-butyl phthalate

Butyl benzyl phthalate

Bis(2-ethylhexyl)phthalate

Haulus un

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.

2230

2230

2230

2230

..

-----

-----

-----

-----

ND

ND

ND

27700

..



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	07/17/09 12:07

				Phtha	-	er EPA nerica Por	8270-SI	М					
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed		Notes	
PSF0519-04 (	FO 095696)			Soi	1		Samp	led: 06/10	/09 15:55				RL
Surrogate(s):	2-Fluorobiphenyl p-Terphenyl-d14				NR NR		10 - 150 % 10 - 150 %	50x "			06/25/09 23:56 "	Z3 Z3	
PSF0519-05 (	FO 095697)			Soi	1		Samp	led: 06/09/	/09 00:00				
Dimethyl phthalate		EPA 8270m	ND		47.0	ug/kg dry	lx	9060620	06/17/09 15:10	06/26/09 18:49			
Diethyl phthalate		"	ND		47.0	"	"	"	"				
Di-n-butyl phthalate	2	"	ND		47.0	"	"	"	"	"			
Butyl benzyl phtha	late	"	48.1		47.0	"	"	"	"	"			
Bis(2-ethylhexyl)ph	nthalate	"	211		47.0	"	"	"	"	"			
Di-n-octyl phthalate	;	"	ND		47.0	"		"	"	"			
Surrogate(s):	2-Fluorobiphenyl p-Terphenyl-d14				46.7% 73.8%		10 - 150 % 10 - 150 %	"			"		

TestAmerica Portland

Haulus lun

Howard Holmes, Project Manager



#### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

36238 Jennifer Shackelford

**Portland Harbor** 

Report Created: 07/17/09 12:07

Percent Dry Weight (Solids) per ASTM D2216-80 TestAmerica Portland											
Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0519-01	(FO 095693)			Soi	1		Sam	pled: 06/09/	09 13:59		
% Solids		NCA SOP	45.9		0.0100	% by Weight	1x	9060619	06/16/09 18:07	06/16/09 18:07	
PSF0519-02	(FO 095694)			Soi	1		Sam	pled: 06/09/	09 15:00		
% Solids		NCA SOP	56.5		0.0100	% by Weight	1x	9060619	06/16/09 18:07	06/16/09 18:07	
PSF0519-03	(FO 095695)			Soi	1		Sam	pled: 06/10/	09 13:15		
% Solids		NCA SOP	65.9		0.0100	% by Weight	1x	9060619	06/16/09 18:07	06/16/09 18:07	
PSF0519-04	(FO 095696)			Soi	1		Sam	pled: 06/10/	09 15:55		
% Solids		NCA SOP	59.7		0.0100	% by Weight	1x	9060619	06/16/09 18:07	06/16/09 18:07	
PSF0519-05	(FO 095697)			Soi	1		Sam	pled: 06/09/	09 00:00		
% Solids		NCA SOP	56.5		0.0100	% by Weight	1x	9060619	06/16/09 18:07	06/16/09 18:07	

TestAmerica Portland

lun Haulus

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	07/17/09 12:07
	Organic Carbon, To TestAmerica Conr		

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0519-01 (FO 095693)			Soil			Sa	mpled: 06/09	0/09 13:59		
Total Organic Carbon - Duplicates	9060	52200	10.4	100	mg/Kg	1x	28636	06/29/09 18:26	06/29/09 18:26	
PSF0519-02 (FO 095694)			Soil			Sa	mpled: 06/09	0/09 15:00		
Total Organic Carbon - Duplicates	9060	13700	10.4	100	mg/Kg	1x	28636	06/29/09 18:40	06/29/09 18:40	
PSF0519-03 (FO 095695)			Soil			Sa	mpled: 06/10	/09 13:15		
Total Organic Carbon - Duplicates	9060	38400	10.4	100	mg/Kg	1x	28636	06/29/09 18:53	06/29/09 18:53	
PSF0519-04 (FO 095696)			Soil			Sa	mpled: 06/10	0/09 15:55		
Total Organic Carbon - Duplicates	9060	90600	10.4	100	mg/Kg	1x	28636	06/29/09 19:41	06/29/09 19:41	
PSF0519-05 (FO 095697)			Soil			Sa	mpled: 06/09	0/09 00:00		
Total Organic Carbon - Duplicates	9060	19800	10.4	100	mg/Kg	1x	28636	06/29/09 19:55	06/29/09 19:55	

TestAmerica Portland

Haulus Hun

Howard Holmes, Project Manager



#### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

Portland Harbor 36238

Jennifer Shackelford

Report Created: 07/17/09 12:07

#### Chlorinated Herbicides per EPA Method 8151A Modified - Laboratory Quality Control Results TestAmerica Portland

QC Batch: 9070017	Soil Pre	eparation M	ethod: EPA	3510/60	) Series									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	o‰ REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9070017-BLK1)								Extr	racted:	07/01/09 10	):51			
2,4-D	8151mod	ND		20.0	ug/kg wet	1x							07/08/09 16:47	
2,4-DB	"	ND		20.0										
2,4,5-T	"	ND		20.0										
2,4,5-TP (Silvex)	"	ND		20.0										
Dalapon	"	ND		20.0										
Dicamba	"	ND		20.0	"	"								
Dichlorprop	"	ND		20.0	"	"								
Dinoseb	"	ND		20.0		"								
MCPA	"	ND		2000		"								
MCPP	"	ND		2000	"								"	
Surrogate(s): 2,4-Dichloropheny	lacetic acid	Recovery:	89.2%	Li	mits: 30-140%	"							07/08/09 16:47	
LCS (9070017-BS1)								Extr	racted:	07/01/09 10	):51			
2,4-D	8151mod	86.8		20.0	ug/kg wet	1x		80.0	108%	(30-120)			07/08/09 17:26	
2,4-DB	"	99.0		20.0	"				124%	(30-130)				
2,4,5-T	"	86.2		20.0					108%	(25-125)				
2,4,5-TP (Silvex)	"	78.9		20.0					98.6%	(35-100)				
Dalapon	"	60.7		20.0					75.9%	(20-110)				
Dicamba	"	88.3		20.0					110%	(30-115)				
Dichlorprop	"	79.3		20.0					99.1%	(50-100)				
Dinoseb	"	85.2		20.0				"	107%	(10-130)				
MCPA	"	7910		2000				8000	98.8%	(30-105)				
MCPP	"	7770		2000	"			"	97.2%				"	
Surrogate(s): 2,4-Dichloropheny	lacetic acid	Recovery:	108%		mits: 45-125%	"				. ,			07/08/09 17:26	
M-4-1- 8-1 (0070017 M81)				OC Saura	. DEF0510.051	DE1		Fretz	d.	07/01/09 10	.51			
Matrix Spike (9070017-MS1) 2.4-D	8151mod	203		142	: PSF0519-051 ug/kg dry	4x	ND	142	143%	(15-110)			07/08/09 21:20	Ν
2,4-DB	"	220		142	"		ND	"	156%	(10-135)				N
2,4,5-T	"	202		142	"		ND	"	143%	(15-120)				N
2,4,5-TP (Silvex)	"	165		142	"		ND	"	117%	(20-105)				N
Dalapon	"	149		142			ND	"	105%	(15-105)				
Dicamba	"	189		142	"		ND	"	134%	(10 100)			"	Ν
Dichlorprop	"	187		142	"		ND		132%	(25-105)				N
Dinoseb	"	187		142			ND	"	132%	(15-125)				N
MCPA	"	17800		14200	"		ND	14200	125%	(15-105)				N
		17000		200				200	120/0	(10 100)				19

TestAmerica Portland

lun Haulus

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.

Howard Holmes, Project Manager



#### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

36238 Jennifer Shackelford

**Portland Harbor** 

Report Created: 07/17/09 12:07

#### Chlorinated Herbicides per EPA Method 8151A Modified - Laboratory Quality Control Results TestAmerica Portland

QC Batch: 9070017	Soil Pre	paration M	ethod: EPA	3510/60	0 Series									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	s) Analyzed	Notes
Matrix Spike Dup (907001	7-MSD1)			QC Sourc	e: PSF0519-0	5RE1		Extr	acted:	07/01/09 10	:51			
2,4-D	8151mod	204		142	ug/kg dry	4x	ND	142	144%	(15-110)	0.783%	6 (30)	07/08/09 21:59	M7
2,4-DB	"	212		142	"	"	ND	"	150%	(10-135)	3.99%	(40)		M7
2,4,5-T	"	198		142	"	"	ND	"	140%	(15-120)	1.94%	"		M7
2,4,5-TP (Silvex)	"	156		142	"	"	ND	"	110%	(20-105)	5.96%	"	"	M7
Dalapon	"	147		142	"	"	ND	"	104%	(15-105)	1.50%	"	"	
Dicamba	"	178		142	"	"	ND	"	126%		5.89%	"		M7
Dichlorprop	"	173		142	"	"	ND	"	122%	(25-105)	7.71%	"		M7
Dinoseb	"	169		142	"	"	ND	"	120%	(15-125)	10.2%	"		
MCPA	"	18200		14200	"	"	ND	14200	128%	(15-105)	2.27%	"		M7
MCPP	"	18100		14200	"	"	ND	"	128%	(15-110)	3.71%	"		M7
Surrogate(s): 2,4-Dichlorophe	enylacetic acid	Recovery:	120%	L	imits: 20-125%	6 "							07/08/09 21:59	

TestAmerica Portland

lun Haulus

Howard Holmes, Project Manager



#### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

**Portland Harbor** 36238

Jennifer Shackelford

Report Created: 07/17/09 12:07

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

QC Bate	h: 9060620	Soil Pre	paration N	lethod: EPA	3550										
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (906062	20-BLK1)								Extr	acted:	06/17/09 15	5:10			
Acenaphthene		EPA 8270m	ND		13.4	ug/kg wet	1x						0	6/18/09 12:30	
Acenaphthylene			ND		13.4	"	"							"	
Anthracene			ND		13.4	"	"							"	
Benzo (a) anthracen	e		ND		13.4	"	"							"	
Benzo (a) pyrene			ND		13.4	"	"							"	
Benzo (b) fluoranthe	ene		ND		13.4	"	"							"	
Benzo (ghi) perylene	e		ND		13.4	"	"							"	
Benzo (k) fluoranthe	ene		ND		13.4	"	"							"	
Chrysene			ND		13.4	"	"							"	
Dibenzo (a,h) anthra	cene		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:	47.0%	L	imits: 24-125%	"							06/18/09 12:30	
	Pyrene-d10			71.0%		41-141%	"							"	
	Benzo (a) pyrene-d12			75.6%		38-143%	"							"	
LCS (9060620	)-BS1)								Extr	acted:	06/17/09 15	5:10			
Acenaphthene		EPA 8270m	146		13.4	ug/kg wet	1x		166	88.0%	(33-139)		0	6/18/09 11:58	
Benzo (a) pyrene			146		13.4	"	"		"	87.7%	(45-149)			"	
Pyrene			127		13.4	"	"		"	76.3%	(39-138)			"	
Surrogate(s):	Fluorene-d10		Recovery:	37.6%	L	imits: 24-125%	"							06/18/09 11:58	
0.07	Pyrene-d10			69.0%		41-141%	"							"	
	Benzo (a) pyrene-d12			76.8%		38-143%	"							"	
Matrix Spike	(9060620-MS1)				QC Sourc	e: PSF0346-03			Extr	acted:	06/17/09 15	5:10			
Acenaphthene	. ,	EPA 8270m	374		152	ug/kg dry	10x	96.1	189	147%	(33-139)		0	6/18/09 13:32	M
Benzo (a) pyrene			156		152	"	"	ND	"	82.3%	(45-149)			"	
Pyrene			277		152	"		74.2	"	107%	(39-138)				
Surrogate(s):	Fluorene-d10		Recovery:	85.9%	L	imits: 24-125%	"							06/18/09 13:32	
5 (7	Pyrene-d10			77.5%		41-141%	"							"	
	Benzo (a) pyrene-d12			85.1%		38-143%	"							"	

TestAmerica Portland

lun Haulus

Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.



#### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

**Portland Harbor** 36238

Jennifer Shackelford

Report Created: 07/17/09 12:07

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

QC Batch: 9060620	Soil Pre	paration M	lethod: EPA	A 3550										
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
Matrix Spike Dup (9060620-MS	D1)			QC Source	e: PSF0346-0	3		Extr	acted:	06/17/09 15	5:10			
Acenaphthene	EPA 8270m	264		152	ug/kg dry	10x	96.1	189	89.0%	(33-139)	34.5%	(60)	06/18/09 14:04	
Benzo (a) pyrene	"	146		152	"	"	ND	"	77.3%	(45-149)	6.50%	, "	"	
Pyrene	"	207		152	"	"	74.2	"	70.1%	(39-138)	29.1%	, "	"	
Surrogate(s): Fluorene-d10		Recovery:	89.0%	Li	imits: 24-1259	6 "							06/18/09 14:04	
Pyrene-d10			75.4%		41-141	% "							"	
Benzo (a) pyrene-d12			79.9%		38-143	% "							"	

TestAmerica Portland

flun Haulus

Howard Holmes, Project Manager



### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

Portland Harbor 36238

Jennifer Shackelford

Report Created: 07/17/09 12:07

	Ph	thalates p	er EPA 8270- Te		Laborato ca Portland	ry Qua	ality Con	trol Re	esults					
QC Batch: 9060620	Soil Pre	paration N	lethod: EPA	3550										
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limit	s) Analyzed	Not
Blank (9060620-BLK1)								Extr	acted:	06/17/09 15	:10			
Dimethyl phthalate	EPA 8270m	ND		26.8	ug/kg wet	1x							06/24/09 22:11	
Diethyl phthalate		ND		26.8	"									
Di-n-butyl phthalate	"	ND		26.8		"							"	
Butyl benzyl phthalate		ND		26.8	"	"								
Bis(2-ethylhexyl)phthalate		ND		26.8	"	"								
Di-n-octyl phthalate		ND		26.8	"									
Surrogate(s): 2-Fluorobiphenyl		Recovery:	50.6%	Lii	nits: 10-150%	ó "							06/24/09 22:11	
p-Terphenyl-d14			108%		10-150	% "							"	
LCS (9060620-BS1)								Extr	acted:	06/17/09 15	:10			
Dimethyl phthalate	EPA 8270m	111		26.7	ug/kg wet	1x		133	83.7%	(20-150)			06/24/09 22:47	
Diethyl phthalate		127		26.7	"				95.4%				"	
Di-n-butyl phthalate		144		26.7					108%				"	
Butyl benzyl phthalate		162		26.7					122%				"	
Bis(2-ethylhexyl)phthalate		147		26.7					110%					
Di-n-octyl phthalate		128		26.7					96.4%					
Surrogate(s): 2-Fluorobiphenyl		Recovery:	23.8%		nits: 10-1509	<i></i>							06/24/09 22:47	
p-Terphenyl-d14		Recovery.	98.2%	Lii	10-150								"	
Matrix Spike (9060620-MS1)				OC Source	: PSF0346-0	3		Extr	acted:	06/17/09 15	.10			
Dimethyl phthalate	EPA 8270m	145		152	ug/kg dry	5x	ND	152	95.6%				06/25/09 20:56	
Diethyl phthalate	"	145		152	"	"	ND	"	81.7%	(10 150)			"	
Di-n-butyl phthalate		151		152			ND		99.9%					
Butyl benzyl phthalate		151		152			ND		100%					
									100%					
Bis(2-ethylhexyl)phthalate		165		152			ND							
Di-n-octyl phthalate		138		152			ND		91.0%					
Surrogate(s): 2-Fluorobiphenyl		Recovery:	44.7%	Lii	nits: 10-150%								06/25/09 20:56 "	
p-Terphenyl-d14			89.3%		10-150	6 "							"	
Matrix Spike Dup (9060620-MS	SD1)			QC Source	PSF0346-0	3		Extr	acted:	06/17/09 15	:10			
Dimethyl phthalate	EPA 8270m	123		152	ug/kg dry	5x	ND	151	81.7%	(10-150)	15.9%	6 (50)	06/25/09 21:32	
Diethyl phthalate		143		152	"		ND	"	94.4%		14.2%	, <b>"</b>		
Di-n-butyl phthalate		169		152	"		ND	"	111%		10.7%	, " D		
Butyl benzyl phthalate		154		152			ND	"	102%		1.41%	, "		
Bis(2-ethylhexyl)phthalate		163		152			ND	"	108%		0.717%	6 "		
Di-n-octyl phthalate		140		152	"		ND	"	92.3%		1.15%	, <b>"</b>		
Surrogate(s): 2-Fluorobiphenyl		Recovery:	36.7%	Lii	nits: 10-150%	ó "							06/25/09 21:32	
p-Terphenyl-d14			104%	20	10-150	<i>.</i>							"	

TestAmerica Portland

Haulus Lun

Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain

of custody document. This analytical report shall not be reproduced except in full,

without the written approval of the laboratory.



### City of Portland Water Pollution Laboratory

6543 N. Burlington Ave. Portland, OR 97203

Project Name: Project Number: Project Manager:

36238

**Portland Harbor** 

Jennifer Shackelford

Report Created: 07/17/09 12:07

	Oı	ganic Carbo	· · · ·		L <b>aborato</b> Connectic		ality Con	trol Re	sults					
QC Batch: 28636	Soil Pre	eparation Metl	hod: NA											
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
LCS (220-28636-5)				QC Source:				Extra	acted:	06/29/09 18	:13			
Total Organic Carbon - Duplicates	9060	3771	10.4	100	mg/Kg	1x		3530	107%	(28-172)			06/29/09 18:13	
Blank (220-28636-6)				QC Source:				Extra	acted:	06/29/09 18	:19			
Total Organic Carbon - Duplicates	9060	ND	10.4	100	mg/Kg	1x							06/29/09 18:19	
Matrix Spike (938738)				QC Source:	PSF0519-0	3		Extra	acted:	06/29/09 19	:35			
Total Organic Carbon - Duplicates	9060	142200	10.4	100	mg/Kg	1x	38400	110000	94%	(75-125)			06/29/09 19:35	
Duplicate (93873X)				QC Source:	PSF0519-0	3		Extra	acted:	06/29/09 19	:07			
Total Organic Carbon - Duplicates	9060	39630	10.4	100	mg/Kg	1x	38400				3%	(20)	06/29/09 19:07	

TestAmerica Portland

Haulus lun

Howard Holmes, Project Manager



Project Name: Project Number: Project Manager: Portland Harbor 36238

Jennifer Shackelford

Report Created: 07/17/09 12:07

#### **Notes and Definitions**

#### Report Specific Notes:

6543 N. Burlington Ave.

Portland, OR 97203

Report Sp	Deci	<u>ne Notes:</u>
H4	-	Sample was extracted past holding time, but analyzed within analysis holding time.
M7	-	The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).
N1	-	See case narrative.
RL1	-	Reporting limit raised due to sample matrix effects.
RL3	-	Reporting limit raised due to high concentrations of non-target analytes.
Z3	-	The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
Laborator	ry R	eporting Conventions:
DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts analytical dilutions and

- Reporting Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic- Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy.SignatureApplication of electronic signature indicates that the report has been reviewed and approved for release by the laboratory.<br/>Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

HæUM un

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.

Howard Holmes, Project Manager

TestAmerica

509-924 9200 FAX 924-9290 503-906-9200 FAX 906-9210 907 567 9200 FAX 563 9210

11922 E. First Ave, Spokane, WA 99206-5302 9405 SW Nimhus Ave.Bcaverton, OR 97008-7145

11720 North Creek Pkwy N Suite 400. Bothell. WA 98011-8244

425-420-9200 FAX 420-9210

75= 39,2445.94 TAL-1000(0408) TA WO ID \* Turnaround Requests less than standard may incur Rush Charge DATE: UIUU PAGE C OF -DATE: 6//6 4=56.57 5 4 3 2 1 <1 = 56.571 = 105.97 - 59.77 Organic & Inorganic Analyses Define the second statyses Petroleum Hydrocarbon Analyses Work Order #: PSF USI **TURNAROUND REQUEST** TIME: LOCATION/ COMMENTS T'T in Business Days \* OTHER Specify: Thenko \* Please we current MIC arallyt lict. # OF CONT. 3 ہ FIRM: FIRM: 000 W. International Airport Rd Ste A10, Anchorage, AK 99502-1119 MATRIX (W, S, O)  $\mathcal{N}$ COON Latter Lytle **CHAIN OF CUSTODY REPORT** RECEIVED BY: -RECEIVED BY: PRINT NAME: PRINT NAME: REQUESTED ANALYSES PRESERVATIVE P.O. NUMBER 3 6 238 14:30 0110 11,25 FIRME City if forthind TIME 11,2 INVOICE TO TIME 201  $\times$ X  $\succ$ HIS-OLPS Y Y \*  $\times$ THE LEADER IN ENVIRONMENTAL TESTING Jennifu Shackelfaid  $\frac{1}{5}\overline{5}$ ちらく PROJECT NAME: PDI HANDIN 1359 1500 PROJECT NUMBER: SAMPLED BY: SAMPLED BY: FIRM: SAMPLING DATE/TIME 10/01 (a) W/ Val 10/0/01 10 B D9 CLIENT CIL & F PUTHING F0095697 FOC95695 F0095693 JPUGG2001 FOODS1094 CLIENT SAMPLE IDENTIFICATION ADDITIONAL REMARK: RELEASED BY: **RELEASED BY:** PRINT NAME: PRINT NAME: REPORT TC ADDRESS: PHONE

			TestAmerica Portland	
			Sample Receiving Checkli	st
	c Orde it Nar		PSF0519 Date/Time Received: nd Project: C, ty of Portland	ilillog 1430 Tortland Harber
Time []ED	Zone: T/EST	Γ	CDT/CST MDT/MST	AK OTHER
Co	oler #(s erature	s): es:_Z	$\overrightarrow{1}$ $\overrightarrow{2}$ Digi #2       IR Gun $\overrightarrow{D}$ $\overrightarrow{D}$ $\overrightarrow{D}$ $\overrightarrow{D}$	Temperature out of Range: Not enough or No Ice Ice Melted W/in 4 Hrs of collection 
N/A	Yes	No		Initials:
Ĺ			1. If ESI client, were temp blanks received? If no, do	cument on NOD.
đ			2. Cooler Seals intact? (N/A if hand delivered) if no,	document on NOD.
	$\square$		3. Chain of Custody present? If no, document on NC	DD.
	$\square$		4. Bottles received intact? If no, document on NOD.	
	Z		5. Sample is not multiphasic? If no, document on No	OD.
	Ó		6. Proper Container and preservatives used? If no, d	ocument on NOD.
7			7. pH of all samples checked and meet requirements	? If no, document on NOD.
			8. Cyanide samples checked for sulfides and meet re	quirements? If no, notify PM.
y.			9. HF Dilution required?	
	Ņ		<ol> <li>Sufficient volume provided for all analysis? If n PM before proceeding.</li> <li>Did chain of custody agree with samples received</li> </ol>	
			12. Is the "Sampled by" section of the COC complete	
নি			13. Were VOA/Oil Syringe samples without headspa	
			14. Were VOA vials preserved? [HCI Sodium 7	
ليتيا			15. Did samples require preservation with sodium thi	
Π.			16. If yes to #14, was the residual chlorine test negative	
and a			17. Are dissolved/field filtered metals bottles sedime	
			18. Is sufficient volume provided for client requester no, document on NOD and contact PM before proceed	d MS/MSD or matrix duplicates? If eding.
			19. Are analyses with short holding times received in 20. West Standard Turn Around (TAT) requested?	n noiu?
			20. Was Standard Turn Around (TAT) requested?	a(a)? If no notify DM
			21. Receipt date(s) $\leq$ 48 hours past the collection date	

# TestAmerica Portland Sample Receiving Checklist

Work Order #: PSF0519
-----------------------

Log	in Ch	ecks: Initials: <u>PS</u>
NA	Yes	No
	$\square$	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
Í		23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If
		no, document on NOD and contact PM.
	$\square$	24. Did the chain of custody include "received by" and "relinquished by" signatures,
		dates and times?
$\square$		25. Were special log in instructions read and followed?
		26. Were tests logged checked against the COC?
$\square$		27. Were rush notices printed and delivered?
2		28. Were short hold notices printed and delivered?
	Z	29. Were subcontract COCs printed?
$\square$		30. Was HF dilution logged?

# Labeling and Storage Checks:

NA	Yes	No	
	Z		31. Were the subcontracted samples/containers put in Sx fridge?
$\square$			32. Were sample bottles and COC double checked for dissolved/filtered metals?
	$\square$		33. Did the sample ID, Date, and Time from label match what was logged?
$\square$			34. Were Foreign sample stickers affixed to each container and containers stored in
			foreign fridge?
Ø			35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
Ø			36. Was an NOD for created for noted discrepancies and placed in folder?

75

Initials:

 ${\rm Document}$  any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

							\$	C.X	Pilot (	i Trap	er OF 18 Sec	rbor Stormwat	doc\Portland Ha	r Samp\Samp	S:/EiD/1000/1020.005-/Portland Harbor Stormwater Samp\Sampdoc\Portland Harbor Stormwater OF 18 Sed Trap Pilot COC.xts	S:\EID\1000\1020.00
Date:	Printed Name:	Date:					Name:	Printed Name:			Date:			Printed Name:	mutalin og l	Printed Name: - Ston W
4. Time:	<u>Received By:</u> Signature:	Time:			မာ	Ľ.	Received By Signature:	Receive Signature:			Time:	- - 	N	Received By: Signature:	- <sup>Time</sup> 030	Signature By: 1.
Date:	Printed Name:	Date:					Name:	Printed Name:			Date:	· · ·		Printed Name;	6////09	Philad Name:
Time:	Signature:	Jime:						Signature:			Time:			Signature:	Time 1030	Signature:
- 4.	Relinguished By:				÷	ed By:	Relinguishe	Relinc	·				By: 2	Relinquished By:		Relinquished By: 1.
			2											:		
							. •									
						· · ·	. <u></u>									
	56.5%	×	~		$\times$	$\times$	×	$\times$		×	。 メ		60/9/09	DUP	DUPLICATE	F0095697
163.4 g Total Wet Weight	59.7%	×		•	$\times$			Х		×	c X	1555	6/10/09	18_ST5	ST-18-AAX261-0609 3250 NW ST HELENS RD	F0095696
492.2 g Total Wet Weight	96.50	X		•	X	X	×	Х		X	c X	1315	6/10/09	18_ST4	ST-18-AAT466-0609 4033 NW YEON AVE	FO095695
3903-8-g Total Wet Weight 3 860.05 - (111)	56.5%	×		•	$\times$	$\times$	$\times$	×		×	с Х	1500	60/9/09	18_ST3	ST-18-AND535-0609 4033 NW YEON AVE	FO095694
223.3 g Total Wet Weight	45.9%	×		•	$\times$			×		×	° X	1359	6/9/09	18_ST2	ST-18-AAT557-0609 3950 NW YEON AVE	FO095693
41.5 g Total Wet Weight	92.28			•	$\times$					X,	C	805	6/11/09	18_ST1	ST-18-AAT565-0609 NW 35th & YEON	FO095692
	Total Slids		Total Me	TS*		Grain Si	Herbicid	PAH + P	SVOCs		Sample Type PCB Arc	Sample Sa Time 1	Sample Date	Point Code	Location	WPCL Sample I.D.
A TOC to be done at CAS ( isbazonky) Tests requested per rus hower 6/15/02-PHU	* TOC to be done at CAS Tests requested perroshome	<u>Vn,</u> Ni, Ag, Zn) + Hg	etals ( As, Cd Cr,		- 	ze	les (TA)	hthalates (Low-level)	(low-level CAS)	es (Low-level CAS)	sample octors (Low-level)		1-of-custody 18_ST3, 18_ST 18_ST3, 18_ST sites) est aliquot pos	tudy Chair 15), 12/9/08 ( 09 (All OF 18 use the small	Basin 18 Sediment Trap Pilot Study Chain-of-custody alled: 10/30/08 (18_ST2), 12/4/08 (18_ST5), 12/9/08 (18_ST3, 18_ST Sediment traps removed: 6/4/09 (All OF 18 sites) one at WPCL, care should be taken to use the smallest aliquot pos volume for additional follow-un analyses	Basin 18 Sediment Trap Pilot Study Chain-of-custody Z/4/oq Sediment traps installed: 10/30/08 (18_ST2), 12/4/08 (18_ST5), 12/9/08 (18_ST3, 18_ST4), Z/4/oq (18_ST1) Sediment traps removed: 6/4/09 (All OF 18 sites) * Total Solids to be done at WPCL, care should be taken to use the smallest aliquot possible to retain sample volume for additional follow-un analyses
		Metals		ra I	Genera			S	Organics	0		-			_	
	Requested Analyses	queste	Re		. • •							SEDIMENT	Matrix:	OKMWA	20.005 Matrix S	File Number: 1020.005
Collected By: <u>JX3 /PT3 / AJA</u> / J <u>JM [LAP</u>				⊿∎∎												
Date: <u>&amp;/////O</u> P Page: 1of(					dy ervices		a čo lan			NI O	City of Portland Chain-of-Custody Bureau of Environmental Serv	Bu		CIT	aboratory	Water Pollution Control Laboratory 6543 N. Burlington Ave.
				ļ	ļ											



# LABORATORY ANALYSIS REPORT



Sample ID: FO09	<b>5692</b> Sample Collected: 06/11/09 08:05 Sample Received: 06/11/09	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AAT565-0609	Report Page:	Page 1 of 1
	NW 35TH & YEON / US OF CB INLET AT MH	System ID:	AN06039
Sample Point Code: Sample Type: Sample Matrix:	18_ST1 COMPOSITE SEDIMENT	EID File # : LocCode: Collected By:	1020.005 PORTHASW JXB/PTB/AJA/JJM/L/

#### 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%.

_	<b>–</b> <i>– –</i>			<b>BB</b> - 411	Analysis Date
Test Parameter	Result	Units	MRL	Method	
GENERAL					
TOTAL SOLIDS	39.2	% W/W	0.01	SM 2540 G	06/11/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	169000	mg/Kg dry wt	500	EPA 9060 MOD	06/18/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<5.9	µg/Kg dry wt	5.9	EPA 8081A	06/18/09
4,4'-DDE	<5.7	µg/Kg dry wt	5.7	EPA 8081A	06/18/09
4,4'-DDT	<19	$\mu$ g/Kg dry wt	19	EPA 8081A	06/18/09
Aldrin	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Alpha-BHC	<5.7	µg/Kg dry wt	5.7	EPA 8081A	06/18/09
Alpha-Chlordane	<11	µg/Kg dry wt	11	EPA 8081A	06/18/09
Beta-BHC	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Delta-BHC	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Dieldrin	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Endosulfan I	<9.3	$\mu$ g/Kg dry wt	9.3	EPA 8081A	06/18/09
Endosulfan II	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Endosulfan Sulfate	<5.7	μg/Kg dry wt	5.7	EPA 8081A	06/18/09
Endrin	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Endrin Aldehyde	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Endrin Ketone	<5.7	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Gamma-BHC(Lindane)	EST 12	µg/Kg dry wt	5.7	EPA 8081A	.06/18/09
Gamma-Chlordane	20	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Heptachlor	EST 9.4	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Heptachlor Epoxide	<5.7	μg/Kg dry wt	5.7	EPA 8081A	06/18/09
Methoxychlor	14	$\mu$ g/Kg dry wt	5.7	EPA 8081A	06/18/09
Toxaphene	<370	$\mu$ g/Kg dry wt	370	EPA 8081A	06/18/09

Validated By:

End of Report for Sample ID: FO095692



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

### LABORATORY ANALYSIS REPORT



Sample ID: FO09	5693 Sample Collected: 06/09/09 13 Sample Received: 06/11/09	3:59 Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AAT557-0609	Report Page:	Page 1 of 3
/ (ddi obox Booddionn	3950 NW YEON AVE / US OF MANHOLE	System ID:	AN06040
Sample Point Code:	18_ST2	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/PTB/AJA/JJM/L/

#### 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%. LAB: MRLs are raised for PCB Aroclor analysis due to the low level of solids in the sample. Traces of Aroclors 1254 and 1260 were evident but at concentractions below the MRLs.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL				· ·	
TOTAL SOLIDS	45.9	% W/W	0.01	SM 2540 G	06/11/09
METALS					
ARSENIC	4.75	mg/Kg dry wt	0.50	EPA 6020	06/24/09
CADMIUM	0.34	mg/Kg dry wt	0.10	EPA 6020	06/24/09
CHROMIUM	43.8	mg/Kg dry wt	0.50	EPA 6020	06/24/09
COPPER	46.9	mg/Kg dry wt	0.25	EPA 6020	06/24/09
LEAD	22.6	mg/Kg dry wt	0.10	EPA 6020	06/24/09
MANGANESE	754	mg/Kg dry wt	1.0	EPA 6020	06/24/09
MERCURY	0.260	mg/Kg dry wt	0.010	EPA 6020	06/24/09
NICKEL	30.2	mg/Kg dry wt	0.25	EPA 6020	06/24/09
SILVER	0.24	mg/Kg dry wt	0.10	EPA 6020	06/24/09
ZINC	172	mg/Kg dry wt	0.50	EPA 6020	06/24/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1221	<40	μg/Kg dry wt	40	EPA 8082	06/24/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1248	<40	µg/Kg dry wt	40	EPA 8082	06/24/09
Aroclor 1254	<20	μg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1260	<20	μg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1262	<20	μg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1268	<20	$\mu$ g/Kg dry wt	20	EPA 8082	06/24/09
OUTSIDE ANALYSIS				•	
TOTAL ORGANIC CARBON	52200	mg/Kg dry wt	100	EPA 9060 MOD	06/29/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	55	$\mu$ g/Kg dry wt	2.2	EPA 8081A	06/18/09
4,4'-DDE	66	$\mu$ g/Kg dry wt	2.2	EPA 8081A	06/18/09
4,4'-DDT	<23	$\mu$ g/Kg dry wt	23	EPA 8081A	06/18/09
Aldrin	78	$\mu$ g/Kg dry wt	2.2	EPA 8081A	06/18/09
Alpha-BHC	<2.2	µg/Kg dry wt	2.2	EPA 8081A	06/18/09
Alpha-Chlordane	. 52	µg/Kg dry wt	2.2	EPA 8081A	06/18/09

Validated By:



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

### LABORATORY ANALYSIS REPORT



Sample ID: FO09	5693 Sample Collected: 06/09/09 13:5 Sample Received: 06/11/09	59 Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AAT557-0609	Report Page:	Page 2 of 3
	3950 NW YEON AVE / US OF MANHOLE	System ID:	AN06040
Sample Point Code:	18_ST2	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/PTB/AJA/JJM/L/

#### 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%. LAB: MRLs are raised for PCB Aroclor analysis due to the low level of solids in the sample. Traces of Aroclors 1254 and 1260 were evident but at concentractions below the MRLs.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
Beta-BHC	<2.2	$\mu$ g/Kg dry wt	2.2	EPA 8081A	06/18/09
Delta-BHC	<4.8	µg/Kg dry wt	4.8	EPA 8081A	06/18/09
Dieldrin	EST 3.8	µg/Kg dry wt	2.2	EPA 8081A	06/18/09
Endosulfan I	<5.2	$\mu$ g/Kg dry wt	5.2	EPA 8081A	06/18/09
Endosulfan II	<18	μg/Kg dry wt	18	EPA 8081A	06/18/09
Endosulfan Sulfate	2.4	µg/Kg dry wt	2.2	EPA 8081A	06/18/09
Endrin	<3.2	µg/Kg dry wt	3.2	EPA 8081A	06/18/09
Endrin Aldehyde	<3.6	µg/Kg dry wt	3.6	EPA 8081A	06/18/09
Endrin Ketone	EST 8.8	µg/Kg dry wt	2.2	EPA 8081A	06/18/09
Gamma-BHC(Lindane)	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8081A	06/18/09
Gamma-Chlordane	350	µg/Kg dry wt	11	EPA 8081A	06/18/09
Heptachlor	300	µg/Kg dry wt	11	EPA 8081A	06/18/09
Heptachlor Epoxide	<6.3	$\mu$ g/Kg dry wt	6.3	EPA 8081A	06/18/09
Methoxychlor	<3.7	$\mu$ g/Kg dry wt	3.7	EPA 8081A	06/18/09
Toxaphene	<790	$\mu$ g/Kg dry wt	790	EPA 8081A	06/18/09
POLYNUCLEAR AROMATICS & PHTH	ALATES - TA				
Acenaphthene	<146	μg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Acenaphthylene	<146	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Anthracene	247	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Benzo(a)anthracene	163	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Benzo(a)pyrene	186	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Benzo(b)fluoranthene	235	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Benzo(ghi)perylene	267	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Benzo(k)fluoranthene	164	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Bis(2-ethylhexyl) phthalate	26900	µg/Kg dry wt	2910	EPA8270M-SIM	06/17/09
Butyl benzyl phthalate	<2910	μg/Kg dry wt	2910	EPA8270M-SIM	06/17/09
Chrysene	426	$\mu$ g/Kg dry wt	146	EPA8270M-SIM	06/17/09
Dibenzo(a,h)anthracene	<146	μg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Diethyl phthalate	<2910	µg/Kg dry wt	2910	EPA8270M-SIM	06/17/09
Dimethyl phthalate	<2910	$\mu$ g/Kg dry wt	2910	EPA8270M-SIM	06/17/09
Di-n-butyl phthalate	<2910	μg/Kg dry wt	2910	EPA8270M-SIM	06/17/09
Di-n-octyl phthalate	<4370	$\mu$ g/Kg dry wt	4370	EPA8270M-SIM	06/17/09
Fluoranthene	491	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09

Validated By:



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

# LABORATORY ANALYSIS REPORT



Sample ID: FO09	5693	Sample Collected: 06/09/09 Sample Received: 06/11/09	13:59	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND ST-18-AAT55	HARBOR STORMWATER SA 7-0609	MP	Report Page:	Page 3 of 3
	3950 NW YE	ON AVE / US OF MANHOLE		System ID:	AN06040
Sample Point Code:	18_ST2			EID File # :	1020.005
Sample Type:	COMPOSITE			LocCode:	PORTHASW
Sample Matrix:	SEDIMENT			Collected By:	JXB/PTB/AJA/JJM/L/

#### 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%. LAB: MRLs are raised for PCB Aroclor analysis due to the low level of solids in the sample. Traces of Aroclors 1254 and 1260 were evident but at concentractions below the MRLs.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluorene	<146	$\mu$ g/Kg dry wt	146	EPA8270M-SIM	06/17/09
Indeno(1,2,3-cd)pyrene	150	$\mu$ g/Kg dry wt	146	EPA8270M-SIM	06/17/09
Naphthalene	<146	$\mu$ g/Kg dry wt	146	EPA8270M-SIM	06/17/09
Phenanthrene	463	μg/Kg dry wt	146	EPA8270M-SIM	06/17/09
Pyrene	586	µg/Kg dry wt	146	EPA8270M-SIM	06/17/09

End of Report for Sample ID: FO095693

Validated By:



# LABORATORY ANALYSIS REPORT



Sample ID: FO09	5694	Sample Collected: 06/09/09 Sample Received: 06/11/09	15:00	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLANE ST-18-AND5	HARBOR STORMWATER SAN	MP	Report Page:	Page 1 of 3
Address/Location.		ON AVE / 42 INCH LINE US OF MH	4	System ID:	AN06041
Sample Point Code:	18_ST3			EID File # :	1020.005
Sample Type:	COMPOSITE			LocCode:	PORTHASW
Sample Matrix:	SEDIMENT			Collected By:	JXB/PTB/AJA/JJM/L/

#### 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. Sample extraction holding time was exceeded for Herbicide analysis; results may be low estimates due to compound degradation.

T 4 Developmenter	Result	Units	MRL	Method	Analysis Date
Test Parameter	Result	Units	WITE	Metiloa	
GENERAL		o/ ) •/ / • /	0.04	0110540.0	00/11/00
TOTAL SOLIDS	56.5	% W/W	0.01	SM 2540 G	06/11/09
METALS					
ARSENIC	2.01	mg/Kg dry wt	0.50	EPA 6020	06/17/09
CADMIUM	0.20	mg/Kg dry wt	0.10	EPA 6020	06/17/09
CHROMIUM	24.3	mg/Kg dry wt	0.50	EPA 6020	06/17/09
COPPER	15.2	mg/Kg dry wt	0.25	EPA 6020	06/17/09
LEAD	12.6	mg/Kg dry wt	0.10	EPA 6020	06/17/09
MANGANESE	901	mg/Kg dry wt	0.5	EPA 6010	06/17/09
MERCURY	0.033	mg/Kg dry wt	0.010	EPA 6020	06/17/09
NICKEL	13.8	mg/Kg dry wt	0.25	EPA 6020	06/17/09
SILVER	<0.10	mg/Kg dry wt	0.10	EPA 6020	06/17/09
ZINC	79.5	mg/Kg dry wt	0.50	EPA 6020	06/17/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)		·			
Aroclor 1016/1242	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1232	<10	μg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1248	<10	μg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1254	<10	μg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1260	<10	μg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	06/24/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	13700	mg/Kg dry wt	100	EPA 9060 MOD	06/29/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 μm)	6.8	Fract %	0.1	ASTM D421/422	06/18/09
Coarse Sand (4750-2000 $\mu$ m)	2.8	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (150-75 $\mu$ m)	13.2	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (250-150 <i>µ</i> m)	5.9	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (425-250 µm)	4.5	Fract %	0.1	ASTM D421/422	06/18/09
Gravel (>4750 μm)	0.7	Fract %	0.1	ASTM D421/422	06/18/09
Medium Sand (2000-850 μm)	4.8	Fract %	0.1	ASTM D421/422	06/18/09

Report Date: 08/07/09

Validated By:



# LABORATORY ANALYSIS REPORT



Sample ID: FO09	<b>5694</b> Sample Collected: 06/09/09 15:00 Sample Received: 06/11/09	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AND535-0609	Report Page:	Page 2 of 3
· · · · · · · · · · · · · · · · · · ·	4033 NW YEON AVE / 42 INCH LINE US OF MH	System ID:	AN06041
Sample Point Code: Sample Type: Sample Matrix:	18_ST3 COMPOSITE SEDIMENT	EID File # : LocCode: Collected By:	1020.005 PORTHASW JXB/PTB/AJA/JJM/L/

#### 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. Sample extraction holding time was exceeded for Herbicide analysis; results may be low estimates due to compound degradation.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
Medium Sand (850-425 $\mu$ m)	3.5	Fract %	0.1	ASTM D421/422	06/18/09
Silt (13-9 μm)	1.4	Fract %	0.1	ASTM D421/422	06/18/09
Silt (22-13 µm)	4.1	Fract %	0.1	ASTM D421/422	06/18/09
Silt (32-22 µm)	6.8	Fract %	0.1	ASTM D421/422	06/18/09
Silt (7-3.2 μm)	1.4	Fract %	0.1	ASTM D421/422	06/18/09
Silt (75-32 µm)	43.0	Fract %	0.1	ASTM D421/422	06/18/09
Silt (9-7 µm)	1.4	Fract %	0.1	ASTM D421/422	06/18/09
HERBICIDES-CHLORINATED - TA					
2,4,5-T	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
2,4,5-TP (Silvex)	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
2,4-D	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
2,4-DB	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dalapon	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dicamba	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dichlorprop	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dinoseb	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
MCPA	<14.2	mg/Kg dry wt	14.2	EPÁ 8151	07/01/09
MCPP	<14.2	mg/Kg dry wt	14.2	EPA 8151	07/01/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
4,4'-DDE	1.5	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
4,4'-DDT	<1.1	µg/Kg dry wt	1.1	EPA 8081A	06/18/09
Aldrin	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Alpha-BHC	<1.0	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
Alpha-Chlordane	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Beta-BHC	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Delta-BHC	<1.0	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
Dieldrin	<1.0	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
Endosulfan I	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Endosulfan II	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Endosulfan Sulfate	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Endrin	<1.0	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
Endrin Aldehyde	<1.0	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
Endrin Ketone	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09

Report Date: 08/07/09

Validated By:



# LABORATORY ANALYSIS REPORT



Sample ID: FO09	Sample Collected:         06/09/09         15:00           Sample Received:         06/11/09	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AND535-0609	Report Page:	Page 3 of 3
Addroom Lood Ronn	4033 NW YEON AVE / 42 INCH LINE US OF MH	System ID:	AN06041
Sample Point Code: Sample Type: Sample Matrix:	18_ST3 COMPOSITE SEDIMENT	EID File # : LocCode: Collected By:	1020.005 PORTHASW JXB/PTB/AJA/JJM/L/

#### 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. Sample extraction holding time was exceeded for Herbicide analysis; results may be low estimates due to compound degradation.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<1.0	µg/Kg dry wt	1.0	EPA 8081A	06/18/09
Gamma-Chlordane	<1.0	$\mu$ g/Kg dry wt $\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Heptachlor	<1.0	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Heptachlor Epoxide	<1.0	$\mu$ g/Kg dry wt $\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Methoxychlor	3.7	$\mu$ g/Kg dry wt	1.0	EPA 8081A	06/18/09
Toxaphene	<50	$\mu$ g/Kg dry wt	50	EPA 8081A	06/18/09
POLYNUCLEAR AROMATICS & PHTH	ALATES - TA				
Acenaphthene	<23.6	$\mu$ g/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Acenaphthylene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Anthracene	<23.6	μg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Benzo(a)anthracene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Benzo(a)pyrene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Benzo(b)fluoranthene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Benzo(ghi)perylene	<23.6	μg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Benzo(k)fluoranthene	<23.6	$\mu$ g/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Bis(2-ethylhexyl) phthalate	256	µg/Kg dry wt	47.1	EPA8270M-SIM	06/17/09
Butyl benzyl phthalate	54.7	µg/Kg dry wt	47.1	EPA8270M-SIM	06/17/09
Chrysene	29.0	$\mu$ g/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Dibenzo(a,h)anthracene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Diethyl phthalate	<47.1	µg/Kg dry wt	47.1	EPA8270M-SIM	06/17/09
Dimethyl phthalate	<47.1	μg/Kg dry wt	47.1	EPA8270M-SIM	06/17/09
Di-n-butyl phthalate	<47.1	μg/Kg dry wt	47.1	EPA8270M-SIM	06/17/09
Di-n-octyl phthalate	<70.7	$\mu$ g/Kg dry wt	70.7	EPA8270M-SIM	06/17/09
Fluoranthene	33.6	μg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Fluorene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Indeno(1,2,3-cd)pyrene	<23.6	µg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Naphthalene	<23.6	μg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Phenanthrene	<23.6	μg/Kg dry wt	23.6	EPA8270M-SIM	06/17/09
Pyrene	25.1	$\mu$ g/Kg dry wt	23.6	EPA8270M-SIM	06/17/09

End of Report for Sample ID: FO095694



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

## LABORATORY ANALYSIS REPORT

Sample ID: FO09	5695	Sample Collected: 06/10/09 Sample Received: 06/11/09	13:15	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAN ST-18-ATT	ND HARBOR STORMWATER SA 466-0609	MP	Report Page:	Page 1 of 3
	4033 NW \	EON AVE / 48 INCH LINE DS OF M	IH	System ID:	AN06042
Sample Point Code:	18_ST4			EID File # :	1020.005
Sample Type:	COMPOSI	TE		LocCode:	PORTHASW
Sample Matrix:	SEDIMEN	Г		Collected By:	JXB/PTB/AJA/JJM/L/

#### 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. Extraction holding time was exceeded for Herbicide analysis; results may be low estimates. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. LAB: The reporting limit for PCB Aroclor 1248 is raised due non-target interfering compounds, possibly organochlorine pesticides.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	Result	Units		Wiethou	
GENERAL				010540.0	00/11/00
TOTAL SOLIDS	65.9	% W/W	0.01	SM 2540 G	06/11/09
METALS					
ARSENIC	2.85	mg/Kg dry wt	0.50	EPA 6020	06/24/09
CADMIUM	1.01	mg/Kg dry wt	0.10	EPA 6020	06/24/09
CHROMIUM	60.5	mg/Kg dry wt	0.50	EPA 6020	06/24/09
COPPER	67.8	mg/Kg dry wt	0.25	EPA 6020	06/24/09
LEAD	164	mg/Kg dry wt	0.10	EPA 6020	06/24/09
MANGANESE	548	mg/Kg dry wt	1.0	EPA 6020	06/24/09
MERCURY	0.305	mg/Kg dry wt	0.010	EPA 6020	06/24/09
NICKEL	25.5	mg/Kg dry wt	0.25	EPA 6020	06/24/09
SILVER	0.14	mg/Kg dry wt	0.10	EPA 6020	06/24/09
ZINC	436	mg/Kg dry wt	0.50	EPA 6020	06/24/09
GC ANALYSIS		. •		•	
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1248	<100	$\mu$ g/Kg dry wt	100	EPA 8082	06/24/09
Aroclor 1254	90	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1260	61	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1262	<10	μg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1268	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
OUTSIDE ANALYSIS			4		
TOTAL ORGANIC CARBON	38400	mg/Kg dry wt	100	EPA 9060 MOD	06/29/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 μm)	11.1	Fract %	0.1	ASTM D421/422	06/18/09
Coarse Sand (4750-2000 $\mu$ m)	0.3	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (150-75 $\mu$ m)	10.7	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (250-150 µm)	9.2	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (425-250 µm)	12.4	Fract %	0.1	ASTM D421/422	06/18/09
Gravel (>4750 μm)	<0.1	Fract %	0.1	ASTM D421/422	06/18/09

Validated By:



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

# LABORATORY ANALYSIS REPORT



Sample ID: FO09	5695	Sample Collected: 06/10/09 Sample Received: 06/11/09	13:15	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAN ST-18-ATT	ID HARBOR STORMWATER SAM	1P	Report Page:	Page 2 of 3
Address/Location.		'EON AVE / 48 INCH LINE DS OF MH		System ID:	AN06042
Sample Point Code:	18_ST4			EID File # :	1020.005
Sample Type: Sample Matrix:	COMPOSIT SEDIMENT	· ,		LocCode: Collected By:	PORTHASW JXB/PTB/AJA/JJM/L/

#### 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. Extraction holding time was exceeded for Herbicide analysis; results may be low estimates. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. LAB: The reporting limit for PCB Aroclor 1248 is raised due non-target interfering compounds, possibly organochlorine pesticides.

<b>T</b> ( <b>D</b> )	Desult	Linite		Method	Analysis Date
Test Parameter	Result	Units	MRL		
Medium Sand (2000-850 $\mu$ m)	2.2	Fract %	0.1	ASTM D421/422	06/18/09
Medium Sand (850-425 μm)	6.8	Fract %	0.1	ASTM D421/422	06/18/09
Silt (13-9 μm)	4.2	Fract %	0.1	ASTM D421/422	06/18/09
Silt (22-13 μm)	5.5	Fract %	0.1	ASTM D421/422	06/18/09
Silt (32-22 μm)	9.7	Fract %	0.1	ASTM D421/422	06/18/09
Silt (7-3.2 μm)	3.5	Fract %	0.1	ASTM D421/422	06/18/09
Silt (75-32 μm)	22.3	Fract %	0.1	ASTM D421/422	06/18/09
Silt (9-7 μm)	2.1	Fract %	0.1	ASTM D421/422	06/18/09
HERBICIDES-CHLORINATED - TA					
2,4,5-T	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
2,4,5-TP (Silvex)	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
2,4-D	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
2,4-DB	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
Dalapon	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
Dicamba	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
Dichlorprop	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
Dinoseb	<0.607	mg/Kg dry wt	0.607	EPA 8151	07/01/09
MCPA	<60.7	mg/Kg dry wt	60.7	EPA 8151	07/01/09
MCPP	<60.7	mg/Kg dry wt	60.7	EPA 8151	07/01/09
PESTICIDES BY EPA 8081 - CAS	·			. · · · ·	
4,4'-DDD	72	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
4,4'-DDE	61	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
4,4'-DDT	<33	$\mu$ g/Kg dry wt	33	EPA 8081A	06/18/09
Aldrin	24	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Alpha-BHC	<1.9	µg/Kg dry wt	1.9	EPA 8081A	06/18/09
Alpha-Chlordane	21	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Beta-BHC	<1.9	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Delta-BHC	<2.9	$\mu$ g/Kg dry wt	2.9	EPA 8081A	06/18/09
Dieldrin	24	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Endosulfan I	9.1	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Endosulfan II	<5.6	$\mu$ g/Kg dry wt	5.6	EPA 8081A	06/18/09
Endosulfan Sulfate	EST 2.4	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Endrin	<1.9	µg/Kg dry wt	1.9	EPA 8081A	06/18/09



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

# LABORATORY ANALYSIS REPORT



Sample ID: FO09	5695 Sample Collected: 06/10/09 Sample Received: 06/11/09		Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER S ST-18-ATT466-0609	AMP	Report Page:	Page 3 of 3
Address/Location:       S1-18-AT1406-0009         4033 NW YEON AVE / 48 INCH LINE DS OF MH         Sample Point Code:       18_ST4         Sample Type:       COMPOSITE         Sample Matrix:       SEDIMENT		ΜΗ	System ID: EID File # : LocCode: Collected By:	AN06042 1020.005 PORTHASW JXB/PTB/AJA/JJM/L/

#### 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. Extraction holding time was exceeded for Herbicide analysis; results may be low estimates. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. LAB: The reporting limit for PCB Aroclor 1248 is raised due non-target interfering compounds, possibly organochlorine pesticides.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Aldehyde	<1.9	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Endrin Ketone	EST 12	μg/Kg dry wt	1.9	EPA 8081A	06/18/09
Gamma-BHC(Lindane)	EST 12	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Gamma-Chlordane	29	µg/Kg dry wt	1.9	EPA 8081A	06/18/09
Heptachlor	26	μg/Kg dry wt	1.9	EPA 8081A	06/18/09
Heptachlor Epoxide	<1.9	$\mu$ g/Kg dry wt	1.9	EPA 8081A	06/18/09
Methoxychlor	<1.9	μg/Kg dry wt	1.9	EPA 8081A	06/18/09
Toxaphene	<470	$\mu$ g/Kg dry wt	470	EPA 8081A	06/18/09
POLYNUCLEAR AROMATICS & PHTHALATES	5 - TA				
Acenaphthene	<203	µg/Kg dry wt	203	EPA8270M-SIM	06/17/09
Acenaphthylene	<203	µg/Kg dry wt	203	EPA8270M-SIM	06/17/09
Anthracene	<203	µg/Kg dry wt	203	EPA8270M-SIM	06/17/09
Benzo(a)anthracene	429	µg/Kg dry wt	203	EPA8270M-SIM	06/17/09
Benzo(a)pyrene	390	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Benzo(b)fluoranthene	393	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Benzo(ghi)perylene	372	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Benzo(k)fluoranthene	372	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Bis(2-ethylhexyl) phthalate	7430	$\mu$ g/Kg dry wt	2030	EPA8270M-SIM	06/17/09
Butyl benzyl phthalate	<2030	$\mu$ g/Kg dry wt	2030	EPA8270M-SIM	06/17/09
Chrysene	568	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Dibenzo(a,h)anthracene	<203	µg/Kg dry wt	203	EPA8270M-SIM	06/17/09
Diethyl phthalate	<2030	µg/Kg dry wt	2030	EPA8270M-SIM	06/17/09
Dimethyl phthalate	<2030	$\mu$ g/Kg dry wt	2030	EPA8270M-SIM	06/17/09
Di-n-butyl phthalate	<2030	$\mu$ g/Kg dry wt	2030	EPA8270M-SIM	06/17/09
Di-n-octyl phthalate	<2030	$\mu$ g/Kg dry wt	2030	EPA8270M-SIM	06/17/09
Fluoranthene	1070	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Fluorene	<203	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Indeno(1,2,3-cd)pyrene	295	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Naphthalene	<203	μg/Kg dry wt	203	EPA8270M-SIM	06/17/09
Phenanthrene	611	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09
Pyrene	781	$\mu$ g/Kg dry wt	203	EPA8270M-SIM	06/17/09

End of Report for Sample ID: FO095695



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

# LABORATORY ANALYSIS REPORT



Sample ID: FO09	<b>5696</b> Sample Collected: 06/10/09 15:55 Sample Received: 06/11/09	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AAX261-0609	Report Page:	Page 1 of 3
Address/Looddon.	3250 NW ST HELENS RD / 36 INCH LINE	System ID:	AN06043
Sample Point Code:	18_ST5	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/PTB/AJA/JJM/L/

#### 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%. LAB: Analysis for PCB Aroclors detected numerous non-target interfering compounds, possibly organochlorine pesticides. The reporting limit for Aroclor 1248 is raised due to interferences specifically in the retention time range of 1248.

METALS       ARSENIC       3.54       mg/Kg dry wt       0.50       EPA 6020       06         CADMIUM       24.9       mg/Kg dry wt       0.10       EPA 6020       06         CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         COPPER       192       mg/Kg dry wt       0.25       EPA 6020       06         LEAD       285       mg/Kg dry wt       0.10       EPA 6020       06         MERCURY       0.299       mg/Kg dry wt       0.10       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.25       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.10       EPA 6020       06         Aroclor 1016/1242       <10       µg/Kg dry wt       0.50       EPA 8082       06         Aroclor 1221       <20       µg/Kg dry wt       10       EPA 8082       06         Aroclor 1232       <10       µg/Kg dry wt       10       EPA 8082       06         Aroclor 1248 <th>Parameter</th> <th>Result</th> <th>Units</th> <th>MRL</th> <th>Method</th> <th>Analysis Date</th>	Parameter	Result	Units	MRL	Method	Analysis Date
METALS       ARSENIC       3.54       mg/Kg dry wt       0.50       EPA 6020       06         CADMIUM       24.9       mg/Kg dry wt       0.10       EPA 6020       06         CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         COPPER       192       mg/Kg dry wt       0.25       EPA 6020       06         LEAD       285       mg/Kg dry wt       0.25       EPA 6010       06         MERCURY       0.299       mg/Kg dry wt       0.50       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.25       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.10       EPA 8020       06         Arcolor 1221       <20	NERAL					
ARSENIC       3.54       mg/Kg dry wt       0.50       EPA 6020       06         CADMIUM       24.9       mg/Kg dry wt       0.10       EPA 6020       06         CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         COPPER       192       mg/Kg dry wt       0.50       EPA 6020       06         LEAD       285       mg/Kg dry wt       0.25       EPA 6020       06         MANGANESE       367       mg/Kg dry wt       0.10       EPA 6020       06         MARGANESE       367       mg/Kg dry wt       0.55       EPA 6010       06         MERCURY       0.299       mg/Kg dry wt       0.010       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.10       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 8082       06         Aroctor 1016/1242       <10	ITAL SOLIDS	59.7	% W/W	0.01	SM 2540 G	06/11/09
CADMIUM       24.9       mg/Kg dry wt       0.10       EPA 6020       06         CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         COPPER       192       mg/Kg dry wt       0.25       EPA 6020       06         LEAD       285       mg/Kg dry wt       0.10       EPA 6020       06         MANGANESE       367       mg/Kg dry wt       0.10       EPA 6020       06         MANGANESE       367       mg/Kg dry wt       0.5       EPA 6010       06         MERCURY       0.299       mg/Kg dry wt       0.25       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.10       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.50       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 8082       06         Aroclor 1016/1242       <10	TALS					
CHROMIUM       142       mg/Kg dry wt       0.50       EPA 6020       06         COPPER       192       mg/Kg dry wt       0.25       EPA 6020       06         LEAD       285       mg/Kg dry wt       0.10       EPA 6020       06         MANGANESE       367       mg/Kg dry wt       0.5       EPA 6010       06         MERCURY       0.299       mg/Kg dry wt       0.5       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.10       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.25       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         Aroclor 1016/1242       <10	SENIC	3.54	mg/Kg dry wt	0.50	EPA 6020	06/17/09
COPPER       192       mg/Kg dry wt       0.25       EPA 6020       06         LEAD       285       mg/Kg dry wt       0.10       EPA 6020       06         MANGANESE       367       mg/Kg dry wt       0.5       EPA 6020       06         MERCURY       0.299       mg/Kg dry wt       0.65       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.010       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.25       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         GC ANALYSIS       90LYCHLORINATED BIPHENYLS (PCB)       70.000       mg/Kg dry wt       0.50       EPA 8082       06         Aroclor 1016/1242       <10	JDMIUM	24.9	mg/Kg dry wt	0.10		06/17/09
LEAD       285       mg/Kg dry wt       0.10       EPA 6020       06         MANGANESE       367       mg/Kg dry wt       0.5       EPA 6010       06         MERCURY       0.299       mg/Kg dry wt       0.010       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.10       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         GC ANALYSIS       POLYCHLORINATED BIPHENYLS (PCB)       Aroclor 1016/1242       <10	ROMIUM	142	mg/Kg dry wt	0.50	EPA 6020	06/17/09
Link       200       mg/kg dry wt       0.10       EPA 6010       06         MANGANESE       367       mg/kg dry wt       0.5       EPA 6010       06         MERCURY       0.299       mg/Kg dry wt       0.010       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.10       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         Aroclor 1016/1242       <10	)PPER	192	mg/Kg dry wt	0.25	EPA 6020	06/17/09
MERCURY       0.299       mg/Kg dry wt       0.010       EPA 6020       06         NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.10       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         GC ANALYSIS         POLYCHLORINATED BIPHENYLS (PCB)         Aroclor 1016/1242       <10	AD	285	mg/Kg dry wt	0.10	EPA 6020	06/17/09
NICKEL       73.3       mg/Kg dry wt       0.25       EPA 6020       06         SILVER       1.60       mg/Kg dry wt       0.10       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         GC ANALYSIS         POLYCHLORINATED BIPHENYLS (PCB)         Aroclor 1016/1242       <10	NGANESE	367	mg/Kg dry wt	0.5	EPA 6010	06/17/09
SILVER       1.60       mg/Kg dry wt       0.10       EPA 6020       06         ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         GC ANALYSIS         POLYCHLORINATED BIPHENYLS (PCB)         Aroclor 1016/1242       <10	RCURY	0.299	mg/Kg dry wt	0.010	EPA 6020	06/17/09
ZINC       897       mg/Kg dry wt       0.50       EPA 6020       06         GC ANALYSIS       POLYCHLORINATED BIPHENYLS (PCB)             60       µg/Kg dry wt       10       EPA 8082       06         Aroclor 1016/1242       <10	CKEL	73.3	mg/Kg dry wt	0.25	EPA 6020	06/17/09
GC ANALYSIS         POLYCHLORINATED BIPHENYLS (PCB)         Aroclor 1016/1242       <10	VER	1.60	mg/Kg dry wt	0.10	EPA 6020	06/17/09
POLYCHLORINATED BIPHENYLS (PCB)         Aroclor 1016/1242       <10	1C	897	mg/Kg dry wt	0.50	EPA 6020	06/17/09
Aroclor 1016/1242       <10	NALYSIS					
Aroclor 1221       <20	LYCHLORINATED BIPHENYLS (I	CB)				
Aroclor 1232       <10	oclor 1016/1242	<10	$\mu$ g/Kg dry wt			06/24/09
Aroclor 1248       <100	polor 1221	<20	µg/Kg dry wt	20		06/24/09
Aroclor 1210       70       µg/Kg dry wt       10       EPA 8082       06         Aroclor 1260       37       µg/Kg dry wt       10       EPA 8082       06         Aroclor 1260       37       µg/Kg dry wt       10       EPA 8082       06         Aroclor 1262       <10	oclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1260       37       μg/Kg dry wt       10       EPA 8082       06         Aroclor 1262       <10	oclor 1248	<100	µg/Kg dry wt	100		06/24/09
Aroclor 1262       <10	oclor 1254	70	µg/Kg dry wt	10		06/24/09
Aroclor 1268       <10	oclor 1260	37	µg/Kg dry wt	10	EPA 8082	06/24/09
OUTSIDE ANALYSIS         TOTAL ORGANIC CARBON       90600 mg/Kg dry wt       100       EPA 9060 MOD       06         PESTICIDES BY EPA 8081 - CAS	oclor 1262	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
TOTAL ORGANIC CARBON       90600 mg/Kg dry wt       100       EPA 9060 MOD       06         PESTICIDES BY EPA 8081 - CAS	oclor 1268	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
PESTICIDES BY EPA 8081 - CAS	TSIDE ANALYSIS					
	TAL ORGANIC CARBON	90600	mg/Kg dry wt	100	EPA 9060 MOD	06/29/09
4.4'-DDD 45 μg/Kg dry wt 3.7 EPA 8081A 06	STICIDES BY EPA 8081 - CAS					
	-DDD	45	$\mu$ g/Kg dry wt			06/18/09
						06/18/09
	-'-DDT					06/18/09
						06/18/09
						06/18/09
Alpha-Chlordane <23 $\mu$ g/Kg dry wt 23 EPA 8081A 06	ha-Chlordane	<23	$\mu$ g/Kg dry wt	23	EPA 8081A	06/18/09

Validated By:



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

# LABORATORY ANALYSIS REPORT



Sample ID: FO09	5696 Sample Collected: 06/10/09 15:5 Sample Received: 06/11/09	55 Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AAX261-0609	Report Page:	Page 2 of 3
/	3250 NW ST HELENS RD / 36 INCH LINE	System ID:	AN06043
Sample Point Code:	18_ST5	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/PTB/AJA/JJM/L/

#### 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%. LAB: Analysis for PCB Aroclors detected numerous non-target interfering compounds, possibly organochlorine pesticides. The reporting limit for Aroclor 1248 is raised due to interferences specifically in the retention time range of 1248.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Beta-BHC	<23	$\mu$ g/Kg dry wt	23	EPA 8081A	06/18/09
Delta-BHC	<3.7	μg/Kg dry wt	3.7	EPA 8081A	06/18/09
Dieldrin	<13	$\mu$ g/Kg dry wt	13	EPA 8081A	06/18/09
Endosulfan I	8.4	µg/Kg dry wt	3.7	EPA 8081A	06/18/09
Endosulfan II	<20	$\mu g/Kg dry wt$	20	EPA 8081A	06/18/09
Endosulfan Sulfate	EST 4.0	μg/Kg dry wt	3.7	EPA 8081A	06/18/09
Endrin	<3.7	$\mu$ g/Kg dry wt	3.7	EPA 8081A	06/18/09
Endrin Aldehyde	<3.7	$\mu$ g/Kg dry wt	3.7	EPA 8081A	06/18/09
Endrin Ketone	<3.7	$\mu$ g/Kg dry wt	3.7	EPA 8081A	06/18/09
Gamma-BHC(Lindane)	<12	$\mu$ g/Kg dry wt	12	EPA 8081A	06/18/09
Gamma-Chlordane	<25	$\mu$ g/Kg dry wt	25	EPA 8081A	06/18/09
Heptachlor	EST 12	$\mu$ g/Kg dry wt	3.7	EPA 8081A	06/18/09
Heptachlor Epoxide	<8.6	$\mu$ g/Kg dry wt	8.6	EPA 8081A	06/18/09
Methoxychlor	<4.0	$\mu$ g/Kg dry wt	4.0	EPA 8081A	06/18/09
Toxaphene	<970	$\mu$ g/Kg dry wt	970	EPA 8081A	06/18/09
POLYNUCLEAR AROMATICS & PHTHA	LATES - TA				
Acenaphthene	<223	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Acenaphthylene	<223	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Anthracene	<223	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Benzo(a)anthracene	267	µg/Kg dry wt ≐	223	EPA8270M-SIM	06/17/09
Benzo(a)pyrene	284	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Benzo(b)fluoranthene	360	µg/Kg dry wt	223	EPA8270M-SIM	06/17/09
Benzo(ghi)perylene	451	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Benzo(k)fluoranthene	257	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Bis(2-ethylhexyl) phthalate	27700	$\mu$ g/Kg dry wt	2230	EPA8270M-SIM	06/17/09
Butyl benzyl phthalate	<2230	$\mu$ g/Kg dry wt	2230	EPA8270M-SIM	06/17/09
Chrysene	706	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Dibenzo(a,h)anthracene	<223	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Diethyl phthalate	<2230	$\mu$ g/Kg dry wt	2230	EPA8270M-SIM	06/17/09
Dimethyl phthalate	<2230	$\mu$ g/Kg dry wt	2230	EPA8270M-SIM	06/17/09
Di-n-butyl phthalate	<2230	$\mu$ g/Kg dry wt	2230	EPA8270M-SIM	06/17/09
Di-n-octyl phthalate	<2230	$\mu$ g/Kg dry wt	2230	EPA8270M-SIM	06/17/09
Fluoranthene	934	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09

Validated By:



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

## LABORATORY ANALYSIS REPORT



Sample ID: FO09	<b>5696</b> Sample Collected: 06/10/09 15:55 Sample Received: 06/11/09	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP ST-18-AAX261-0609	Report Page:	Page 3 of 3
, (441000/2004.011	3250 NW ST HELENS RD / 36 INCH LINE	System ID:	AN06043
Sample Point Code: Sample Type: Sample Matrix:	18_ST5 COMPOSITE SEDIMENT	EID File # : LocCode: Collected By:	1020.005 PORTHASW JXB/PTB/AJA/JJM/L/

#### 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%. LAB: Analysis for PCB Aroclors detected numerous non-target interfering compounds, possibly organochlorine pesticides. The reporting limit for Aroclor 1248 is raised due to interferences specifically in the retention time range of 1248.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluorene	<447	$\mu$ g/Kg dry wt	447	EPA8270M-SIM	06/17/09
Indeno(1,2,3-cd)pyrene	<223	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Naphthalene	<223	$\mu$ g/Kg dry wt	223	EPA8270M-SIM	06/17/09
Phenanthrene	1250	μg/Kg dry wt	223	EPA8270M-SIM	06/17/09
Pyrene	1210	μg/Kg dry wt	223	EPA8270M-SIM	06/17/09

End of Report for Sample ID: FO095696

Validated By:



# LABORATORY ANALYSIS REPORT



Sample ID: FO09	<b>5697</b> Sample Collected: 06/09/09 00: Sample Received: 06/11/09	:00 Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP	Report Page:	Page 1 of 3
		System ID:	AN06044
Sample Point Code:	DUP	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/PTB/AJA/JJM/L/

#### 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. Sample extraction holding time was exceeded for Herbicide analysis; results may be low estimates due to compound degradation.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	Result		WINL	Mictilou	
METALS					00/17/00
ARSENIC	2.06	mg/Kg dry wt	0.50	EPA 6020	06/17/09
CADMIUM	0.21	mg/Kg dry wt	0.10	EPA 6020	06/17/09
CHROMIUM	24.9	mg/Kg dry wt	0.50	EPA 6020	06/17/09
COPPER	14.6	mg/Kg dry wt	0.25	EPA 6020	06/17/09
LEAD	12.1	mg/Kg dry wt	0.10	EPA 6020	06/17/09
MANGANESE	874	mg/Kg dry wt	0.5	EPA 6010	06/17/09
MERCURY	0.031	mg/Kg dry wt	0.010	EPA 6020	06/17/09
NICKEL	13.4	mg/Kg dry wt	0.25	EPA 6020	06/17/09
SILVER	<0.10	mg/Kg dry wt	0.10	EPA 6020	06/17/09
ZINC	75.0	mg/Kg dry wt	0.50	EPA 6020	06/17/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					,
Aroclor 1016/1242	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1221	<20	$\mu$ g/Kg dry wt	20	EPA 8082	06/24/09
Aroclor 1232	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1248	<10	μg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1260	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1262	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
Aroclor 1268	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/24/09
OUTSIDE ANALYSIS	·				
TOTAL ORGANIC CARBON	19800	mg/Kg dry wt	100	EPA 9060 MOD	06/29/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 μm)	8.5	Fract %	0.1	ASTM D421/422	06/18/09
Coarse Sand (4750-2000 µm)	3.0	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (150-75 $\mu$ m)	13.5	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (250-150 µm)	5.8	Fract %	0.1	ASTM D421/422	06/18/09
Fine Sand (425-250 µm)	4.3	Fract %	0.1	ASTM D421/422	06/18/09
Gravel (>4750 μm)	1.1	Fract %	0.1	ASTM D421/422	06/18/09
Medium Sand (2000-850 $\mu$ m)	4.1	Fract %	0.1	ASTM D421/422	06/18/09
Medium Sand (850-425 µm)	3.3	Fract %	0.1	ASTM D421/422	06/18/09
Silt (13-9 µm)	0.7	Fract %	0.1	ASTM D421/422	06/18/09

Validated By:



# LABORATORY ANALYSIS REPORT



Sample ID: FO09	5697 Sample Collected: 06/09/09 00 Sample Received: 06/11/09	:00 Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP	Report Page:	Page 2 of 3
		System ID:	AN06044
Sample Point Code:	DUP	EID File # :	1020.005
Sample Type:	COMPOSITE	LocCode:	PORTHASW
Sample Matrix:	SEDIMENT	Collected By:	JXB/PTB/AJA/JJM/L/

#### 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. Sample extraction holding time was exceeded for Herbicide analysis; results may be low estimates due to compound degradation.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
Silt (22-13 μm)	5.0	Fract %	0.1	ASTM D421/422	06/18/09
Silt (32-22 µm)	7.1	Fract %	0.1	ASTM D421/422	06/18/09
Silt (7-3.2 µm)	<0.1	Fract %	0.1	ASTM D421/422	06/18/09
Silt (75-32 μm)	42.2	Fract %	0.1	ASTM D421/422	.06/18/09
Silt (9-7 μm)	1.4	Fract %	0.1	ASTM D421/422	06/18/09
HERBICIDES-CHLORINATED - TA					
2,4,5-T	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
2,4,5-TP (Silvex)	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
2,4-D	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
2,4-DB	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dalapon	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dicamba	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dichlorprop	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
Dinoseb	<0.142	mg/Kg dry wt	0.142	EPA 8151	07/01/09
MCPA	<14.2	mg/Kg dry wt	14.2	EPA 8151	07/01/09
MCPP	<14.2	mg/Kg dry wt	14.2	EPA 8151	07/01/09
PESTICIDES BY EPA 8081 - CAS			•		
4,4'-DDD	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/18/09
4,4'-DDE	1.3	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
4,4'-DDT	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Aldrin	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Alpha-BHC	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Alpha-Chlordane	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/18/09
Beta-BHC	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Delta-BHC	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Dieldrin	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Endosulfan I	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/18/09
Endosulfan II	<1.2	μg/Kg dry wt	1.2	EPA 8081A	06/18/09
Endosulfan Sulfate	<1.2	μg/Kg dry wt	1.2	EPA 8081A	06/18/09
Endrin	<1.2	μg/Kg dry wt	1.2	EPA 8081A	06/18/09
Endrin Aldehyde	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/18/09
Endrin Ketone	<1.2	µg/Kg dry wt	1.2	EPA 8081A	06/18/09
Gamma-BHC(Lindane)	<1.2	μg/Kg dry wt	1.2	EPA 8081A	06/18/09
Gamma-Chlordane	<1.2	μg/Kg dry wt	1.2	EPA 8081A	06/18/09

Report Date: 08/07/09

Validated By:



## City of Portland Water Pollution Control Laboratory

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

## LABORATORY ANALYSIS REPORT



Sample ID: FO09	Sample Collected:         06/09/09         00:00           Sample Received:         06/11/09	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR STORMWATER SAMP	Report Page:	Page 3 of 3
One was to De tot On the		System ID:	AN06044
Sample Point Code:	DUP	EID File # :	PORTHASW
Sample Type: Sample Matrix:	COMPOSITE SEDIMENT	LocCode: Collected By:	JXB/PTB/AJA/JJM/L/

#### 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. Sample extraction holding time was exceeded for Herbicide analysis; results may be low estimates due to compound degradation.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
Heptachlor	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/18/09
Heptachlor Epoxide	<1.2	μg/Kg dry wt	1.2	EPA 8081A	06/18/09
Methoxychlor	<1.2	$\mu$ g/Kg dry wt	1.2	EPA 8081A	06/18/09
Toxaphene	<58	$\mu$ g/Kg dry wt	58	EPA 8081A	06/18/09
POLYNUCLEAR AROMATICS & PHTH	ALATES - TA				
Acenaphthene	<23.5	$\mu$ g/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Acenaphthylene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Anthracene	<23.5	µg/Kg dry wt ⊡	23.5	EPA8270M-SIM	06/17/09
Benzo(a)anthracene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Benzo(a)pyrene	<23.5	$\mu$ g/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Benzo(b)fluoranthene	<23.5	μg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Benzo(ghi)perylene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Benzo(k)fluoranthene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Bis(2-ethylhexyl) phthalate	211	$\mu$ g/Kg dry wt	47.0	EPA8270M-SIM	06/17/09
Butyl benzyl phthalate	48.1	$\mu$ g/Kg dry wt	47.0	EPA8270M-SIM	06/17/09
Chrysene	<23.5	$\mu$ g/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Dibenzo(a,h)anthracene	<23.5	$\mu$ g/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Diethyl phthalate	<47.0	µg/Kg dry wt	47.0	EPA8270M-SIM	06/17/09
Dimethyl phthalate	<47.0	µg/Kg dry wt	47.0	EPA8270M-SIM	06/17/09
Di-n-butyl phthalate	<47.0	$\mu$ g/Kg dry wt	47.0	EPA8270M-SIM	06/17/09
Di-n-octyl phthalate	<47.0	μg/Kg dry wt	47.0	EPA8270M-SIM	06/17/09
Fluoranthene	<23.5	μg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Fluorene	<23.5	μg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Indeno(1,2,3-cd)pyrene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Naphthalene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Phenanthrene	<23.5	µg/Kg dry wt	23.5	EPA8270M-SIM	06/17/09
Pyrene	<23.5	$\mu$ g/Kg dry wt	23.5	EPA8270M-SIM	06/17/09

End of Report for Sample ID: FO095697

Validated By:

2009 Inline Solids



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

# Laboratory Data QA/QC Review Upland Source Control Investigation Outfall Basin 18

To:FileFrom:Julia Fowler, GSIDate:July 29, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control sampling and analyses conducted by the City of Portland (City) in June 2009 in Outfall Basin 18. An additional sample was collected from Outfall Basin 17; the QA/QC review for this sample will be submitted separately.

The laboratory analysis of the Outfall Basin 18 inline grab solids sample (FO095671) and the associated field decontamination blank (FO095673) was conducted 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 6010/6020
  - o Polychlorinated Biphenyl (PCB) Aroclors EPA 8082
- Test America (TA)
  - Total Organic Carbon (TOC) EPA 9060 MOD
  - o Polynuclear Aromatic Hydrocarbons (PAHs) EPA 8270M-SIM
  - o Phthalates EPA 8270-SIM
  - o PCBs EPA 8082
  - o Chlorinated Herbicides EPA 8151A Modified
- Analytical Resources, Inc. (ARI)
  - Grain Size Distribution ASTM D421/422

- Columbia Analytical Services (CAS)
  - Organochlorine Pesticides EPA 8081
  - Semi-Volatile Organic Compounds EPA 8270C

The WPCL summary report comments that 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.

The following QA/QC review of the analytical data is based upon 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
- 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 sample. The chain-of-custody procedures were adequate and sample integrity was maintained through the sample collection and delivery process.

# **Analysis Holding Times**

The sample was extracted and analyzed within the required method-specific holding times.

## **Method Blanks**

Method blanks were processed during the subcontracted laboratory analyses of chlorinated herbicides, organochlorine pesticides, SVOCs, PCB Aroclors, PAHs, phthalates, and TOC. Two herbicides (2,4-D and 2,4,5-T) were detected in the laboratory method blank, at concentrations less than the method reporting limit (MRL). 2,4-D was detected in sample FO095671 at a concentration less than 10 times the method blank detection. 2,4,5-T was detected at concentration less than the method blank concentration. These data are reported as undetected at the method reporting limit. No detections occurred in the method blanks for the other analyses.

# **Surrogate Recoveries**

Surrogate recoveries were completed during the subcontracted laboratory analysis of organochlorine pesticides, chlorinated herbicides, PCB Aroclors, PAHs, phthalates, and SVOCs. All surrogate recoveries were within laboratory control limits, with one exception. The surrogate recovery control criteria were exceeded for analysis of chlorinated herbicides. The TA laboratory report indicates that although the calibration verification recovery was above the method control limit for this analyte, the data are not impacted because the analyte was not detected in the samples.

# Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were processed during the subcontracted laboratory analyses of chlorinated herbicides, SVOCs, PAHs, and phthalates. Laboratory control criteria for MS/MSD samples were exceeded for several compounds during the chlorinated herbicide analyses. One of these compounds (2,4,5-T) was detected in the sample; the remaining herbicides were not detected. With regard to the 2,4,5-T detection, the data are shown on the data tables as not detected because of laboratory method blank detection (see above).

# Laboratory Control / Duplicate Laboratory Control Samples

Laboratory control/duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of organochlorine pesticides, SVOCs, and PAHs. An LCS sample was processed during the laboratory analysis of chlorinated herbicides, PCBs, phthlalates, and TOC. All laboratory control sample recoveries and/or relative percent differences (RPD) were within laboratory control limits, with the following exceptions:

- Recovery of two phthalates (bis[2-ethylhexyl]phthalate and buylbenzyl phthalate) was above acceptance limits. TA reports that because these analytes were not detected in the associated field samples the data are not impacted.
- Recovery of benzoic acid in the LCS/DLCS for the SVOC analysis exceeded the advisory criterion, but CAS reports that this recovery information is for advisory purposes only and no further corrective action was required.
- The upper control criterion for hexachlorocyclopentadiene was exceeded in the LCS/DLCS for the SVOC analysis. The analyte was not detected in the associated field samples.

# Other

The method detection limit (MDL) for pesticides analysis was elevated for certain analytes due to the presence of non-target background compounds in the samples. The results are flagged "i" in the CAS report to indicate the matrix interference.

CAS performed calibration verification for analysis of organochlorine pesticides in accordance with EPA Method 8081. CAS reports that the primary evaluation criterion was exceeded for a few analytes in Continuing Calibration Verification during pesticides analysis of the field decontamination blank; in response, an alternative evaluation was performed as specified in EPA 8081, and all evaluation criteria were met.

			• .							VIO		
Printed Name: Date:	Date:			Printed Name;			Date:				Portland Harbor hilling Same COC he vale / DA	E
Solghature:						ĺ	2			Drintad Mama		Prinked Name:
<u>d By:</u> 4.	Time		<u>3⊻</u> : 3.	Received By: Signature:	Sig		Time:		بر بر	Neceived by: Signature:		Signature:
Printed Name: Date:	Date:			Printed Name:	27		Uate:				109	Matt Syllivan
riginaun a					2					Printed Name		Printed Name:
<u>shed By:</u> 4.	Time		ied BY: 3.	Kelinquisned By: Signature:	Si K		Time:		<u>su by.</u> 2.	Signature:	Time:	Signatures Alto M
			11				G	1128	FDBLANK 6/4/2009	FDBLANK		
			_		•	•				۰.		F0095673
						+						
		-				-		-				
				<u> </u>								
changes made by PHA- 7/9/09	· chai	•	•	•	•	•	0	1252	6/4/09	17.13	IL-78-AAX298-0609 3136 NW 35th Ave	F0095672
	•	•	•	•	•	•	0	1145	6/4/09	18_10	IL-18-AAX261-0609 3250 NW ST HELENS RD	F0095671
		TOC Grain Siz	Total Sol	SVOCs b Herbicide	Pesticide	PCB Aro PAH+Pht	Sample Type	Sample Time	Sample Date	Point Code	Location	WPCL Sample I.D.
	als (Al, Sb, As, Ba, Cd, In, Pb, Ni, Se, Ag, Zn)	9	dis	· · · · · · · · · · · · · · · · · · ·	s by CAS	halates by TA			4/4/09	7 7	<u>OUTFALL 18</u> \$17 \$17	
Field Comments	Metals	General	0	lics	Organics							
Requested Analyses	Requester						& DIWTR	SEDIMENT & DIWTR	Matrix:		1	File Number: 1020.001
									MP	INE SA	<b>LAND HARBOR INI</b>	Project Name: PORTLAND HARBOR INLINE SAMP
Collected By: MJS 5, AJA		11			•					Æ	·	(503) 823-5696
Page: of		ж 	Ody Services	ust.	Chain-of-Custody au of Environmental Servi	FEnv	Chain-of-Custody Bureau of Environmental Serv			CIT	-aboratory	Water Pollution Control Laboratory 6543 N. Burlington Ave. Portland Orenon 97203-4552
Date: <u>んノリノの</u> 9			Ω.		City of Portland	- V O	° Q	Sec. 1	S. LANG	łł,		•



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5671 Sample Collected: 06/04/09 Sample Received: 06/04/09	11:45	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARBOR INLINE SAMP IL-18-AAX261-0609		Report Page:	Page 1 of 5
Address Loodlonn	3250 NW ST HELENS RD		System ID:	AN05829
Sample Point Code:	18_10		EID File # :	1020.001
Sample Type:	COMPOSITE		LocCode:	PORTHARI
Sample Matrix:	SEDIMENT		Collected By:	MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

· · · ·					Analysis
Test Parameter	Result	Units	MRL	Method	Date
GENERAL					
TOTAL SOLIDS	63.5	% W/W	0.01	SM 2540 G	06/04/09
METALS					
ALUMINUM	12200	mg/Kg dry wt	2.5	EPA 6010	06/12/09
ANTIMONY	0.16	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ARSENIC	2.14	mg/Kg dry wt	0.50	EPA 6020	06/10/09
BARIUM	91.5	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CADMIUM	0.17	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	17.6	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	16.5	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	6.11	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MANGANESE	347	mg/Kg dry wt	0.5	EPA 6010	06/12/09
MERCURY	0.018	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	19.2	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SELENIUM	<1.00	mg/Kg dry wt	1.0	EPA 6020	06/10/09
SILVER	<0.10	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	58.9	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	06/05/09
Aroclor 1221	<20	$\mu$ g/Kg dry wt	20	EPA 8082	06/05/09
Aroclor 1232	<10	$\mu$ g/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1248	<10	μg/Kg dry wt	10 -	EPA 8082	06/05/09
Aroclor 1254	<10	μg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1260	.<10	μg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1262	<10	μg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1268	<10	μg/Kg dry wt	10	EPA 8082	06/05/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	786	mg/Kg dry wt	100	EPA 9060 MOD	06/18/09
GRAIN SIZE BY ASTM - ARI		· ·			
Clay (<3.2 μm)	4.6	Fract %	0.1	ASTM D421/422	06/09/09
Coarse Sand (4750-2000 μm)	1.4	Fract %	0.1	ASTM D421/422	06/09/09
Fine Sand (150-75 μm)	4.7	Fract %	0.1	ASTM D421/422	06/09/09
Fine Sand (250-150 µm)	17.3	Fract %	0.1	ASTM D421/422	06/09/09
		st st			

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5671	Sample Collected: 06/04/09 Sample Received: 06/04/09	11:45	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND	HARBOR INLINE SAMP		Report Page:	Page 2 of 5
	3250 NW ST	HELENS RD		System ID:	AN05829
Sample Point Code: Sample Type: Sample Matrix:	18_10 COMPOSITE SEDIMENT			EID File # : LocCode: Collected By:	1020.001 PORTHARI MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	39.7	Fract %	0.1	ASTM D421/422	06/09/09
Gravel (>4750 μm)	6.2	Fract %	0.1	ASTM D421/422	06/09/09
Medium Sand (2000-850 μm)	2.2	Fract %	0.1	ASTM D421/422	06/09/09
Medium Sand (850-425 µm)	19.1	Fract %	0.1	ASTM D421/422	06/09/09
Silt (13-9 µm)	0.8	Fract %	0.1	ASTM D421/422	06/09/09
Silt (22-13 µm)	0.8	Fract %	0.1	ASTM D421/422	06/09/09
Silt (32-22 µm)	<0.1	Fract %	0.1	ASTM D421/422	06/09/09
Silt (7-3.2 μm)	1.3	Fract %	0.1	ASTM D421/422	06/09/09
Silt (75-32 μm)	1.9	Fract %	0.1	ASTM D421/422	06/09/09
Silt (9-7 μm)	<0.1	Fract %	0.1	ASTM D421/422	06/09/09
HERBICIDES-CHLORINATED - TA				· ·	
2,4,5-T	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
2,4,5-TP (Silvex)	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
2,4-D	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
2,4-DB	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
Dalapon	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
Dicamba	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
Dichlorprop	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
Dinoseb	<0.0313	mg/Kg dry wt	0.0313	EPA 8151	06/18/09
MCPA	<3.130	mg/Kg dry wt	3.130	EPA 8151	06/18/09
MCPP	<3.130	mg/Kg dry wt	3.130	EPA 8151	06/18/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
4,4'-DDE	0.97	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
4,4'-DDT	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Aldrin	<0.79	µg/Kg dry wt	0.79	EPA 8081A	06/09/09
Alpha-BHC	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Alpha-Chlordane	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Beta-BHC	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Delta-BHC	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Dieldrin	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Endosulfan I	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Endosulfan II	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Endosulfan Sulfate	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Endrin	<0.79	μg/Kg dry wt	, 0.79	EPA 8081A	06/09/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	<b>5671</b> Sample Collected: 06/04/09 11: Sample Received: 06/04/09	:45 Sample Status:	COMPLETE AND
Proj./Company Name: Address/Location:	PORTLAND HARBOR INLINE SAMP	Report Page:	Page 3 of 5
	3250 NW ST HELENS RD	System ID:	AN05829
Sample Point Code: Sample Type: Sample Matrix:	18_10 COMPOSITE SEDIMENT	EID File # : LocCode: Collected By:	1020.001 Porthari Mjs/Aja

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

					Analysis
Test Parameter	Result	Units	MRL	Method 🧭	Date
Endrin Aldehyde	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Endrin Ketone	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	<0.79	$\mu g/Kg$ dry wt	0.79	EPA 8081A	06/09/09
Gamma-Chlordane	<0.79	µg/Kg dry wt	0.79	EPA 8081A	06/09/09
Heptachlor	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Heptachlor Epoxide	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Methoxychior	<0.79	$\mu$ g/Kg dry wt	0.79	EPA 8081A	06/09/09
Toxaphene	<40	$\mu$ g/Kg dry wt	40	EPA 8081A	06/09/09
POLYNUCLEAR AROMATICS & PHTHALATE					
Acenaphthene	<20.8	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Acenaphthylene	<20.8	µg/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Anthracene	<20.8	µg/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	31.3	µg/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	23.7	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	<20.8	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	<20.8	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	<20.8	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	68.9	µg/Kg dry wt	41.7	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<b>&lt;41</b> .7	$\mu$ g/Kg dry wt	41.7	EPA8270M-SIM	06/09/09
Chrysene	35.3	µg/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<20.8	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Diethyl phthalate	<41.7	μg/Kg dry wt	41.7	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<41.7	$\mu$ g/Kg dry wt	41.7	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<41.7	$\mu$ g/Kg dry wt	41.7	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<41.7	$\mu$ g/Kg dry wt	41.7	EPA8270M-SIM	06/09/09
Fluoranthene	49 7	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Fluorene	<20.8	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	<20.8	µg/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Naphthalene	<20.8	µg/Kg dry wt ∘	20.8	EPA8270M-SIM	06/09/09
Phenanthrene	71.9	µg/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
Pyrene	55.4	$\mu$ g/Kg dry wt	20.8	EPA8270M-SIM	06/09/09
SEMI-VOLATILE ORGANICS - CAS	· ·				
1,2,4-Trichlorobenzene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
1,2-Dichlorobenzene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
1,3-Dichlorobenzene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5671	Sample Collected: 06/04/09 Sample Received: 06/04/09		Sample Status:	COMPLETE AND VALIDATED	
Proj./Company Name: Address/Location:		ND HARBOR INLINE SAMP		Report Page:	Page 4 of 5	
Address Ecoation.		ST HELENS RD		System ID:	AN05829	
Sample Point Code:	18_10			EID File # :	1020.001	
Sample Type:	COMPOSI	TE		LocCode:	PORTHARI	
Sample Matrix:	SEDIMEN	Ĺ	•	Collected By:	MJS/AJA	

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,4-Dichlorobenzene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2,4,5-Trichlorophenol	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2,4,6-Trichlorophenol	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2,4-Dichlorophenol	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2,4-Dimethylphenol	<40	$\mu$ g/Kg dry wt	40	EPA 8270 LV	06/08/09
2,4-Dinitrophenol	<160	μg/Kg dry wt	160	EPA 8270 LV	06/08/09
2,4-Dinitrotoluene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2,6-Dinitrotoluene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2-Chloronaphthalene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2-Chlorophenol	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2-Methylnaphthalene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2-Methylphenol	<7.9	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
2-Nitroaniline	<16	$\mu$ g/Kg dry wt	16	EPA 8270 LV	06/08/09
2-Nitrophenol	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
3,3'-Dichlorobenzidine	<79	μg/Kg dry wt	79	EPA 8270 LV	06/08/09
3-Nitroaniline	<16	$\mu$ g/Kg dry wt	16	EPA 8270 LV	06/08/09
4,6-Dinitro-2-methylphenol	<79	μg/Kg dry wt	79	EPA 8270 LV	06/08/09
4-Bromophenylphenyl ether	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
4-Chloro-3-methylphenol	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
4-Chloroaniline	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
4-Chlorophenylphenyl ether	<7.9	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
4-Methylphenol	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
4-Nitroaniline	<16	$\mu$ g/Kg dry wt	16	EPA 8270 LV	06/08/09
4-Nitrophenol	<79	μg/Kg dry wt	79	EPA 8270 LV	06/08/09
Acenaphthene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Acenaphthylene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Anthracene	8.8	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Benzo(a)anthracene	27	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Benzo(a)pyrene	26	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Benzo(b)fluoranthene	27	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Benzo(g,h,i)perylene	17	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Benzo(k)fluoranthene	. 11	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Benzoic acid	<160	$\mu$ g/Kg dry wt	160	EPA 8270 LV	06/08/09
Benzyl alcohol	<16	μg/Kg dry wt	16	EPA 8270 LV	06/08/09
Bis(2-chloroethoxy) methane	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Bis(2-chloroethyl) ether	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5671	Sample Collected: 06/04/09 Sample Received: 06/04/09	11:45	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLANE	HARBOR INLINE SAMP		Report Page:	Page 5 of 5
	3250 NW ST	HELENS RD		System ID:	AN05829
Sample Point Code:	18_10			EID File # :	1020.001
Sample Type:	COMPOSITE			LocCode:	PORTHARI
Sample Matrix:	SEDIMENT			Collected By:	MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
Bis(2-chloroisopropyl) ether	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Bis(2-ethylhexyl) phthalate	<79	µg/Kg dry wt	79	EPA 8270 LV	06/08/09
Butyl benzyl phthalate	<7.9	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Chrysene	31	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Dibenzo(a,h)anthracene	<7.9	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Dibenzofuran	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Diethyl phthalate	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Dimethyl phthalate	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Di-n-butyl phthalate	<16	µg/Kg dry wt	16	EPA 8270 LV	06/08/09
Di-n-octyl phthalate	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Fluoranthene	46	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Fluorene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Hexachlorobenzene	<7.9	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Hexachlorobutadiene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Hexachlorocyclopentadiene	<40	$\mu$ g/Kg dry wt	40	EPA 8270 LV	06/08/09
Hexachloroethane	<7.9	μg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Indeno(1,2,3-cd)pyrene	15	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Isophorone	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Naphthalene	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Nitrobenzene	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
N-Nitrosodi-n-propylamine	<7.9	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09
N-Nitrosodiphenylamine	<7.9	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Pentachlorophenol	<79	µg/Kg dry wt	7 <del>9</del>	EPA 8270 LV	06/08/09
Phenanthrene	23	µg/Kg dry wt	7.9	EPA 8270 LV	06/08/09
Phenol	<24	$\mu$ g/Kg dry wt	24	EPA 8270 LV	06/08/09
Pyrene	52	$\mu$ g/Kg dry wt	7.9	EPA 8270 LV	06/08/09

Validated By:

End of Report for Sample ID: FO095671



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5672	Sample Collected: 06/04/09 Sample Received: 06/04/09	12:52	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND	HARBOR INLINE SAMP		Report Page:	Page 1 of 5
	3136 NW 35T	HAVE		System ID:	AN05830
Sample Point Code: Sample Type: Sample Matrix:	17_13 COMPOSITE SEDIMENT			EID File # : LocCode: Collected By:	1020.001 PORTHARI MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	Resurt			Incurou	
GENERAL	67.7	% W/W	0.01	SM 2540 G	06/04/09
TOTAL SOLIDS	07.7	70 44/44	0.01	0WI 2040 G	00/04/00
METALS					
ALUMINUM	9760	mg/Kg dry wt	2.5	EPA 6010	06/12/09
ANTIMONY	3.59	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ARSENIC	101	mg/Kg dry wt	0.50	EPA 6020	06/10/09
BARIUM	340	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CADMIUM	0.13	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	245	mg/Kg dry wt	0.50	EPA 6020	.06/10/09
COPPER	37.0	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	38.2	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MANGANESE	1640	mg/Kg dry wt	0.5	EPA 6010	06/12/09
MERCURY	0.015	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	305	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SELENIUM	<1.00	mg/Kg dry wt	1.0	EPA 6020	06/10/09
SILVER	<0.10	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	153	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	06/05/09
Aroclor 1221	<20	$\mu$ g/Kg dry wt	20	EPA 8082	06/05/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1248	<10	μg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1260	<10	µg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1262	<10	μg/Kg dry wt	10	EPA 8082	06/05/09
Aroclor 1268	<10	μg/Kg dry wt	10	EPA 8082	06/05/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	6490	mg/Kg dry wt	100	EPA 9060 MOD	06/18/09
GRAIN SIZE BY ASTM - ARI					00100100
Clay (<3.2 µm)	5.8	Fract %	0.1	ASTM D421/422	06/09/09
Coarse Sand (4750-2000 μm)	1.7	Fract %	0.1	ASTM D421/422	06/09/09
Fine Sand (150-75 μm)	1.4	Fract %	0.1	ASTM D421/422	06/09/09
Fine Sand (250-150 <i>µ</i> m)	4.2	Fract %	0.1	ASTM D421/422	06/09/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5672	Sample Collected: 06/04/09 Sample Received: 06/04/09	12:52	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAN	D HARBOR INLINE SAMP 98-0609		Report Page:	Page 2 of 5
	3136 NW 3	5TH AVE		System ID:	AN05830
Sample Point Code: Sample Type: Sample Matrix:	17_13 COMPOSIT SEDIMENT			EID File # : LocCode: Collected By:	1020.001 PORTHARI MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fine Sand (425-250 µm)	41.1	Fract %	0.1	ASTM D421/422	06/09/09
Gravel (>4750 $\mu$ m)	1.1	Fract %	0.1	ASTM D421/422	06/09/09
Medium Sand (2000-850 μm)	2.6	Fract %	0.1	ASTM D421/422	06/09/09
Medium Sand (850-425 µm)	38.3	Fract %	0.1	ASTM D421/422	06/09/09
Silt (13-9 µm)	<0.1	Fract %	0.1	ASTM D421/422	06/09/09
Silt (22-13 µm)	<0.1	Fract %	0.1	ASTM D421/422	06/09/09
Silt (32-22 µm)	0.4	Fract %	0.1	ASTM D421/422	06/09/09
Silt (7-3.2 µm)	1.3	Fract %	0.1	ASTM D421/422	06/09/09
Silt (75-32 μm)	2.0	Fract %	0.1	ASTM D421/422	06/09/09
Silt (9-7 μm)	<0.1	Fract %	0.1	ASTM D421/422	06/09/09
HERBICIDES-CHLORINATED - TA					
2,4,5-T	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
2,4,5-TP (Silvex)	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
2,4-D	1.790	mg/Kg dry wt	0.303	EPA 8151	06/18/09
2,4-DB	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
Dalapon	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
Dicamba	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
Dichlorprop	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
Dinoseb	<0.0303	mg/Kg dry wt	0.0303	EPA 8151	06/18/09
MCPA	<3.030	mg/Kg dry wt	3.030	EPA 8151	06/18/09
MCPP	<3.030	mg/Kg dry wt	3.030	EPA 8151	06/18/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
4,4'-DDE	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
4,4'-DDT	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Aldrin	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Alpha-BHC	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Alpha-Chlordane	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Beta-BHC	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Delta-BHC	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Dieldrin	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Endosulfan I	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Endosulfan II	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Endosulfan Sulfate	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Endrin	<0.81	µg/Kg dry wt	0.81	EPA 8081A	06/09/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5672	Sample Collected: 06/04/09 Sample Received: 06/04/09	12:52	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name:		ND HARBOR INLINE SAMP		Report Page:	Page 3 of 5
Address/Location:	IL-17-AAX2 3136 NW 3			System ID:	AN05830
Sample Point Code:	17_13			EID File # :	1020.001
Sample Type:	COMPOSI	TE		LocCode:	PORTHARI
Sample Matrix:	SEDIMEN			Collected By:	MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Aldehyde	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Endrin Ketone	<0.81	μg/Kg dry wt	0.81	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Gamma-Chlordane	<0.81	μg/Kg dry wt	0.81	EPA 8081A	06/09/09
Heptachlor	<0.81	$\mu$ g/Kg dry wt	0.81	EPA 8081A	06/09/09
Heptachlor Epoxide	<0.81	μg/Kg dry wt	0.81	EPA 8081A	06/09/09
Methoxychlor	<0.81	μg/Kg dry wt	0.81	EPA 8081A	06/09/09
Toxaphene	<41	$\mu$ g/Kg dry wt	41	EPA 8081A	06/09/09
POLYNUCLEAR AROMATICS & PHTHALAT					00/00/00
Acenaphthene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Acenaphthylene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Anthracene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	272	$\mu$ g/Kg dry wt	162	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<162	$\mu$ g/Kg dry wt	162	EPA8270M-SIM	06/09/09
Chrysene	<20.2	μg/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Diethyl phthalate	<162	$\mu$ g/Kg dry wt	162	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<162	µg/Kg dry wt	162	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<162	µg/Kg dry wt	162	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<162	$\mu$ g/Kg dry wt	162	EPA8270M-SIM	06/09/09
Fluoranthene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Fluorene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	<20.2	µg/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Naphthalene	<20.2	µg/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Phenanthrene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
Pyrene	<20.2	$\mu$ g/Kg dry wt	20.2	EPA8270M-SIM	06/09/09
SEMI-VOLATILE ORGANICS - CAS			0.0		06/18/09
1,2,4-Trichlorobenzene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
1,2-Dichlorobenzene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
1,3-Dichlorobenzene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	00/16/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5672	Sample Collected: 06/04/09 Sample Received: 06/04/09	12:52	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND	HARBOR INLINE SAMP		Report Page:	Page 4 of 5
	3136 NW 351			System ID:	AN05830
Sample Point Code: Sample Type: Sample Matrix:	17_13 COMPOSITE SEDIMENT			EID File # : LocCode: Collected By:	1020.001 PORTHARI MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

					Analysis Date
Test Parameter	Result	Units	MRL	Method	Date
1,4-Dichlorobenzene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2,4,5-Trichlorophenol	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2,4,6-Trichlorophenol	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2,4-Dichlorophenol	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2,4-Dimethylphenol	<50	$\mu$ g/Kg dry wt	50	EPA 8270 LV	06/18/09
2,4-Dinitrophenol	<200	µg/Kg dry wt	200	EPA 8270 LV	06/18/09
2,4-Dinitrotoluene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2,6-Dinitrotoluene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2-Chloronaphthalene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2-Chlorophenol	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2-Methylnaphthalene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2-Methylphenol	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
2-Nitroaniline	<20	µg/Kg dry wt	20	EPA 8270 LV	06/18/09
2-Nitrophenol	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
3,3'-Dichlorobenzidine	<99	µg/Kg dry wt	99	EPA 8270 LV	06/18/09
3-Nitroaniline	<20	$\mu$ g/Kg dry wt	20	EPA 8270 LV	06/18/09
4,6-Dinitro-2-methylphenol	<99	µg/Kg dry wt	99	EPA 8270 LV	06/18/09
4-Bromophenylphenyl ether	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
4-Chloro-3-methylphenol	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
4-Chloroaniline	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
4-Chlorophenylphenyl ether	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
4-Methylphenol	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
4-Nitroaniline	<20	µg/Kg dry wt	20	EPA 8270 LV	06/18/09
4-Nitrophenol	<99	µg/Kg dry wt	99	EPA 8270 LV	06/18/09
Acenaphthene	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Acenaphthylene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Anthracene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Benzo(a)anthracene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Benzo(a)pyrene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Benzo(b)fluoranthene	12	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Benzo(g,h,i)perylene	12	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Benzo(k)fluoranthene	<9.9	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Benzoic acid	<200	$\mu$ g/Kg dry wt	200	EPA 8270 LV	06/18/09
Benzyl alcohol	<20	$\mu$ g/Kg dry wt	20	EPA 8270 LV	06/18/09
Bis(2-chloroethoxy) methane	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Bis(2-chloroethyl) ether	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5672	Sample Collected: 06/04/09 Sample Received: 06/04/09	12:52	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND	HARBOR INLINE SAMP		Report Page:	Page 5 of 5
	3136 NW 35T	H AVE		System ID:	AN05830
Sample Point Code: Sample Type: Sample Matrix:	17_13 COMPOSITE SEDIMENT			EID File # : LocCode: Collected By:	1020.001 PORTHARI MJS/AJA

#### 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. Inconsistent matrix spike recoveries for Herbicide analysis indicates possible matrix effects.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroisopropyl) ether	<9.9	μg/Kg dry wit	9.9	EPA 8270 LV	06/18/09
Bis(2-ethylhexyl) phthalate	110	$\mu$ g/Kg dry wt	9.9 99	EPA 8270 LV	06/18/09
Butyl benzyl phthalate	<9.9		9.9	EPA 8270 LV	06/18/09
	12	μg/Kg dry wt	9.9 9.9	EPA 8270 LV	06/18/09
Chrysene		μg/Kg dry wt		EPA 8270 LV	06/18/09
Dibenzo(a,h)anthracene	<9.9	μg/Kg dry wt	9.9		
Dibenzofuran	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Diethyl phthalate	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Dimethyl phthalate	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Di-n-butyl phthalate	<20	$\mu$ g/Kg dry wt	20	EPA 8270 LV	06/18/09
Di-n-octyl phthalate	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Fluoranthene	17	µg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Fluorene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Hexachlorobenzene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Hexachlorobutadiene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Hexachlorocyclopentadiene	<50	µg/Kg dry wt	50	EPA 8270 LV	06/18/09
Hexachloroethane	<9.9	$\mu g/Kg dry wt$	9.9	EPA 8270 LV	06/18/09
Indeno(1,2,3-cd)pyrene	11	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Isophorone	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Naphthalene	<9.9	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Nitrobenzene	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
N-Nitrosodi-n-propylamine	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
N-Nitrosodiphenylamine	<9.9	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Pentachlorophenol	<99	μg/Kg dry wt	99	EPA 8270 LV	06/18/09
Phenanthrene	13	μg/Kg dry wt	9.9	EPA 8270 LV	06/18/09
Phenol	<30	$\mu$ g/Kg dry wt	30	EPA 8270 LV	06/18/09
Pyrene	26	$\mu$ g/Kg dry wt	9.9	EPA 8270 LV	06/18/09

Validated By:

End of Report for Sample ID: FO095672



### LABORATORY ANALYSIS REPORT



Sample ID: FO09	5673	Sample Collected: 06/04/09 Sample Received: 06/04/09	11:28	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND	) HARBOR INLINE SAMP ON BLANK		Report Page:	Page 1 of 3
				System ID:	AN05831
Sample Point Code:	FDBLANK			EID File # :	1020.001
Sample Type:	GRAB			LocCode:	PORTHARI
Sample Matrix:	DIWTR			Collected By:	MJS/AJA

#### 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
METALS					
ALUMINUM	<0.050	mg/L	0.050	EPA 200.7	06/05/09
MANGANESE	<0.010	mg/L	0.010	EPA 200.7	06/05/09
MERCURY	<0.0020	μg/L	0.002	WPCLSOP M-10.02	
METALS BY ICP-MS (TOTAL) - 11					
ANTIMONY	<0.10	µg/L	0.1	EPA 200.8	06/09/09
ARSENIC	<0.10	μg/L	0.1	EPA 200.8	06/09/09
BARIUM	<0.10	μg/L	<b>0.1</b> ·	EPA 200.8	06/09/09
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	06/09/09
CHROMIUM	<0.40	μg/L	0.4	EPA 200.8	06/09/09
COPPER	<0.20	μg/L	0.2	EPA 200.8	06/09/09
LEAD	<0.10	μg/L	0.1	EPA 200.8	06/09/09
NICKEL	<0.20	μg/L	.0.2	EPA 200.8	06/09/09
SELENIUM	<0.50	μg/L	0.5	EPA 200.8	06/09/09
SILVER	<0.10	μġ/L	0.1	EPA 200.8	06/09/09
ZINC	<0.50	μg/L	0.5	EPA 200.8	06/09/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<1.8	ng/L	1.8	EPA 8081	06/10/09
4,4'-DDE	<1.9	ng/L	1.9	EPA 8081	06/10/09
4,4'-DDT	<0.72	ng/L	0.72	EPA 8081	06/10/09
Aldrin	<0.50	ng/L	0.50	EPA 8081	06/10/09
Alpha-BHC	<0.50	ng/L	0.50	EPA 8081	06/10/09
Alpha-Chlordane	<0.50	ng/L	0.50	EPA 8081	06/10/09
Beta-BHC	<0.50	ng/L	0.50	EPA 8081	06/10/09
Delta-BHC	<0.50	ng/L	0.50	EPA 8081	06/10/09
Dieldrin	<0.50	ng/L	0.50	EPA 8081	06/10/09
Endosulfan I	<0.50	ng/L	0.50	EPA 8081	06/10/09
Endosulfan II	0.96	ng/L	0.50	EPA 8081	06/10/09
Endosulfan Sulfate	<0.50	ng/L	0.50	EPA 8081	06/10/09
Endrin	<0.50	ng/L	0.50	EPA 8081	06/10/09
Endrin Aldehyde	<0.50	ng/L	0.50	EPA 8081	06/10/09
Endrin Ketone	<0.50	ng/L	0.50	EPA 8081	06/10/09
Gamma-BHC(Lindane)	<0.50	ng/L	0.50	EPA 8081	06/10/09
Gamma-Chlordane	<0.50	ng/L	0.50	EPA 8081	06/10/09

Validated By:



## LABORATORY ANALYSIS REPORT



Sample ID: FO09	5673	Sample Collected: 06/04/09 Sample Received: 06/04/09	11:28	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND	HARBOR INLINE SAMP		Report Page:	Page 2 of 3
				System ID:	AN05831
Sample Point Code:	FDBLANK			EID File # :	1020.001
Sample Type:	GRAB			LocCode:	PORTHARI
Sample Matrix:	DIWTR			Collected By:	MJS/AJA

#### 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.

T. ( D	Decelt	11		Na tha al	Analysis Date
Test Parameter	Result	Units	MRL	Method	Date
Heptachlor	<0.50	ng/L	0.50	EPA 8081	06/10/09
Heptachlor Epoxide	<0.50	ng/L	0.50	EPA 8081	06/10/09
Methoxychlor	<0.50	ng/L	0.50	EPA 8081	06/10/09
Toxaphene	<54	ng/L	54	EPA 8081	06/10/09
POLYCHLORINATED BIPHENYLS (PCB) - T	A				
Aroclor 1016	<0.048	µg/L	0.048	EPA 8082	06/11/09
Aroclor 1221	<0.048	μg/L	0.048	EPA 8082	06/11/09
Aroclor 1232	<0.048	μg/L	0.048	EPA 8082	06/11/09
Aroclor 1242	<0.048	μg/L	0.048	EPA 8082	06/11/09
Aroclor 1248	<0.048	μg/L	0.048	EPA 8082	06/11/09
Aroclor 1254	<0.048	μg/L	0.048	EPA 8082	06/11/09
Aroclor 1260	<0.048	µg/L	0.048	EPA 8082	06/11/09
Aroclor 1262	<0.048	μg/L	0.048	EPA 8082	06/11/09
Aroclor 1268	<0.048	μg/L	0.048	EPA 8082	06/11/09
POLYNUCLEAR AROMATICS & PHTHALAT	ES - TA				
Acenaphthene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	06/08/09
Acenaphthylene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	06/08/09
Anthracene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	06/08/09
Benzo(a)anthracene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	06/08/09
Benzo(a)pyrene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	06/08/09
Benzo(b)fluoranthene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	06/08/09
Benzo(ghi)perylene	<0.0194	μg/L	0.0194	EPA 8270M-SIM	06/08/09
Benzo(k)fluoranthene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	06/08/09
Bis(2-ethylhexyl) phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	06/08/09
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/08/09
Chrysene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	06/08/09
Dibenzo(a,h)anthracene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	06/08/09
Diethyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	06/08/09
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/08/09
Di-n-butyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	06/08/09
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/08/09
Fluoranthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/08/09
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/08/09
Indeno(1,2,3-cd)pyrene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	06/08/09
Naphthalene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/08/09

Validated By



## LABORATORY ANALYSIS REPORT



Sample ID: FO09		ble Collected: 06/04/09 ble Received: 06/04/09	11:28	Sample Status:	COMPLETE AND VALIDATED
Proj./Company Name: Address/Location:	PORTLAND HARB			Report Page:	Page 3 of 3
••••••				System ID:	AN05831
Sample Point Code:	FDBLANK			EID File # :	1020.001
Sample Type:	GRAB	,		LocCode:	PORTHARI
Sample Matrix:	DIWTR			Collected By:	MJS/AJA

#### 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.

Result	Units	MRL	Method	Analysis Date
<0.0194	μg/L	0.0194	EPA 8270M-SIM	06/08/09
<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/08/09
	<0.0194	<0.0194 µg/L	<0.0194 µg/L 0.0194	<0.0194 µg/L 0.0194 EPA 8270M-SIM

End of Report for Sample ID: FO095673

Report Date: 07/08/09

Validated By



June 19, 2009

Mr. Howard Holmes Test America, Inc. 9405 SW Nimbus Ave. Beaverton, OR 97008

## Subject: Project No.: PSF0201 ARI Project No.: PB87

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

Uluna

Guenna Smith Geotechnical Division Manager 206-695-6246 guennas@arilabs.com

Enclosures

cc: File PB87

## SUBCONTRACT ORDER

TestAmerica Portland PSF0201

SENDING LABORATORY:			RECEIVING LA	BORATORY:
TestAmerica Portland			Analytical Res	sources, Inc. (ARI)
9405 SW Nimbus Ave.			4611 S 134th	Place, Suite 100
Beaverton, OR 97008			Tukwilla, WA	98168
Phone: (503) 906-9200			Phone :(206)	621-6490
Fax: (503) 906-9210			Fax: 206-621	-7523
Project Manager: Howard	Holmes			ion: OR - OREGON
			Receipt Tempe	$\frac{14 \cdot 2 \circ C}{1 \circ C} = \frac{1}{1 \circ C} = \frac{1}{$
Analysis	Units	Due	Expires	Comments
Sample ID: PSF0201-01	Soil		Sampled: 06/04/09	11:45
Grain Size (ASTM) - SUB	ug/l	06/19/09	12/01/09 11:45	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				

Sample ID: PSF0201-02	Soil		Sampled: 06/04/09 1	2:52
Grain Size (ASTM) - SUB	ug/l	06/19/09	12/01/09 12:52	sub to Analytical Resources Inc (ARI
Containers Supplied:				
8 oz. jar (A)				

Released By

Date/Time

6

Date/Time

ka Mulumba 619104 953 Date/Time Received By

Released By

Received By



Client: Test America, Inc.

ARI Project No.: PB87

Client Project: PSF0201

## **Case Narrative**

- 1. Two samples were received on June 9, 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.

rema Sunte Approved by: Title: Lead Technician

Date: <u>6/19/09</u>

t America, Inc	PSF0201
Test A	ב

Percent Finer (Passing) Than the Indicated Size

1.3	46	40
3.2	46	2.8
2	50	7.2
6	59	7.2
13	67	7.2
53	7.6	7.2
32	7.6	7.6
#200 (75)	9.4	9.6
#100 (150)	14.1	11.1
#60 (250)	31.4	15.3
#40 (425)	71.0	56.4
#20 (850)	90.1	94.6
#10 (2000)	92.3	97.2
#4 (4750)	93.8	98.9
3/8"	97.5	99.7
1/2"	98.3	100.0
3/4"	100.0 98.3	100.0
-	100.0	100.0 100.0
1 1/2"	100.0	100.0
2"	100.0	100.0
a.	100.0	100.0
Sieve Size (microns)	PSF0201-01	PSF0201-02

Testing performed according to ASTM D421/D422

PB87

Test America, Inc. PSF0201 Percent Retained in Each Size Fraction

Description		%Coarse Gravel	e Gravel			% Gravel		% Coarse Sand		% Medium Sand	%	% Fine Sand	p	% Very Coarse	% Coarse Mo	% Medium Sit	% Fine Silt	% Fine Silt	% Very Fine Silt	% Clay
Particle Size (microns)	3-2"	3-2" 2-1 1/2" 1 1/2"-1" 1-3/4" 3/4-1/2" 1/2-3/8" 3/8"-4750	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4750	4750- 2000	2000-850	2000-850 850-425 425-250	425-250	250-150	150-75	75-32	32-22	22-13	13-9	9-7	7-3.2	<3.2
PSF0201-01	0.0	0.0	0.0	0.0	1.7	0.8	3.7	14	2.2	191	39.7	17.3	47	10	00	α	α	0	10	
					+							>		2	2	2	2.2	 	?	4.0
PSFUZU1-UZ	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.7	2.6	38.3	41.1	4.2	1.4	2.0	0.4	0.0	0.0	0.0	1.3	5.8

PB87

Percent Finer Than Clay Π Silt **Grain Size Distribution by Hydrometer Particle Diameter** Sand -+- PSF0201-01 Gravel 



June 30, 2009

Analytical Report for Service Request No: K0905065

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 June 05, 2009. For your reference, these analyses have been assigned our service request number K0905065.

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.** 

7/20/09 Pradeep Divvela

Project Chemist

PD/ln

Page 1 of 46

## 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
Μ	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
ТРН	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater
	than or equal to the MDL.

#### **Inorganic Data Qualifiers**

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

#### Metals Data Qualifiers

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

#### **Organic Data Qualifiers**

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

#### Additional Petroleum Hydrocarbon Specific Qualifiers

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

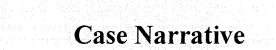
## Columbia Analytical Services, Inc. Kelso, WA State Certifications, Accreditations, and Licenses

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









#### COLUMBIA ANALYTICAL SERVICES, INC.

Client:Portland, City ofProject:Portland Harbor Inline SampSample Matrix:Sludge/Water

Service Request No.: Date Received: K0905065 06/05/09

#### CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

#### Sample Receipt

Two sludge and four water samples were received for analysis at Columbia Analytical Services on 06/05/09. 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.

#### Organochlorine Pesticides by EPA Method 8081A for Sediments

#### **Elevated Detection Limits:**

The detection limit was elevated for at least a couple analytes in both field 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.

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

#### Organochlorine Pesticides by EPA Method 8081A for Sludge

#### 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 2,4'-DDT in CAL 8582. The ICV results were reported from the acceptable column. The data quality was not affected. No further corrective action was necessary.

#### **Calibration Verification Exceptions:**

The primary evaluation criterion was exceeded for a few analytes in Continuing Calibration Verification (CCV) 0615F032. 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 met the alternative evaluation criteria.

#### Sample Confirmation Notes:

The confirmation comparison criteria of 40% difference for Endosulfan II was exceeded in sample FO 095675. The higher of the two values was reported because no evidence of a matrix interference was observed.

	Re		oztoilos
Approved by		_Date	····

#### **Elevated Detection Limits:**

The MDL/MRL is elevated for several analytes in sample Method Blank KWG0905002-13. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the problem.

The detection limit was elevated for at least a couple analytes in all field 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.

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

#### Semivolatile Organic Compounds by EPA Method 8270C

#### Surrogate Exceptions:

The control criteria were exceeded for 2-Fluorophenol and Phenol-d6 in FO095672. Since the problem may indicate a potential bias in the analytical results, the sample was re-extracted within hold time and re-analyzed. The surrogates met control criteria for the re-analysis. Therefore, the results from the re-extracted analysis were reported.

#### Lab Control Sample Exceptions:

The advisory criterion was exceeded for Benzoic Acid in the replicate Laboratory Control Samples (LCS/DLCS) KWG0904879-3 and KWG0904879-4. 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 upper control criterion was exceeded for Hexachlorocyclopentadiene in the replicate Laboratory Control Samples (LCS/DLCS) KWG0905322-1 and KWG0905322-2. The analyte in question was not detected in the associated field sample. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

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

	R	populog
Approved by		Date

Chain of Custody Documentation

Columbia Analytical Services Mc
---------------------------------------

# CHAIN OF CUSTODY

man name

Analylical	5			>>>>	
ompany	1317 South 13th Ave. • Kelso, WA 98626 • (360)	• (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068 PAGE	DF	COC #	
NHANA Hau	hav wint red				
PROJECT MANAGER JIMMILLE DWC COMPANY/ADDRESS (I. 1-1-1 OF PCy +1	and hard	STB Contraction of the state of	0 [] 200 0 [] 200 0 [] 0 () 0 () 0 () 0 () 0 () 0 () 0 () 0 ()		<b>.</b>
δ CITV/STATE/ZIP		$\begin{array}{c} W_{1} \\ W_{1} \\ S_{1} \\ S_{2} \\$	Long Chron		
E-MAIL ADDRESS			,SSI ,SSI ,SS, ,SS, , ,SSI , ,SSI , , , ,		
PHONE # FAX#					
SAMPLEH'S SIGNATURE SAMPLE I.D. DATE TIME			000 N-EHN EON 2 Hd	/ / REMARKS	KS
11 10/H/01/1	Sed				
FOO95672 1 1252	522-	×			
FO 095673 4 1128	3	· · · · · · · · · · · · · · · · · · ·			
Marken Liter POOG					
FUCASS 15 10856		×			
FORGENTIO & 0942		×			
AUIREMENTS P.O Report: Method Bill urrogate, as	INVOICE INFORMATION# To:	Circle which metals are to be analyzed: Total Metals: AI As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Dissolved Metals: AI As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb	Mg Mn Mo Ni K Ag Na Mg Mn Mo Ni K Ag Na	Se Sr TI Sn V Zn F Se Sr TI Sn V Zn F	6H H
required		*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI	NORTHWEST O	(CIRCLE ONE)	
required Data Validation Report	TURNAROUND REQUIREMENTS 24 hr. 48 hr. 5 Dav	SPECIAL INSTRUCTIONS/COMMENTS: PLL (NJL NUN LENN	sos + otrs	NON anolysi	Ž
(includes all raw data)	Standard (10-15 working days) Provide FAX Results		$\sub$	Centro.	
V. EDD	Requested Report Date				
RELINQUISHED BY: Signature Kinch 6/5/09 1005 Kong Kinch Prine Ronkad	Bignature Bignature	RECEIVED BY: C 50 1 10.05 Date Mare Date Mare Date Time Firm	1.30 MM RE	Marcelved BY: 13	33
	and a second a second a second a second as a second as a s		ne na manana ang ang ang ang ang ang ang ang an	RCOC #1	06/03

	Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form	PC			
Cli	ient / Project: <u>City of Postland</u> Service Request K09 05065				
Red	ceived: $6.509$ Opened: $6.509$ By: $00$				
1.	Samples were received via? US Mail Fed Ex UPS DHL GH GS PDX Courier	Hand Delive	ered		
2.	Samples were received in: (circle) Cooler Box Envelope Other COUNCY COOLER	NA			
3.	Were <u>custody seals</u> on coolers? NA Y N If yes, how many and where?				
	If present, were custody seals intact? Y N If present, were they signed and dated?	Y <	N		
4.	Is shipper's air-bill filed? If not, record air-bill number:	NA Y	N		
5.	Temperature of cooler(s) upon receipt (°C):     3-1       Temperature Blank (°C):     N-P				
	Thermometer ID:				
6.	If applicable, list Chain of Custody Numbers:				
7.	Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other				
8.	Were custody papers properly filled out (ink, signed, etc.)?	NA Y	N		
9.	Did all bottles arrive in good condition (unbroken)? Indicate in the table below.	NA Y	N		
10.	Were all sample labels complete (i.e analysis, preservation, etc.)?	NA $(Y)$	N		
11.	11. Did all sample labels and tags agree with custody papers? Indicate in the table below				
12.	12. Were appropriate bottles/containers and volumes received for the tests indicated?				
13.	13. Were the pH-preserved bottles tested* received at the appropriate pH? Indicate in the table below				
14.	NA Y	N			
15.	Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?	NA Y	N		
16.	Was C12/Res negative?	VA Y	N		

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
	ana mangangan ata mangan ang ang ang ang ang ang ang ang an		

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	рН	Reagent	Volume added	Reagent Lot Number	Initials	Time
	- 16° - 7° 1° 1° 1° 1°									
*~										

\*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN). Additional Notes, Discrepancies, & Resolutions:\_\_\_\_\_



### Analytical Results

Client:	Portland, City of	Service Request:	K0905065
Project:	Portland Harbor Inli		
Sample Matrix:	Sludge, solid		

### **Total Solids**

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

Units: PERCENT Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
FO 095671	K0905065-001	06/04/2009	06/05/2009	06/10/2009	63.9	
FO 095672	K0905065-002	06/04/2009	06/05/2009	06/10/2009	61.7	

### QA/QC Report

Client: Project: Sample Matrix:	Portland, City of Portland Harbor Inli Sludge, solid			D: D	vice Request: ate Collected: ate Received: ate Analyzed:	K0905065 06/04/2009 06/05/2009 06/10/2009
	ä	Duplicate Sample Sum	mary			
		<b>Total Solids</b>				
Prep Method: Analysis Method: Test Notes:	NONE 160.3M				Units: Basis:	PERCENT Wet
Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
FO 095671	K0905065-001	63.9	63.3	63.6	<1	

### Organochlorine Pesticides EPA Method 8081 Sediments

Analytical Results

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

### Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

### **Organochlorine Pesticides**

Sample Name:	FO 095671	Units:	ug/Kg
Lab Code:	K0905065-001	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND U	Ò.79	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND U	0.79	0.18	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND U	0.79	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND U	0.79	0.074	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND U	0.79	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	0.54 J	0.79	0.16	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	ND U	0.79	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	0.19 JP	0.79	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	0.13 JP	0.79	0.063	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	0.15 JP	0.79	0.10	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND Ui	0.79	0.17	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	0.97	0.79	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND U	0.79	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND U	0.79	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	0.70 JP	0.79	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND U	0.79	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND U	0.79	0.11	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	0.46 JP	0.79	0.17	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND U	0.79	0.093	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND U	0.79	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND Ui	40	11	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	90	25-125	06/19/09	Acceptable
Decachlorobiphenyl	82	22-142	06/19/09	Acceptable

#### + Analyte Comments

gamma-Chlordane

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

Analytical Results

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

### Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

### **Organochlorine Pesticides**

Sample Name:	FO 095672	Units:	ug/Kg
Lab Code:	K0905065-002	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	0.81	0.11	1	06/09/09	06/19/09	KWG0904936	11010
beta-BHC	ND U	0.81	0.18	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND U	0.81	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND U	0.81	0.074	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND U	0.81	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND U	0.81	0.16	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	ND U	0.81	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND U	0.81	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND Ui	0.81	0.097	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND U	0.81	0.10	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND U	0.81	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND Ui	0.81	0.35	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND U	0.81	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND U	0.81	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND Ui	0.81	0.31	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND U	0.81	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND U	0.81	0.11	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND U	0.81	0.17	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND Ui	0.81	0.24	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND Ui	0.81	0.21	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND U	41	4.8	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	80	25-125	06/19/09	Acceptable	,
Decachlorobiphenyl	74	22-142	06/19/09	Acceptable	

#### + Analyte Comments

gamma-Chlordane

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

Analytical Results

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

### Service Request: K0905065 Date Collected: NA Date Received: NA

### **Organochlorine Pesticides**

Sample Name:	Method Blank	Units:	0 0
Lab Code:	KWG0904936-5	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8081A	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND U	0.50	0.18	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND U	0.50	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND U	0.50	0.074	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND U	0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND U	0.50	0.16	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	ND U	0.50	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND U	0.50	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND U	0.50	0.063	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND U	0.50	0.10	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND U	0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND U	0.50	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND U	0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND U	0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND U	0.50	0.17	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND U	0.50	0.093	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND U	0.50	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND U	25	4.8	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	82	25-125	06/19/09	Acceptable	
Decachlorobiphenyl	85	22-142	06/19/09	Acceptable	

#### † Analyte Comments

gamma-Chlordane

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

QA/QC Report

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

### Surrogate Recovery Summary Organochlorine Pesticides

Extraction Method:EPA 3541Analysis Method:8081A

Units: PERCENT Level: Low

Sample Name	Lab Code	<u>Sur1</u>	<u>Sur2</u>
FO 095671	K0905065-001	90	82
FO 095672	K0905065-002	80	74
Method Blank	KWG0904936-5	82	85
Lab Control Sample	KWG0904936-1	81	81
Duplicate Lab Control Sample	KWG0904936-2	85	86

### Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	25-125
Sur2 =	Decachlorobiphenyl	22-142

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Service Request: K0905065

QA/QC Report

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

# Service Request: K0905065 Date Extracted: 06/09/2009 Date Analyzed: 06/19/2009

### Lab Control Spike/Duplicate Lab Control Spike Summary Organochlorine Pesticides

Extraction Method:EPA 3541Analysis Method:8081A							В	asis: evel:	ug/Kg Dry Low KWG0904936
	KW	Control Samp /G0904936-1 Control Spik		. KW	Lab Control 3 /G0904936-2 : Lab Control	-	%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPI	) 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.

19

### Organochlorine Pesticides EPA Method 8081 Waters

Analytical Results

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

### Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

### **Organochlorine Pesticides**

Sample Name:	FO 095673	Units:	0
Lab Code:	K0905065-003	Basis:	
Extraction Method: Analysis Method:	EPA 3535 8081A	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
beta-BHC	ND U	0.50	0.41	1	06/10/09	06/16/09	KWG0905002	
gamma-BHC (Lindane)	ND U	0.50	0.47	1	06/10/09	06/16/09	KWG0905002	
delta-BHC	ND U	0.50	0.14	1	06/10/09	06/16/09	KWG0905002	
Heptachlor	ND U	0.50	0.18	1	06/10/09	06/16/09	KWG0905002	
Aldrin	ND U	0.50	0.11	1	06/10/09	06/16/09	KWG0905002	
Heptachlor Epoxide	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
gamma-Chlordane†	ND U	0.50	0.31	1	06/10/09	06/16/09	KWG0905002	
Endosulfan I	ND U	0.50	0.25	1	06/10/09	06/16/09	KWG0905002	
alpha-Chlordane	ND U	0.50	0.27	1	06/10/09	06/16/09	KWG0905002	
Dieldrin	ND U	0.50	0.37	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDE	ND Ui	1.9	1.9	1	06/10/09	06/16/09	KWG0905002	
Endrin	ND U	0.50	0.49	1	06/10/09	06/16/09	KWG0905002	
Endosulfan II	0.96	0.50	0.35	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDD	ND Ui	1.8	1.8	1	06/10/09	06/16/09	KWG0905002	
Endrin Aldehyde	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
Endosulfan Sulfate	ND U	0.50	0.28	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDT	ND Ui	0.72	0.72	1	06/10/09	06/16/09	KWG0905002	
Endrin Ketone	ND U	0.50	0.32	1	06/10/09	06/16/09	KWG0905002	
Methoxychlor	ND U	0.50	0.28	1	06/10/09	06/16/09	KWG0905002	
Toxaphene	ND Ui	54	54	1	06/10/09	06/16/09	KWG0905002	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	57	10-121	06/16/09	Acceptable
Decachlorobiphenyl	74	17-150	06/16/09	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.

Analytical Results

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

### Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

### **Organochlorine Pesticides**

Sample Name: Lab Code:	FO 095674 K0905065-004			ng/L NA
Extraction Method: Analysis Method:	EPA 3535 8081A	Le	vel:	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	06/10/09	06/16/09	KWG0905002	
beta-BHC	ND U	0.52	0.43	1	06/10/09	06/16/09	KWG0905002	
gamma-BHC (Lindane)	ND U	0.52	0.49	1	06/10/09	06/16/09	KWG0905002	
delta-BHC	ND Ui	0.52	0.19	1	06/10/09	06/16/09	KWG0905002	
Heptachlor	ND U	0.52	0.19	1	06/10/09	06/16/09	KWG0905002	
Aldrin	ND U	0.52	0.12	1	06/10/09	06/16/09	KWG0905002	
Heptachlor Epoxide	ND U	0.52	0.22	1	06/10/09	06/16/09	KWG0905002	
gamma-Chlordane†	ND U	0.52	0.32	1	06/10/09	06/16/09	KWG0905002	
Endosulfan I	ND U	0.52	0.26	1	06/10/09	06/16/09	KWG0905002	
alpha-Chlordane	ND U	0.52	0.28	1	06/10/09	06/16/09	KWG0905002	
Dieldrin	ND U	0.52	0.38	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDE	ND Ui	1.7	1.7	1	06/10/09	06/16/09	KWG0905002	
Endrin	ND U	0.52	0.51	1	06/10/09	06/16/09	KWG0905002	
Endosulfan II	ND Ui	0.62	0.62	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDD	ND Ui	1.8	1.8	1	06/10/09	06/16/09	KWG0905002	
Endrin Aldehyde	ND U	0.52	0.22	1	06/10/09	06/16/09	KWG0905002	
Endosulfan Sulfate	ND U	0.52	0.29	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDT	ND U	0.52	0.18	1	06/10/09	06/16/09	KWG0905002	
Endrin Ketone	ND U	0.52	0.33	1	06/10/09	06/16/09	KWG0905002	
Methoxychlor	ND U	0.52	0.29	1	06/10/09	06/16/09	KWG0905002	
Toxaphene	ND Ui	44	44	1	06/10/09	06/16/09	KWG0905002	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	55	10-121	06/16/09	Acceptable	
Decachlorobiphenyl	72	17-150	06/16/09	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.

Analytical Results

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

### Organochlorine Pesticides

Sample Name:	FO 095675	Units:	0
Lab Code:	K0905065-005	Basis:	
Extraction Method: Analysis Method:	EPA 3535 8081A	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
beta-BHC	ND U	0.50	0.41	1	06/10/09	06/16/09	KWG0905002	
gamma-BHC (Lindane)	ND U	0.50	0.47	1	06/10/09	06/16/09	KWG0905002	
delta-BHC	ND U	0.50	0.14	1	06/10/09	06/16/09	KWG0905002	
Heptachlor	ND U	0.50	0.18	1	06/10/09	06/16/09	KWG0905002	
Aldrin	ND U	0.50	0.11	1	06/10/09	06/16/09	KWG0905002	
Heptachlor Epoxide	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
gamma-Chlordane†	ND U	0.50	0.31	1	06/10/09	06/16/09	KWG0905002	
Endosulfan I	ND U	0.50	0.25	1	06/10/09	06/16/09	KWG0905002	
alpha-Chlordane	ND U	0.50	0.27	1	06/10/09	06/16/09	KWG0905002	
Dieldrin	ND U	0.50	0.37	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDE	ND Ui	1.2	1.2	1	06/10/09	06/16/09	KWG0905002	
Endrin	ND U	0.50	0.49	1	06/10/09	06/16/09	KWG0905002	
Endosulfan II	0.88 P	0.50	0.35	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDD	ND Ui	1.8	1.8	1	06/10/09	06/16/09	KWG0905002	
Endrin Aldehyde	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
Endosulfan Sulfate	ND U	0.50	0.28	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDT	ND U	0.50	0.17	1	06/10/09	06/16/09	KWG0905002	
Endrin Ketone	ND U	0.50	0.32	1	06/10/09	06/16/09	KWG0905002	
Methoxychlor	ND U	0.50	0.28	1	06/10/09	06/16/09	KWG0905002	
Toxaphene	ND Ui	94	94	. 1	06/10/09	06/16/09	KWG0905002	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	52	10-121	06/16/09	Acceptable	
Decachlorobiphenyl	71	17-150	06/16/09	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:

1 of 1

 Service Request:
 K0905065

 Date Collected:
 06/04/2009

 Date Received:
 06/05/2009

Analytical Results

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

### **Organochlorine Pesticides**

Sample Name:	FO 095676	Units:	U
Lab Code:	K0905065-006	Basis:	
Extraction Method: Analysis Method:	EPA 3535 8081A	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	06/10/09	06/16/09	KWG0905002	
beta-BHC	ND U	0.52	0.43	1	06/10/09	06/16/09	KWG0905002	
gamma-BHC (Lindane)	ND U	0.52	0.49	1	06/10/09	06/16/09	KWG0905002	
delta-BHC	ND U	0.52	0.15	1	06/10/09	06/16/09	KWG0905002	
Heptachlor	ND U	0.52	0.19	1	06/10/09	06/16/09	KWG0905002	
Aldrin	ND Ui	0.52	0.52	1	06/10/09	06/16/09	KWG0905002	
Heptachlor Epoxide	ND U	0.52	0.22	1	06/10/09	06/16/09	KWG0905002	
gamma-Chlordane†	ND U	0.52	0.32	1	06/10/09	06/16/09	KWG0905002	
Endosulfan I	ND Ui	1.2	1.2	1	06/10/09	06/16/09	KWG0905002	
alpha-Chlordane	ND U	0.52	0.28	1	06/10/09	06/16/09	KWG0905002	
Dieldrin	ND U	0.52	0.38	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDE	ND Ui	1.6	1.6	1	06/10/09	06/16/09	KWG0905002	
Endrin	ND U	0.52	0.51	1	06/10/09	06/16/09	KWG0905002	
Endosulfan II	0.59	0.52	0.36	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDD	ND Ui	2.3	2.3	1	06/10/09	06/16/09	KWG0905002	
Endrin Aldehyde	ND U	0.52	0.22	1	06/10/09	06/16/09	KWG0905002	
Endosulfan Sulfate	ND U	0.52	0.29	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDT	ND U	0.52	0.18	1	06/10/09	06/16/09	KWG0905002	
Endrin Ketone	ND U	0.52	0.33	1	06/10/09	06/16/09	KWG0905002	
Methoxychlor	ND U	0.52	0.29	1	06/10/09	06/16/09	KWG0905002	
Toxaphene	ND Ui	180	180	1	06/10/09	06/16/09	KWG0905002	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
Tetrachloro-m-xylene	49	10-121	06/16/09	Acceptable	
Decachlorobiphenyl	68	17-150	06/16/09	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:

 Service Request:
 K0905065

 Date Collected:
 06/04/2009

 Date Received:
 06/05/2009

Analytical Results

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

### **Organochlorine Pesticides**

Sample Name:	Method Blank	Units:	U
Lab Code:	KWG0905002-13	Basis:	
Extraction Method: Analysis Method:	EPA 3535 8081A	Level:	Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
alpha-BHC	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
beta-BHC	ND U	0.50	0.41	1	06/10/09	06/16/09	KWG0905002	
gamma-BHC (Lindane)	ND U	0.50	0.47	1	06/10/09	06/16/09	KWG0905002	
delta-BHC	ND U	0.50	0.14	1	06/10/09	06/16/09	KWG0905002	
Heptachlor	ND U	0.50	0.18	1	06/10/09	06/16/09	KWG0905002	
Aldrin	ND U	0.50	0.11	1	06/10/09	06/16/09	KWG0905002	
Heptachlor Epoxide	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
gamma-Chlordane†	ND U	0.50	0.31	1	06/10/09	06/16/09	KWG0905002	
Endosulfan I	ND Ui	0.50	0.40	1	06/10/09	06/16/09	KWG0905002	
alpha-Chlordane	ND U	0.50	0.27	1	06/10/09	06/16/09	KWG0905002	
Dieldrin	ND U	0.50	0.37	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDE	ND Ui	1.5	1.5	1	06/10/09	06/16/09	KWG0905002	
Endrin	ND U	0.50	0.49	1	06/10/09	06/16/09	KWG0905002	
Endosulfan II	ND Ui	0.65	0.65	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDD	ND Ui	2.1	2.1	1	06/10/09	06/16/09	KWG0905002	
Endrin Aldehyde	ND U	0.50	0.21	1	06/10/09	06/16/09	KWG0905002	
Endosulfan Sulfate	ND U	0.50	0.28	1	06/10/09	06/16/09	KWG0905002	
4,4'-DDT	ND U	0.50	0.17	1	06/10/09	06/16/09	KWG0905002	
Endrin Ketone	ND Ui	0.53	0.53	1	06/10/09	06/16/09	KWG0905002	
Methoxychlor	ND U	0.50	0.28	1	06/10/09	06/16/09	KWG0905002	
Toxaphene	ND Ui	25	23	1	06/10/09	06/16/09	KWG0905002	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	56	10-121	06/16/09	Acceptable
Decachlorobiphenyl	79	17-150	06/16/09	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:

Service Request: K0905065 Date Collected: NA Date Received: NA

QA/QC Report

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

### Service Request: K0905065

### Surrogate Recovery Summary Organochlorine Pesticides

Extraction Method:EPA 3535Analysis Method:8081A

Units: PERCENT Level: Low

Sample Name	Lab Code	<u>Sur1</u>	<u>Sur2</u>
FO 095673	K0905065-003	57	74
FO 095674	K0905065-004	55	72
FO 095675	K0905065-005	52	71
FO 095676	K0905065-006	49	68
Method Blank	KWG0905002-13	56	79
Lab Control Sample	KWG0905002-1	42	78
Duplicate Lab Control Sample	KWG0905002-2	39	77

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.

QA/QC Report

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

- - -

# Service Request: K0905065 Date Extracted: 06/10/2009 Date Analyzed: 06/16/2009

### Lab Control Spike/Duplicate Lab Control Spike Summary Organochlorine Pesticides

Extraction Method:EPA 3535Analysis Method:8081A							В	asis: evel:	ng/L NA Low KWG0905002
	KW	Control Samp /G0905002-1 Control Spik		KW	Lab Control /G0905002-2 e Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	) Limit
alpha-BHC	7.91	10.0	79	8.20	10.0	82	43-127	4	30
beta-BHC	8.78	10.0	88	8.66	10.0	87	41-129	1	30
gamma-BHC (Lindane)	8.07	10.0	81	8.32	10.0	83	42-128	3	30
delta-BHC	8.49	10.0	85	8.62	10.0	86	47-141	1	30
Heptachlor	7.73	10.0	77	7.55	10.0	76	34-126	2	30
Aldrin	6.01	10.0	60	6.18	10.0	62	10-125	3	30
Heptachlor Epoxide	7,98	10.0	80	7.52	10.0	75	45-124	6	30
gamma-Chlordane	8.16	10.0	82	8.53	10.0	85	48-119	4	30
Endosulfan I	8.02	10.0	80	9.01	10.0	90	30-115	12	30
alpha-Chlordane	8.07	10.0	81	8.57	10.0	86	48-119	6	30
Dieldrin	8.43	10.0	84	8.71	10.0	87	50-120	3	30
4,4'-DDE	8.83	10.0	88	11.7	10.0	117	36-137	28	30
Endrin	9.44	10.0	94	9.22	10.0	92	53-132	2	30
Endosulfan II	9.41	10.0	94	9.12	10.0	91	32-123	3	30
4,4'-DDD	8.94	10.0	89	12.1	10.0	121	38-140	30	30
Endrin Aldehyde	7.06	10.0	71	7.24	10.0	72	30-114	3	30
Endosulfan Sulfate	8.41	10.0	84	8.67	10.0	87	46-120	3	30
4,4' <b>-</b> DDT	9.57	10.0	96	9.83	10.0	98	45-146	3	30
Endrin Ketone	8.35	10.0	83	8.46	10.0	85	45-127	1	30
Methoxychlor	10.2	10.0	102	10.6	10.0	106	48-140	3	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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

Analytical Results

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

### Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

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

Sample Name:	FO 095671	Units:	ug/Kg
Lab Code:	K0905065-001	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

Analyte Name	Result	0	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	7.9	1.9	1	06/08/09	06/15/09	KWG0904879	
Phenol	5.0		24	2.0	1	06/08/09	06/15/09	KWG0904879	
2-Chlorophenol	ND	U	7.9	2.0	1	06/08/09	06/15/09	KWG0904879	
1,3-Dichlorobenzene	ND	U	7.9	3.0	1	06/08/09	06/15/09	KWG0904879	
1,4-Dichlorobenzene	ND	U	7.9	2.9	1	06/08/09	06/15/09	KWG0904879	
1,2-Dichlorobenzene	ND	U	7.9	2.9	1	06/08/09	06/15/09	KWG0904879	
Benzyl Alcohol	ND		16	2.1	1	06/08/09	06/15/09	KWG0904879	
Bis(2-chloroisopropyl) Ether	ND	U	7.9	2.6	1	06/08/09	06/15/09	KWG0904879	
2-Methylphenol	ND	U	7.9	1.5	1	06/0 <b>8</b> /09	06/15/09	KWG0904879	
Hexachloroethane	ND	U	7.9	3.1	1	06/08/09	06/15/09	KWG0904879	
N-Nitrosodi-n-propylamine	ND	U	7.9	2.4	1	06/08/09	06/15/09	KWG0904879	
4-Methylphenol†	ND	U	7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
Nitrobenzene	ND		7.9	2.2	1	06/08/09	06/15/09	KWG0904879	
Isophorone	ND		7.9	1.0	1	06/08/09	06/15/09	KWG0904879	
2-Nitrophenol	ND	U	7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
2,4-Dimethylphenol	ND		40	5.5	1	06/08/09	06/15/09	KWG0904879	
Bis(2-chloroethoxy)methane	ND	U	7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
2,4-Dichlorophenol	ND	U	7.9	1.0	1	06/08/09	06/15/09	KWG0904879	
Benzoic Acid	99	J	160	96	1	06/08/09	06/15/09	KWG0904879	
1,2,4-Trichlorobenzene	ND	U	7.9	2.6	1	06/08/09	06/15/09	KWG0904879	
Naphthalene	3.3	J	7.9	2.3	1	06/08/09	06/15/09	KWG0904879	
4-Chloroaniline	ND		7.9	1.9	1	06/08/09	06/15/09	KWG0904879	
Hexachlorobutadiene	ND	U	7.9	2.5	1	06/08/09	06/15/09	KWG0904879	
4-Chloro-3-methylphenol	ND	U	7.9	1.4	1	06/08/09	06/15/09	KWG0904879	
2-Methylnaphthalene	ND	U	7.9	2.2	1	06/08/09	06/15/09	KWG0904879	
Hexachlorocyclopentadiene	ND	U	40	29	1	06/08/09	06/15/09	KWG0904879	
2,4,6-Trichlorophenol	ND	U	7.9	1.4	1	06/08/09	06/15/09	KWG0904879	
2,4,5-Trichlorophenol		U	7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
2-Chloronaphthalene		U	7.9	1.6	1	06/08/09	06/15/09	KWG0904879	
2-Nitroaniline	ND	U	16	3.2	1	06/08/09	06/15/09	KWG0904879	
Acenaphthylene	3.7		7.9	1.2	1	06/08/09	06/15/09	KWG0904879	
Dimethyl Phthalate	ND		7.9	1.0	1	06/08/09	06/15/09	KWG0904879	
2,6-Dinitrotoluene	ND	U	7.9	2.0	1	06/08/09	06/15/09	KWG0904879	

**Comments:** 

Form 1A - Organic

Analytical Results

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

# Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

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

Sample Name:	FO 095671	Units:	00
Lab Code:	K0905065-001	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND	U	7.9	1.4	1	06/08/09	06/15/09	KWG0904879	
3-Nitroaniline	ND		16	2.5	1	06/08/09	06/15/09	KWG0904879	
2,4-Dinitrophenol	ND	U	160	17	1	06/08/09	06/15/09	KWG0904879	
Dibenzofuran	ND	U	7.9	1.2	1	06/08/09	06/15/09	KWG0904879	
4-Nitrophenol	ND	U	79	18	1	06/08/09	06/15/09	KWG0904879	
2,4-Dinitrotoluene	ND	U	7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
Fluorene	ND	U	7.9	1.1	1	06/08/09	06/15/09	KWG0904879	
4-Chlorophenyl Phenyl Ether	ND	U	7.9	1.4	1	06/08/09	06/15/09	KWG0904879	
Diethyl Phthalate	ND	U	7.9	1.3	1	06/08/09	06/15/09	KWG0904879	
4-Nitroaniline	ND	U	16	1.8	1	06/08/09	06/15/09	KWG0904879	
2-Methyl-4,6-dinitrophenol	ND		79	1.4	1	06/08/09	06/15/09	KWG0904879	
N-Nitrosodiphenylamine	ND	U	7.9	1.6	1	06/0 <b>8</b> /09	06/15/09	KWG0904879	
4-Bromophenyl Phenyl Ether	ND	U	7.9	1.6	1	06/08/09	06/15/09	KWG0904879	
Hexachlorobenzene	ND	U	7.9	1.2	1	06/08/09	06/15/09	KWG0904879	
Pentachlorophenol	ND	U	79	20	1	06/0 <b>8</b> /09	06/15/09	KWG0904879	
Phenanthrene	23		7.9	1.4	1	06/08/09	06/15/09	KWG0904879	
Anthracene	8.8		7.9	1.6	1	06/08/09	06/15/09	KWG0904879	
Di-n-butyl Phthalate	ND	U	16	7.9	1	06/08/09	06/15/09	KWG0904879	
Fluoranthene	46		7.9	1.6	- 1	06/08/09	06/15/09	KWG0904879	
Pyrene	52		7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
Butyl Benzyl Phthalate	ND	U	7.9	3.2	1	06/0 <b>8</b> /09	06/15/09	KWG0904879	
3,3'-Dichlorobenzidine	ND	U	79	3.7	1	06/08/09	06/15/09	KWG0904879	
Benz(a)anthracene	. 27		7.9	1.7	1	06/08/09	06/15/09	KWG0904879	
Chrysene	31		7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
Bis(2-ethylhexyl) Phthalate	43	J	79	7.0	1	06/08/09	06/15/09	KWG0904879	
Di-n-octyl Phthalate	ND	U	7.9	1.7	1	06/08/09	06/15/09	KWG0904879	
Benzo(b)fluoranthene	27		7.9	1.2	1	06/08/09	06/15/09	KWG0904879	
Benzo(k)fluoranthene	11		7.9	1.4	1	06/08/09	06/15/09	KWG0904879	
Benzo(a)pyrene	26		7.9	1.7	1	06/08/09	06/15/09	KWG0904879	
Indeno(1,2,3-cd)pyrene	15		7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
Dibenz(a,h)anthracene	4.1	J	7.9	1.5	1	06/08/09	06/15/09	KWG0904879	
Benzo(g,h,i)perylene	17		7.9	1.5	1	06/08/09	06/15/09	KWG0904879	

Comments:

30

Analytical Results

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

 Service Request:
 K0905065

 Date Collected:
 06/04/2009

 Date Received:
 06/05/2009

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

 Sample Name:
 FO 095671

 Lab Code:
 K0905065-001

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2-Fluorophenol	20	11-80	06/15/09	Acceptable	<b></b>
Phenol-d6	37	20-86	06/15/09	Acceptable	
Nitrobenzene-d5	60	27-91	06/15/09	Acceptable	
2-Fluorobiphenyl	56	25-97	06/15/09	Acceptable	
2,4,6-Tribromophenol	36	10-119	06/15/09	Acceptable	
Terphenyl-d14	77	33-129	06/15/09	Acceptable	

+ Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Analytical Results

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

# Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

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

Sample Name:	FO 095672	Units:	00
Lab Code:	K0905065-002	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result		MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Bis(2-chloroethyl) Ether	ND	U	9.9	1.9	1	06/18/09	06/24/09	KWG0905322	
Phenol	9.4		30	2.0	1	06/18/09	06/24/09	KWG0905322	
2-Chlorophenol	ND	U	9.9	2.0	1	06/18/09	06/24/09	KWG0905322	
1,3-Dichlorobenzene	ND	U	9.9	3.0	1	06/18/09	06/24/09	KWG0905322	
1,4-Dichlorobenzene	ND	U	9.9	2.9	1	06/18/09	06/24/09	KWG0905322	
1,2-Dichlorobenzene	ND	U	9.9	2.9	1	06/18/09	06/24/09	KWG0905322	
Benzyl Alcohol	ND	U	20	2.1	1	06/18/09	06/24/09	KWG0905322	
Bis(2-chloroisopropyl) Ether	ND	U	9.9	2.6	1	06/18/09	06/24/09	KWG0905322	
2-Methylphenol	ND	U	9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
Hexachloroethane	ND	U	9.9	3.1	1	06/18/09	06/24/09	KWG0905322	
N-Nitrosodi-n-propylamine	ND	U	9.9	2.4	1	06/18/09	06/24/09	KWG0905322	
4-Methylphenol†	ND	U	9.9	1.5	1	06/1 <b>8</b> /09	06/24/09	KWG0905322	
Nitrobenzene	ND	U	9.9	2.2	1	06/18/09	06/24/09	KWG0905322	
Isophorone	ND	U	9.9	1.0	1	06/18/09	06/24/09	KWG0905322	
2-Nitrophenol	ND	U	9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
2,4-Dimethylphenol	ND	U	50	5.5	1	06/18/09	06/24/09	KWG0905322	
Bis(2-chloroethoxy)methane	ND	U	9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
2,4-Dichlorophenol	ND	U	9.9	1.0	1	06/18/09	06/24/09	KWG0905322	
Benzoic Acid	120	J	200	96	1	06/18/09	06/24/09	KWG0905322	
1,2,4-Trichlorobenzene	ND	U	9.9	2.6	1	06/18/09	06/24/09	KWG0905322	
Naphthalene	ND	U	9.9	2.3	1	06/18/09	06/24/09	KWG0905322	
4-Chloroaniline	ND	U	9.9	1.9	1	06/18/09	06/24/09	KWG0905322	
Hexachlorobutadiene	ND	U	9.9	2.5	1	06/18/09	06/24/09	KWG0905322	
4-Chloro-3-methylphenol	ND	U	9.9	1.4	1	06/18/09	06/24/09	KWG0905322	
2-Methylnaphthalene	ND		9.9	2.2	1	06/18/09	06/24/09	KWG0905322	
Hexachlorocyclopentadiene	ND		50	29	1	06/18/09	06/24/09	KWG0905322	
2,4,6-Trichlorophenol	ND	U	9.9	1.4	1	06/18/09	06/24/09	KWG0905322	
2,4,5-Trichlorophenol	ND	U	9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
2-Chloronaphthalene	ND	U	9.9	1.6	1	06/18/09	06/24/09	KWG0905322	
2-Nitroaniline	ND	U	20	3.2	1	06/18/09	06/24/09	KWG0905322	
Acenaphthylene	2.3		9.9	1.2	1	06/18/09	06/24/09	KWG0905322	
Dimethyl Phthalate	1.5		9.9	1.0	1	06/18/09	06/24/09	KWG0905322	
2,6-Dinitrotoluene	ND	U	9.9	2.0	1	06/18/09	06/24/09	KWG0905322	

**Comments:** 

32

Analytical Results

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

# Service Request: K0905065 Date Collected: 06/04/2009 Date Received: 06/05/2009

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

Sample Name:	FO 095672	Units:	0 0
Lab Code:	K0905065-002	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND	U	9.9	1.4	1	06/18/09	06/24/09	KWG0905322	
3-Nitroaniline	ND		20	2.5	1	06/18/09	06/24/09	KWG0905322	
2,4-Dinitrophenol	ND	U	200	17	1	06/18/09	06/24/09	KWG0905322	
Dibenzofuran	ND	U	9.9	1.2	1	06/18/09	06/24/09	KWG0905322	
4-Nitrophenol	ND	U	99	18	1	06/18/09	06/24/09	KWG0905322	
2,4-Dinitrotoluene	ND	U	9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
Fluorene	1.5	J	9.9	1.1	1	06/18/09	06/24/09	KWG0905322	
4-Chlorophenyl Phenyl Ether	ND	U	9.9	1.4	1	06/18/09	06/24/09	KWG0905322	
Diethyl Phthalate	ND	U	9.9	1.3	1	06/18/09	06/24/09	KWG0905322	
4-Nitroaniline	ND	U	20	1.8	1	06/18/09	06/24/09	KWG0905322	
2-Methyl-4,6-dinitrophenol	ND		99	1.4	1	06/18/09	06/24/09	KWG0905322	
N-Nitrosodiphenylamine	ND	U	9.9	1.6	1	06/1 <b>8</b> /09	06/24/09	KWG0905322	
4-Bromophenyl Phenyl Ether	ND		9.9	1.6	1	06/18/09	06/24/09	KWG0905322	
Hexachlorobenzene	ND		9.9	1.2	1	06/18/09	06/24/09	KWG0905322	
Pentachlorophenol	ND	U	99	20	1	06/18/09	06/24/09	KWG0905322	
Phenanthrene	13		9.9	1.4	1	06/18/09	06/24/09	KWG0905322	
Anthracene	2.4	J	9.9	1.6	1	06/18/09	06/24/09	KWG0905322	
Di-n-butyl Phthalate	ND	U	20	7.9	1	06/18/09	06/24/09	KWG0905322	
Fluoranthene	17		9.9	1.6	1	06/18/09	06/24/09	KWG0905322	
Pyrene	26		9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
Butyl Benzyl Phthalate	ND	U	9.9	3.2	1	06/18/09	06/24/09	KWG0905322	
3,3'-Dichlorobenzidine	ND	U	99	3.7	1	06/18/09	06/24/09	KWG0905322	
Benz(a)anthracene	7.2	J	9.9	1.7	1	06/18/09	06/24/09	KWG0905322	
Chrysene	12		9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
Bis(2-ethylhexyl) Phthalate	110		99	7.0	1	06/18/09	06/24/09	KWG0905322	
Di-n-octyl Phthalate	ND	U	9.9	1.7	1	06/18/09	06/24/09	KWG0905322	
Benzo(b)fluoranthene	12		9.9	1.2	1	06/18/09	06/24/09	KWG0905322	
Benzo(k)fluoranthene	4.0	J	9.9	1.4	1	06/18/09	06/24/09	KWG0905322	
Benzo(a)pyrene	9.4	J	9.9	1.7	1	06/18/09	06/24/09	KWG0905322	
Indeno(1,2,3-cd)pyrene	11		9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
Dibenz(a,h)anthracene	ND	U	9.9	1.5	1	06/18/09	06/24/09	KWG0905322	
Benzo(g,h,i)perylene	12		9.9	1.5	1	06/18/09	06/24/09	KWG0905322	

**Comments:** 

Analytical Results

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

 Service Request:
 K0905065

 Date Collected:
 06/04/2009

 Date Received:
 06/05/2009

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

 Sample Name:
 FO 095672

 Lab Code:
 K0905065-002

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2-Fluorophenol	18	11-80	06/24/09	Acceptable	
Phenol-d6	34	20-86	06/24/09	Acceptable	
Nitrobenzene-d5	67	27-91	06/24/09	Acceptable	
2-Fluorobiphenyl	63	25-97	06/24/09	Acceptable	
2,4,6-Tribromophenol	46	10-119	06/24/09	Acceptable	
Terphenyl-d14	104	33-129	06/24/09	Acceptable	

+ Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Inline Samp
Sample Matrix:	Misc. solid

### Service Request: K0905065 Date Collected: NA Date Received: NA

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

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0904879-5	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result		MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Bis(2-chloroethyl) Ether	ND		5.0	1.9	1	06/08/09	06/12/09	KWG0904879	
Phenol	2.6		15	2.0	1	06/08/09	06/12/09	KWG0904879	
2-Chlorophenol	ND	U	5.0	2.0	1	06/08/09	06/12/09	KWG0904879	
1,3-Dichlorobenzene	ND	U	5.0	3.0	1	06/08/09	06/12/09	KWG0904879	
1,4-Dichlorobenzene	ND	U	5.0	2.9	1	06/08/09	06/12/09	KWG0904879	
1,2-Dichlorobenzene	ND	U	5.0	2.9	1	06/08/09	06/12/09	KWG0904879	
Benzyl Alcohol	ND	U	10	2.1	1	06/08/09	06/12/09	KWG0904879	
Bis(2-chloroisopropyl) Ether	ND	U	5.0	2.6	1	06/08/09	06/12/09	KWG0904879	
2-Methylphenol	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
Hexachloroethane	ND	U	5.0	3.1	1	06/08/09	06/12/09	KWG0904879	
N-Nitrosodi-n-propylamine	ND	U	5.0	2.4	1	06/08/09	06/12/09	KWG0904879	
4-Methylphenol <sup>†</sup>	ND	U	5.0	1.5	1	06/0 <b>8</b> /09	06/12/09	KWG0904879	
Nitrobenzene	ND	U	5.0	2.2	1	06/08/09	06/12/09	KWG0904879	
Isophorone	ND	U	5.0	1.0	1	06/08/09	06/12/09	KWG0904879	
2-Nitrophenol	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
2,4-Dimethylphenol	ND	U	25	5.5	1	06/08/09	06/12/09	KWG0904879	
Bis(2-chloroethoxy)methane	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
2,4-Dichlorophenol	ND	U	5.0	1.0	1	06/08/09	06/12/09	KWG0904879	
Benzoic Acid	ND	U	100	96	1	06/08/09	06/12/09	KWG0904879	
1,2,4-Trichlorobenzene	ND	U	5.0	2.6	1	06/08/09	06/12/09	KWG0904879	
Naphthalene	ND	U	5.0	2.3	1	06/08/09	06/12/09	KWG0904879	
4-Chloroaniline	ND	U	5.0	1.9	1	06/08/09	06/12/09	KWG0904879	
Hexachlorobutadiene		U	5.0	2.5	1	06/08/09	06/12/09	KWG0904879	
4-Chloro-3-methylphenol	ND	U	5.0	1.4	1	06/08/09	06/12/09	KWG0904879	
2-Methylnaphthalene	ND	U	5.0	2.2	1	06/08/09	06/12/09	KWG0904879	
Hexachlorocyclopentadiene	ND	U	29	29	1	06/08/09	06/12/09	KWG0904879	
2,4,6-Trichlorophenol	ND	U	5.0	1.4	1	06/08/09	06/12/09	KWG0904879	
2,4,5-Trichlorophenol	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
2-Chloronaphthalene	ND		5.0	1.6	1	06/08/09	06/12/09	KWG0904879	
2-Nitroaniline	ND	U	10	3.2	1	06/08/09	06/12/09	KWG0904879	
Acenaphthylene	ND		5.0	1.2	1	06/08/09	06/12/09	KWG0904879	
Dimethyl Phthalate	ND		5.0	1.0	1	06/08/09	06/12/09	KWG0904879	
2,6-Dinitrotoluene	ND	U	5.0	2.0	1	06/08/09	06/12/09	KWG0904879	

#### **Comments:**

35

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Inline Samp
Sample Matrix:	Misc. solid

### Service Request: K0905065 Date Collected: NA Date Received: NA

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

Sample Name:	Method Blank	Units: ug/Kg
Lab Code:	KWG0904879-5	Basis: Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level: Low

					Dilution	Date	Date	Extraction	
Analyte Name	Result	Q	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
Acenaphthene	ND		5.0	1.4	.1	06/08/09	06/12/09	KWG0904879	
3-Nitroaniline	ND		10	2.5	1	06/08/09	06/12/09	KWG0904879	
2,4-Dinitrophenol	ND	U	100	17	1	06/08/09	06/12/09	KWG0904879	
Dibenzofuran	ND	U	5.0	1.2	1	06/08/09	06/12/09	KWG0904879	
4-Nitrophenol	ND	U	50	18	1	06/08/09	06/12/09	KWG0904879	
2,4-Dinitrotoluene	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
Fluorene	ND	U	5.0	1.1	1	06/08/09	06/12/09	KWG0904879	
4-Chlorophenyl Phenyl Ether	ND	U	5.0	1.4	1	06/08/09	06/12/09	KWG0904879	
Diethyl Phthalate	ND	U	5.0	1.3	1	06/08/09	06/12/09	KWG0904879	
4-Nitroaniline	ND	U	10	1.8	1	06/08/09	06/12/09	KWG0904879	
2-Methyl-4,6-dinitrophenol	ND	U	50	1.4	1	06/08/09	06/12/09	KWG0904879	
N-Nitrosodiphenylamine	ND	U	5.0	1.6	1	06/0 <b>8</b> /09	06/12/09	KWG0904879	
4-Bromophenyl Phenyl Ether	ND	U	5.0	1.6	1	06/08/09	06/12/09	KWG0904879	·····
Hexachlorobenzene	ND		5.0	1.2	1	06/08/09	06/12/09	KWG0904879	
Pentachlorophenol	ND	U	50	20	1	06/08/09	06/12/09	KWG0904879	
Phenanthrene	ND		5.0	1.4	1	06/08/09	06/12/09	KWG0904879	
Anthracene	ND		5.0	1.6	1	06/08/09	06/12/09	KWG0904879	
Di-n-butyl Phthalate	ND	U	10	7.9	1	06/0 <b>8</b> /09	06/12/09	KWG0904879	
Fluoranthene	ND		5.0	1.6	1	06/08/09	06/12/09	KWG0904879	
Pyrene	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
Butyl Benzyl Phthalate	ND	U	5.0	3.2	1	06/0 <b>8</b> /09	06/12/09	KWG0904879	
3,3'-Dichlorobenzidine	ND	U	50	3.7	1	06/08/09	06/12/09	KWG0904879	
Benz(a)anthracene	ND	U	5.0	1.7	1	06/08/09	06/12/09	KWG0904879	
Chrysene	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
Bis(2-ethylhexyl) Phthalate	ND	U	50	7.0	1	06/08/09	06/12/09	KWG0904879	
Di-n-octyl Phthalate	ND	U	5.0	1.7	1	06/08/09	06/12/09	KWG0904879	
Benzo(b)fluoranthene	ND	U	5.0	1.2	1	06/08/09	06/12/09	KWG0904879	
Benzo(k)fluoranthene	ND	U	5.0	1.4	1	06/08/09	06/12/09	KWG0904879	
Benzo(a)pyrene	ND	U	5.0	1.7	1	06/08/09	06/12/09	KWG0904879	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
Dibenz(a,h)anthracene	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	
Benzo(g,h,i)perylene	ND	U	5.0	1.5	1	06/08/09	06/12/09	KWG0904879	

Form 1A - Organic

Analytical Results

Client:	Portland, City of
Project:	Portland Harbor Inline Samp
Sample Matrix:	Misc. solid

Service Request: K0905065 Date Collected: NA Date Received: NA

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

Sample Name:	Method Blank
Lab Code:	KWG0904879-5

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2-Fluorophenol	50	11-80	06/12/09	Acceptable	<u> </u>
Phenol-d6	52	20-86	06/12/09	Acceptable	
Nitrobenzene-d5	48	27-91	06/12/09	Acceptable	
2-Fluorobiphenyl	47	25-97	06/12/09	Acceptable	
2,4,6-Tribromophenol	61	10-119	06/12/09	Acceptable	
Terphenyl-d14	70	33-129	06/12/09	Acceptable	

Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

**Comments:** 

Merged

Form 1A - Organic

Analytical Results

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

### Service Request: K0905065 Date Collected: NA Date Received: NA

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

Sample Name:	Method Blank	Units:	ug/Kg
Lab Code:	KWG0905322-3	Basis:	Dry
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

Analyte Name         Result Q         MRL         MDL         Factor         Extracted         Analyzed         Lot         Note           Bis(2-chloroethyl) Ether         ND U         6.1         1.9         1         06/18/09         06/24/09         KWG0905322           2-Chlorophenol         ND U         6.1         2.0         1         06/18/09         06/24/09         KWG0905322           1.3-Dichlorobenzene         ND U         6.1         3.0         1         06/18/09         06/24/09         KWG0905322           1.4-Dichlorobenzene         ND U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           Benzyl Alcohol         ND U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND U         6.1         3.1         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND U         6.1         3.1         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol*         ND U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2-Mitrobenzene         ND U <td< th=""><th></th><th></th><th></th><th></th><th></th><th>Dilution</th><th>Date</th><th>Date</th><th>Extraction</th><th></th></td<>						Dilution	Date	Date	Extraction	
Phenol         ND         U         19         2.0         1         06/18/09         06/24/09         KWG0905322           2-Chlorophenol         ND         U         6.1         2.0         1         06/18/09         06/24/09         KWG0905322           1.3-Dichlorobenzene         ND         U         6.1         2.0         1         06/18/09         06/24/09         KWG0905322           1.4-Dichlorobenzene         ND         U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           Benzyl Alcohol         ND         U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           Bis(2-chlorostepropyl) Ether         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           NNitrosofin-n-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         1.5         1         06/18/09		Result	<u>Q</u>	MRL	MDL	Factor	Extracted	Analyzed	Lot	Note
2-Chlorophenol         ND         U         6.1         2.0         1         0.07/14/90         KWG0905322           1.3-Dicklorobenzene         ND         U         6.1         3.0         1         06/18/09         06/24/09         KWG0905322           1.4-Dicklorobenzene         ND         U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           Benzyl Alcohol         ND         U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           Benzyl Alcohol         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           Hexachlorostiopropil Etter         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           Hexachlorocthane         ND         U         6.1         3.1         1         06/18/09         06/24/09         KWG0905322           Vitrobenzene         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Isophorone         ND         U         6.1         1.0         1         06/18/09         06/24/09         <				6.1	1.9	1	06/18/09	06/24/09	KWG0905322	
1.3-Dichlorobenzene         ND         U         6.1         3.0         1         06/18/09         06/24/09         KWG0905322           1.4-Dichlorobenzene         ND         U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           1.2-Dichlorobenzene         ND         U         6.1         2.9         1         06/18/09         06/24/09         KWG0905322           Benzyl Alcohol         ND         U         13         2.1         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           1.5         NHirosofin-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           1.5         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2.4-Dirochthoxylmethane         ND         U         6.1         1.5         1         06					2.0	1	06/18/09	06/24/09	KWG0905322	
1.4-Dichlorobenzene       ND       6.1       2.9       1       06/18/09       06/24/09       KWG0905322         1.2-Dichlorobenzene       ND       U       6.1       2.9       1       06/18/09       06/24/09       KWG0905322         Benzyl Alcohol       ND       U       1.3       2.1       1       06/18/09       06/24/09       KWG0905322         Benzyl Alcohol       ND       U       6.1       2.6       1       06/18/09       06/24/09       KWG0905322         2-Methylphenol       ND       U       6.1       3.1       1       06/18/09       06/24/09       KWG0905322         N-Nitrosodin-propylamine       ND       U       6.1       3.1       1       06/18/09       06/24/09       KWG0905322         N-Nitrosodin-propylamine       ND       U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         Nitrobenzene       ND       U       6.1       1.0       1       06/18/09       06/24/09       KWG0905322         2Nitrophenol       ND       U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2A-Direthylphenol       ND       U       6.1 <t< td=""><td>2-Chlorophenol</td><td>ND</td><td>U</td><td>6.1</td><td>2.0</td><td>1</td><td>06/18/09</td><td>06/24/09</td><td>KWG0905322</td><td></td></t<>	2-Chlorophenol	ND	U	6.1	2.0	1	06/18/09	06/24/09	KWG0905322	
1.2-Dichlorobenzene         ND         G.1         2.9         1         06/18/09         06/24/09         KWG0905322           Benzyl Alcohol         ND         U         13         2.1         1         06/18/09         06/24/09         KWG0905322           Bis(2-chloroisopropyl) Ether         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           -Methylphenol         ND         U         6.1         3.1         1         06/18/09         06/24/09         KWG0905322           -Nitrosodi-n-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           V-Nitrosodi-n-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Isophorone         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.0         1         06/18/09		ND	U	6.1	3.0	1	06/18/09	06/24/09	KWG0905322	
Benzyl Alcohol         ND         U         13         2.1         1         06/18/09         66/24/09         KWG0905322           Bis2-chloroisopropyl) Ether         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           Hexachloroethane         ND         U         6.1         3.1         1         06/18/09         06/24/09         KWG0905322           N-Nitrosofin-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           N-Nitrosofin-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dinethylphenol         ND         U         6.1         1.5         1         06/18/09				6.1	2.9	1	06/18/09	06/24/09	KWG0905322	
Bis(2-chloroisopropyl) Ether         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           2-Methylphenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           Hexachloroethane         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           4-Methylphenol         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           4-Methylphenol <sup>†</sup> ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Direthylphenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2.4-Direthylphenol         ND         U         6.1         2.3         1         06/18/09	1,2-Dichlorobenzene	ND	U	6.1	2.9	1	06/18/09	06/24/09	KWG0905322	
2-Methylphenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           Hexachloroethane         ND         U         6.1         3.1         1         06/18/09         06/24/09         KWG0905322           N-Nitrosodi-n-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           4-Methylphenol <sup>+</sup> ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         2.6         1         06/18/09		ND	U	13	2.1	1	06/18/09	06/24/09	KWG0905322	
Hexachloroethane         ND         U         6.1         2.1         06/18/09         06/24/09         KWG0905322           N-Nitrosodi-n-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           4-Methylphenol†         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dirotophenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.5         06/18/09         06/24/09         KWG0905322           1.2.4-Trichlorobenzene         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG090		ND	U	6.1	2.6	1	06/18/09	06/24/09	KWG0905322	
N-Nitrosodi-n-propylamine         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           4-Methylphenol†         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2-Nitrobenzene         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2,4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         2.6         1         06/18/09		ND	U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
4-Methylphenol†         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           Nitrobenzene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           Isophorone         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           Bis/2-chloroethoxylmethane         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           1.2.4-Trichlorobenzene         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         2.5         1         06/18/09		ND	U	6.1	3.1	1	06/18/09	06/24/09	KWG0905322	
Nitrobenzene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           Isophorone         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2.4-Tichlorobenzene         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           1.2.4 -Trichlorobenzene         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         2.5         1         06/18/09 <t< td=""><td></td><td>ND</td><td>U</td><td>6.1</td><td>2.4</td><td>1</td><td>06/18/09</td><td>06/24/09</td><td>KWG0905322</td><td></td></t<>		ND	U	6.1	2.4	1	06/18/09	06/24/09	KWG0905322	
Isophorone         ND         U         6.1         1.2         1         00/14/09         KWG0905322           2-Nitrophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           1.2,4-Trichlorobenzene         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         1.4         1         06/18/09         06/24/09		ND	U	6.1	1.5	1	06/1 <b>8</b> /09	06/24/09	KWG0905322	
2-Nitrophenol         ND         U         6.1         1.5         1         00/18/09         06/24/09         KWG0905322           2.4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dimethylphenol         ND         U         31         5.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           2.4-Dichlorophenol         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           1.2, 4-Trichlorobenzene         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           Naphthalene         ND         U         6.1         1.4         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         1.4         1         06/18/09		ND	U	6.1	2.2	1	06/18/09	06/24/09	KWG0905322	
2.4-Dimethylphenol       ND       ND       31       5.5       1       06/18/09       06/24/09       KWG0905322         Bis(2-chloroethoxy)methane       ND       U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2,4-Dichlorophenol       ND       U       6.1       1.0       1       06/18/09       06/24/09       KWG0905322         2,4-Dichlorophenol       ND       U       6.1       1.0       1       06/18/09       06/24/09       KWG0905322         Benzoic Acid       ND       U       6.1       2.6       1       06/18/09       06/24/09       KWG0905322         Naphthalene       ND       U       6.1       2.6       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND       U       6.1       2.3       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND       U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.	1	ND	U	6.1	1.0	1	06/18/09	06/24/09	KWG0905322	
Bis(2-chloroethoxy)methane         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2,4-Dichlorophenol         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           Benzoic Acid         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322           I.2,4-Trichlorobenzene         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           Naphthalene         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         2.5         1         06/18/09         06/24/09         KWG0905322           4-Chloro-3-methylphenol         ND         U         6.1         2.4         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         1.4         1         06/18/09	2-Nitrophenol	ND	U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
2,4-Dichlorophenol       ND U       6.1       1.0       1       06/18/09       06/24/09       KWG0905322         Benzoic Acid       ND U       130       96       1       06/18/09       06/24/09       KWG0905322         J.2,4-Trichlorobenzene       ND U       6.1       2.6       1       06/18/09       06/24/09       KWG0905322         Naphthalene       ND U       6.1       2.6       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND U       6.1       2.3       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND U       6.1       1.9       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND U       6.1       2.5       1       06/18/09       06/24/09       KWG0905322         4-Chloro-3-methylphenol       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         2,4,6-Trichlorophenol       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5		ND	U	31	5.5	1	06/18/09	06/24/09	KWG0905322	
Benzoic Acid         ND         U         130         96         1         06/18/09         06/24/09         KWG0905322           1,2,4-Trichlorobenzene         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           Naphthalene         ND         U         6.1         2.6         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         2.5         1         06/18/09         06/24/09         KWG0905322           4-Chloro-3-methylphenol         ND         U         6.1         2.5         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2.4,6-Trichlorophenol         ND         U         6.1         1.4         1         06/18/09         06/24/09         KWG0905322           2,4,5-Trichlorophenol         ND         U         6.1         1.5         1         06/18/09 <td>• •</td> <td>ND</td> <td>U</td> <td>6.1</td> <td>1.5</td> <td>1</td> <td>06/18/09</td> <td>06/24/09</td> <td>KWG0905322</td> <td></td>	• •	ND	U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
1,2,4-Trichlorobenzene       ND U       6.1       2.6       1       06/18/09       06/24/09       KWG0905322         Naphthalene       ND U       6.1       2.3       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND U       6.1       2.3       1       06/18/09       06/24/09       KWG0905322         4-Chloroaniline       ND U       6.1       2.5       1       06/18/09       06/24/09       KWG0905322         4-Chloro-3-methylphenol       ND U       6.1       2.5       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-A,6-Trichlorophenol       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322	2,4-Dichlorophenol	ND	U	6.1	1.0	1	06/18/09	06/24/09	KWG0905322	
Naphthalene         ND         U         6.1         2.3         1         06/18/09         06/24/09         KWG0905322           4-Chloroaniline         ND         U         6.1         1.9         1         06/18/09         06/24/09         KWG0905322           Hexachlorobutadiene         ND         U         6.1         1.9         1         06/18/09         06/24/09         KWG0905322           4-Chloro-3-methylphenol         ND         U         6.1         2.5         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         1.4         1         06/18/09         06/24/09         KWG0905322           2-A,6-Trichlorophenol         ND         U         6.1         1.4         1         06/18/09         06/24/09         KWG0905322           2,4,5-Trichlorophenol         ND         U         6.1         1.6         1         06		ND	U	130	96	1	06/18/09	06/24/09	KWG0905322	
4-Chloroaniline         ND         U         6.1         1.9         1         06/18/09         06/24/09         KWG0905322           Hexachlorobutadiene         ND         U         6.1         2.5         1         06/18/09         06/24/09         KWG0905322           4-Chloro-3-methylphenol         ND         U         6.1         2.5         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         2.2         1         06/18/09         06/24/09         KWG0905322           2-Methylnaphthalene         ND         U         6.1         1.4         1         06/18/09         06/24/09         KWG0905322           2-A,6-Trichlorophenol         ND         U         6.1         1.4         1         06/18/09         06/24/09         KWG0905322           2,4,5-Trichlorophenol         ND         U         6.1         1.5         1         06/18/09         06/24/09         KWG0905322           2-Chloronaphthalene         ND         U         6.1         1.6         1		ND	U	6.1	2.6	1	06/18/09	06/24/09	KWG0905322	
Hexachlorobutadiene       ND       U       6.1       2.5       1       06/18/09       06/24/09       KWG0905322         4-Chloro-3-methylphenol       ND       U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         2,4,6-Trichlorophenol       ND       U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND       U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2-Chloronaphthalene       ND       U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Nitroaniline       ND       U       13       3.2       1       06/18/09       06/24/09       KWG0905322         Acenaphthylene       ND       U </td <td>Naphthalene</td> <td>ND</td> <td>U</td> <td>6.1</td> <td>2.3</td> <td>1</td> <td>06/18/09</td> <td>06/24/09</td> <td>KWG0905322</td> <td></td>	Naphthalene	ND	U	6.1	2.3	1	06/18/09	06/24/09	KWG0905322	
4-Chloro-3-methylphenol       ND       U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         2-Methylnaphthalene       ND       U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         Hexachlorocyclopentadiene       ND       U       31       29       1       06/18/09       06/24/09       KWG0905322         2,4,6-Trichlorophenol       ND       U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND       U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2-Chloronaphthalene       ND       U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Nitroaniline       ND       U       13       3.2       1       06/18/09       06/24/09       KWG0905322         Acenaphthylene       ND       U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322         Dimethyl Phthalate       ND		ND	U	6.1	1.9	1	06/18/09	06/24/09	KWG0905322	
2-Methylnaphthalene       ND U       6.1       2.2       1       06/18/09       06/24/09       KWG0905322         Hexachlorocyclopentadiene       ND U       31       29       1       06/18/09       06/24/09       KWG0905322         2,4,6-Trichlorophenol       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Chloronaphthalene       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Nitroaniline       ND U       13       3.2       1       06/18/09       06/24/09       KWG0905322         Acenaphthylene       ND U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322         Dimethyl Phthalate       ND U       6.1       1.0       1       06/18/09       06/24/09       KWG0905322 </td <td></td> <td>ND</td> <td>U</td> <td>6.1</td> <td>2.5</td> <td>1</td> <td>06/18/09</td> <td>06/24/09</td> <td>KWG0905322</td> <td></td>		ND	U	6.1	2.5	1	06/18/09	06/24/09	KWG0905322	
Hexachlorocyclopentadiene       ND U       31       29       1       06/18/09       06/24/09       KWG0905322         2,4,6-Trichlorophenol       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Chloronaphthalene       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Nitroaniline       ND U       13       3.2       1       06/18/09       06/24/09       KWG0905322         Acenaphthylene       ND U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322         Dimethyl Phthalate       ND U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322	4-Chloro-3-methylphenol	ND	U	6.1	1.4	1	06/18/09	06/24/09	KWG0905322	
2,4,6-Trichlorophenol       ND U       6.1       1.4       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2,4,5-Trichlorophenol       ND U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2-Chloronaphthalene       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Nitroaniline       ND U       13       3.2       1       06/18/09       06/24/09       KWG0905322         Acenaphthylene       ND U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322         Dimethyl Phthalate       ND U       6.1       1.0       1       06/18/09       06/24/09       KWG0905322		ND	U	6.1	2.2	1	06/18/09	06/24/09	KWG0905322	
2,4,5-Trichlorophenol       ND U       6.1       1.5       1       06/18/09       06/24/09       KWG0905322         2-Chloronaphthalene       ND U       6.1       1.6       1       06/18/09       06/24/09       KWG0905322         2-Nitroaniline       ND U       13       3.2       1       06/18/09       06/24/09       KWG0905322         Acenaphthylene       ND U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322         Dimethyl Phthalate       ND U       6.1       1.2       1       06/18/09       06/24/09       KWG0905322		ND	U	31	29	1	06/18/09	06/24/09	KWG0905322	
2-Chloronaphthalene         ND U         6.1         1.6         1         06/18/09         06/24/09         KWG0905322           2-Nitroaniline         ND U         13         3.2         1         06/18/09         06/24/09         KWG0905322           Acenaphthylene         ND U         6.1         1.2         1         06/18/09         06/24/09         KWG0905322           Dimethyl Phthalate         ND U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322	2,4,6-Trichlorophenol	ND	U	6.1	1.4	1	06/18/09	06/24/09	KWG0905322	
2-Nitroaniline         ND U         13         3.2         1         06/18/09         06/24/09         KWG0905322           Acenaphthylene         ND U         6.1         1.2         1         06/18/09         06/24/09         KWG0905322           Dimethyl Phthalate         ND U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322				6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
Acenaphthylene         ND         U         6.1         1.2         1         06/18/09         06/24/09         KWG0905322           Dimethyl Phthalate         ND         U         6.1         1.0         1         06/18/09         06/24/09         KWG0905322	•	ND	U	6.1	1.6	1	06/18/09	06/24/09	KWG0905322	
Dimethyl Phthalate ND U 6.1 1.0 1 06/18/09 06/24/09 KWG0905322		ND	U	13	3.2	1	06/18/09	06/24/09	KWG0905322	
					1.2	1	06/18/09	06/24/09	KWG0905322	
2,6-Dinitrotoluene ND U 6.1 2.0 1 06/18/09 06/24/09 KWG0905322					1.0	1	06/18/09	06/24/09	KWG0905322	
	2,6-Dinitrotoluene	ND	U	6.1	2.0	1	06/18/09	06/24/09	KWG0905322	

Analytical Results

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

### Service Request: K0905065 Date Collected: NA Date Received: NA

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

Sample Name:	Method Blank	Units:	00
Lab Code:	KWG0905322-3	Basis:	
Extraction Method: Analysis Method:	EPA 3541 8270C	Level:	Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	NDU	6.1	1.4	1	06/18/09	06/24/09	KWG0905322	
3-Nitroaniline	ND U	13	2.5	1	06/18/09	06/24/09	KWG0905322	
2,4-Dinitrophenol	ND U	130	17	1	06/18/09	06/24/09	KWG0905322	
Dibenzofuran	ND U	6.1	1.2	1	06/18/09	06/24/09	KWG0905322	
4-Nitrophenol	ND U	61	18	1	06/18/09	06/24/09	KWG0905322	
2,4-Dinitrotoluene	ND U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
Fluorene	ND U	6.1	1.1	1	06/18/09	06/24/09	KWG0905322	
4-Chlorophenyl Phenyl Ether	ND U	6.1	1.4	1	06/18/09	06/24/09	KWG0905322	
Diethyl Phthalate	ND U	6.1	1.3	1	06/18/09	06/24/09	KWG0905322	
4-Nitroaniline	ND U	13	1.8	1	06/18/09	06/24/09	KWG0905322	
2-Methyl-4,6-dinitrophenol	ND U	61	1.4	1	06/18/09	06/24/09	KWG0905322	
N-Nitrosodiphenylamine	ND U	6.1	1.6	1	06/18/09	06/24/09	KWG0905322	
4-Bromophenyl Phenyl Ether	ND U	6.1	1.6	1	06/18/09	06/24/09	KWG0905322	
Hexachlorobenzene	ND U	6.1	1.2	1	06/18/09	06/24/09	KWG0905322	
Pentachlorophenol	ND U	61	20	1	06/18/09	06/24/09	KWG0905322	
Phenanthrene	ND U	6.1	1.4	1	06/18/09	06/24/09	KWG0905322	
Anthracene	ND U	6.1	1.6	1	06/1 <b>8</b> /09	06/24/09	KWG0905322	
Di-n-butyl Phthalate	ND U	13	7.9	1	06/18/09	06/24/09	KWG0905322	
Fluoranthene	ND U	6.1	1.6	1	06/18/09	06/24/09	KWG0905322	
Pyrene	ND U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
Butyl Benzyl Phthalate	ND U	6.1	3.2	1	06/18/09	06/24/09	KWG0905322	
3,3'-Dichlorobenzidine	ND U	61	3.7	1	06/18/09	06/24/09	KWG0905322	
Benz(a)anthracene	ND U	6.1	1.7	1	06/18/09	06/24/09	KWG0905322	
Chrysene	ND U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
Bis(2-ethylhexyl) Phthalate	7.6 J	61	7.0	1	06/18/09	06/24/09	KWG0905322	
Di-n-octyl Phthalate	ND U	6.1	1.7	1	06/18/09	06/24/09	KWG0905322	
Benzo(b)fluoranthene	ND U	6.1	1.2	1	06/18/09	06/24/09	KWG0905322	
Benzo(k)fluoranthene	ND U	6.1	1.4	1	06/18/09	06/24/09	KWG0905322	
Benzo(a)pyrene	ND U	6.1	1.7	1	06/18/09	06/24/09	KWG0905322	
Indeno(1,2,3-cd)pyrene	ND U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
Dibenz(a,h)anthracene	ND U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	
Benzo(g,h,i)perylene	ND U	6.1	1.5	1	06/18/09	06/24/09	KWG0905322	

**Comments:** 

39

Analytical Results

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

Service Request:K0905065Date Collected:NADate Received:NA

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

Sample Name:	Method Blank
Lab Code:	KWG0905322-3

Units: ug/Kg Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
2-Fluorophenol	39	11-80	06/24/09	Acceptable	
Phenol-d6	66	20-86	06/24/09	Acceptable	
Nitrobenzene-d5	90	27-91	06/24/09	Acceptable	
2-Fluorobiphenyl	80	25-97	06/24/09	Acceptable	
2,4,6-Tribromophenol	93	10-119	06/24/09	Acceptable	
Terphenyl-d14	111	33-129	06/24/09	Acceptable	

+ Analyte Comments

4-Methylphenol

This analyte cannot be separated from 3-Methylphenol.

QA/QC Report

Client:Portland, City ofProject:Portland Harbor Inline SampSample Matrix:Sludge, solid

### Service Request: K0905065

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

Extraction Method:EPA 3541Analysis Method:8270C

Units: PERCENT Level: Low

Sample Name	Lab Code	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 095671	K0905065-001	20	37	60	56	36	77
FO 095672	K0905065-002	18	34	67	63	46	104
Method Blank	KWG0904879-5	50	52	48	47	61	70
Method Blank	KWG0905322-3	39	66	90	80	93	111
Batch QC	K0905086-001	42	42	42	42	72	61
Batch QCMS	KWG0904879-1	46	47	47	47	84	71
Batch QCDMS	KWG0904879-2	47	46	47	45	74	61
Lab Control Sample	KWG0904879-3	50	53	50	47	68	68
Duplicate Lab Control Sample	KWG0904879-4	43	46	41	42	59	64
Lab Control Sample	KWG0905322-1	47	57	77	67	79	96
Duplicate Lab Control Sample	KWG0905322-2	41	54	72	65	71	82

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	11-80	Sur5 = 2,4,6-Tribromophenol	10-119
Sur2 = Phenol-d6	20-86	Sur6 = Terphenyl-d14	33-129
Sur3 = Nitrobenzene-d5	27-91	1 - 5	
Sur4 = 2-Fluorobiphenyl	25-97		

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	Portland, City of
Project:	Portland Harbor Inline Samp
Sample Matrix:	Misc. solid

# Service Request: K0905065 Date Extracted: 06/08/2009 Date Analyzed: 06/16/2009

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

Sample Name:	Batch QC	Units:	0 0
Lab Code:	K0905086-001	Basis:	
Extraction Method:	EPA 3541	Level:	
Analysis Method:	8270C	Extraction Lot:	

	Sample	KV	atch QCMS VG0904879- Aatrix Spike	1	KV	atch QCDMS VG0904879- cate Matrix S	2	%Rec		RPD
Analyte Name	Result	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
Phenol	ND	71.1	132	54	66.4	132	50	15-98	7	40
2-Chlorophenol	ND	69.4	132	52	62.0	132	47	19-92	11	40
1,4-Dichlorobenzene	ND	67.3	132	51	66.4	132	50	11-88	1	40
N-Nitrosodi-n-propylamine	ND	67.2	132	51	66.2	132	50	14-104	2	40
1,2,4-Trichlorobenzene	ND	71.6	132	54	65.9	132	50	18-91	8	40
4-Chloro-3-methylphenol	ND	86.4	132	65	75.9	132	57	12-106	13	40
Acenaphthene	ND	77.2	132	58	70.2	132	53	21-104	10	40
4-Nitrophenol	ND	125	132	95	102	132	77	11-131	21	40
2,4-Dinitrotoluene	ND	96.1	132	73	83.6	132	63	25-114	14	40
Pentachlorophenol	ND	102	132	77	100	132	76	10-123	1	40
Pyrene	1.8	94.0	132	70	79.9	132	59	17-129	16	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.

QA/QC Report

Client:	Portland, City of
Project:	Portland Harbor Inline Samp
Sample Matrix:	Misc. solid

### Service Request: K0905065 Date Extracted: 06/08/2009 Date Analyzed: 06/12/2009

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

Extraction Method:EPA 3541Analysis Method:8270C							H L	Basis: .evel:	ug/Kg Dry Low KWG0904879
	KV	Control Samp VG0904879-3 • Control Spik		- KV	Lab Control VG0904879-4 e Lab Control				
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	%Rec Limits	RPD	RPD Limit
Bis(2-chloroethyl) Ether	127	250	51	119	250	48	29-86	6	40
Phenol	129	250	51	117	250	47	28-91	9	40
2-Chlorophenol	129	250	52	115	250	46	31-83	11	40
1,3-Dichlorobenzene	127	250	51	120	250	48	27-82	6	40
1,4-Dichlorobenzene	128	250	51	117	250	47	27-82	9	40
1,2-Dichlorobenzene	131	250	52	118	250	47	29-83	10	40
Benzyl Alcohol	135	250	54	128	250	51	27-88	5	40
Bis(2-chloroisopropyl) Ether	127	250	51	116	250	46	23-88	9	40
2-Methylphenol	118	250	47	114	250	46	14 <b>-</b> 79	3	40
Hexachloroethane	134	250	54	125	250	50	25-84	7	40
N-Nitrosodi-n-propylamine	138	250	55	123	250	49	23-84 24 <b>-</b> 89	13	40
4-Methylphenol	129	250	51	118	250	47	14-82	8	40
Nitrobenzene	132	250	53	126	250	50	29-87	5	40
Isophorone	129	250	52	132	250	53	33-83	2	40
2-Nitrophenol	131	250	52	132	250	51	33-89	4	40
2,4-Dimethylphenol	70.9	250	28	96.8	250	39	10 <b>-</b> 63	31	40
Bis(2-chloroethoxy)methane	132	250	53	124	250	49	33-85	7	40
2,4-Dichlorophenol	121	250	48	124	250	49	33 <b>-</b> 83	1	40 40
Benzoic Acid	ND	750	0 *	ND	750	0 *	10-48	I	40
1,2,4-Trichlorobenzene	124	250	50	125	250	50	31-83	1	40
Naphthalene	121	250	51	125	250	51	32-84		40 40
4-Chloroaniline	120	250	51	120	250 250	51	32 <b>-</b> 84 19-78	1	40 40
Hexachlorobutadiene	127	250 250	51	127	250 250	49	19-78 28-87	0	40 40
4-Chloro-3-methylphenol	131	250	53	123	250 250	49 51	28-87	3	40 40
2-Methylnaphthalene	126	250	50	128	230 250	51		3	
Hexachlorocyclopentadiene	120	250 250	30 49	128	230 250		33-85	1	40
2,4,6-Trichlorophenol	125	250 250	49 56	122		49 52	10-66	1	40
2,4,5-Trichlorophenol	139	230 250	30 57		250	53	31-86	5	40
2-Chloronaphthalene	142	230 250		135	250	54 50	34-89	5	40
2-Nitroaniline	133		54 57	125	250	50	31-86	8	40
Acenaphthylene	142	250	57	142	250	57 57	32-97	1	40
Dimethyl Phthalate		250	61	142	250	57 57	33-87	7	40
2,6-Dinitrotoluene	152	250	61	143	250	57	38-91	6	40
	158	250	63	141	250	57	36-94	11	40
Acenaphthene 3-Nitroaniline	137	250	55	131	250	52	35-83	4	40
5-mitroaminne	153	250	61	142	250	57	31-91	7	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.

1 of 2

QA/QC Report

Client:	Portland, City of
Project:	Portland Harbor Inline Samp
Sample Matrix:	Misc. solid

### Service Request: K0905065 Date Extracted: 06/08/2009 Date Analyzed: 06/12/2009

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

Extraction Method:EPA 3541Analysis Method:8270C							B L		
	KW	Control Samp /G0904879-3 Control Spik	1	KW	Lab Control 3 /G0904879-4 e Lab Control	-	%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
2,4-Dinitrophenol	129	250	52	118	250	47	10-100	9	40
Dibenzofuran	137	250	55	131	250	52	35-85	5	40
4-Nitrophenol	167	250	67	162	250	65	32-110	3	40
2,4-Dinitrotoluene	166	250	66	161	250	64	40-98	3	40
Fluorene	146	250	58	135	250	54	36-87	7	40
4-Chlorophenyl Phenyl Ether	144	250	58	140	250	56	34-87	3	40
Diethyl Phthalate	159	250	63	159	250	64	39-98	0	40
4-Nitroaniline	162	250	65	165	250	66	33-99	2	40
2-Methyl-4,6-dinitrophenol	153	250	61	158	250	63	27-102	3	40
N-Nitrosodiphenylamine	149	250	60	148	250	59	29-92	1	40
4-Bromophenyl Phenyl Ether	154	250	61	143	250	57	38-90	7	40
Hexachlorobenzene	155	250	62	148	250	59	39-90	5	40
Pentachlorophenol	134	250	53	153	250	61	21-97	14	40
Phenanthrene	164	250	66	155	250	62	41-90	6	40
Anthracene	159	250	64	156	250	62	35-93	2	40
Di-n-butyl Phthalate	168	250	67	173	250	69	40-116	2	40
Fluoranthene	171	250	68	177	250	71	42-103	4	40
Pyrene	167	250	67	171	250	68	42-105	2	40
Butyl Benzyl Phthalate	170	250	68	173	250	69	41-114	2	40
3,3'-Dichlorobenzidine	146	250	59	169	250	67	13-98	14	40
Benz(a)anthracene	166	250	66	173	250	69	43-104	4	40
Chrysene	174	250	70	177	250	71	47-104	2	40
Bis(2-ethylhexyl) Phthalate	167	250	67	170	250	68	40-122	2	40
Di-n-octyl Phthalate	172	250	69	172	250	69	43-119	0	40
Benzo(b)fluoranthene	168	250	67	174	250	69	45-106	3	40
Benzo(k)fluoranthene	168	250	67	173	250	69	47-105	3	40
Benzo(a)pyrene	148	250	59	151	250	60	35-109	2	40
Indeno(1,2,3-cd)pyrene	170	250	68	173	250	69	43-111	2	40
Dibenz(a,h)anthracene	164	250	66	170	250	68	44-110	4	40
Benzo(g,h,i)perylene	166	250	67	170	250	68	38-108	2	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.

QA/QC Report

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

## Service Request: K0905065 Date Extracted: 06/18/2009 Date Analyzed: 06/24/2009

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

Extraction Method:EPA 3541Analysis Method:8270C							E L	asis: D evel: L	g/Kg bry ow WG0905322
	KW	Control Samp VG0905322-1 Control Spik		KW	Lab Control /G0905322-2 e Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
Bis(2-chloroethyl) Ether	120	250	48	127	250	51	29-86	6	40
Phenol	139	250	56	140	250	56	28-91	1	40
2-Chlorophenol	138	250	55	123	250	49	31-83	12	40
1,3-Dichlorobenzene	126	250	50	115	250	46	27-82	9	40
1,4-Dichlorobenzene	121	250	48	118	250	47	27-82	2	40
1,2-Dichlorobenzene	128	250	51	121	250	48	29-83	6	40
Benzyl Alcohol	121	250	48	121	250	48	27-88	0	40
Bis(2-chloroisopropyl) Ether	118	250	47	118	250	47	23-88	1	40
2-Methylphenol	109	250	44	111	250	44	14-79	1	40
Hexachloroethane	160	250	64	143	250	57	25-84	11	40
N-Nitrosodi-n-propylamine	142	250	57	138	250	55	24-89	3	.40
4-Methylphenol	122	250	49	111	250	44	14-82	10	40
Nitrobenzene	156	250	62	146	250	58	29-87	7	40
Isophorone	142	250	57	139	250	56	33-83	3	40
2-Nitrophenol	140	250	56	136	250	54	33-89	3	40
2,4-Dimethylphenol	55.8	250	22	38.1	250	15	10-63	38	40
Bis(2-chloroethoxy)methane	132	250	53	133	250	53	33-85	0	40
2,4-Dichlorophenol	132	250	53	126	250	50	33-83	5	40
Benzoic Acid	211	750	28	199	750	27	10-48	6	40
1,2,4-Trichlorobenzene	131	250	52	121	250	48	31-83	8	40
Naphthalene	136	250	54	131	250	52	32-84	4	40
4-Chloroaniline	122	250	49	119	250	47	19-78	3	40
Hexachlorobutadiene	147	250	59	149	250	60	28-87	1	40
4-Chloro-3-methylphenol	141	250	56	137	250	55	28-87	2	40
2-Methylnaphthalene	132	250	53	132	250	53	33-85	0	40
Hexachlorocyclopentadiene	167	250	67 *	166	250	67 *	10-66	0	40
2,4,6-Trichlorophenol	144	250	57	146	250	58	31-86	2	40
2,4,5-Trichlorophenol	148	250	59	150	250	60	34-89	1	40
2-Chloronaphthalene	160	250	64	158	250	63	31-86	2	40
2-Nitroaniline	184	250	74	184	250	73	32-97	0	40
Acenaphthylene	155	250	62	156	250	62	33-87	0	40
Dimethyl Phthalate	167	250	67	159	250	64	38-91	5	40
2,6-Dinitrotoluene	150	250	60	154	250	62	36-94	3	40
Acenaphthene	140	250	56	144	250	58	35-83	3	40
3-Nitroaniline	150	250	60	158	250	63	31-91	5	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.

1 of 2

QA/QC Report

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

### Service Request: K0905065 Date Extracted: 06/18/2009 Date Analyzed: 06/24/2009

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

Extraction Method:EPA 3541Analysis Method:8270C							B L	Units: ug/Kg Basis: Dry Level: Low Extraction Lot: KWG09053	
	KW	Control Samp /G0905322-1 Control Spik		. KV	Lab Control VG0905322-2 e Lab Control		%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	
2,4-Dinitrophenol	144	250	58	145	250	58	10-100	1	40
Dibenzofuran	142	250	57	142	250	57	35-85	0	40
4-Nitrophenol	260	250	104	239	250	96	32-110	8	40
2,4-Dinitrotoluene	182	250	73	174	250	70	40-98	4	40
Fluorene	147	250	59	145	250	58	36-87	1	40
4-Chlorophenyl Phenyl Ether	149	250	60	148	250	59	34-87	1	40
Diethyl Phthalate	186	250	74	172	250	69	39-98	8	40
4-Nitroaniline	170	250	68	159	250	64	33-99	7	40
2-Methyl-4,6-dinitrophenol	175	250	70	169	250	68	27-102	3	40
N-Nitrosodiphenylamine	148	250	59	141	250	56	29-92	6	40
4-Bromophenyl Phenyl Ether	159	250	64	157	250	63	38-90	1	40
Hexachlorobenzene	166	250	66	160	250	64	39-90	4	40
Pentachlorophenol	174	250	69	151	250	60	21-97	14	40
Phenanthrene	158	250	63	145	250	58	41-90	9	40
Anthracene	152	250	61	144	250	58	35-93	6	40
Di-n-butyl Phthalate	192	250	77	168	250	67	40-116	13	40
Fluoranthene	177	250	71	154	250	62	42-103	14	40
Pyrene	165	250	66	143	250	57	42-105	14	40
Butyl Benzyl Phthalate	185	250	74	158	250	63	41-114	15	40
3,3'-Dichlorobenzidine	151	250	61	123	250	49	13-98	20	40
Benz(a)anthracene	174	250	70	151	250	60	43-104	14	40
Chrysene	177	250	71	153	250	61	47-104	15	40
Bis(2-ethylhexyl) Phthalate	187	250	75	159	250	64	40-122	16	40
Di-n-octyl Phthalate	180	250	72	159	250	64	43-119	12	40
Benzo(b)fluoranthene	169	250	68	152	250	61	45-106	11	40
Benzo(k)fluoranthene	176	250	70	158	250	63	47-105	11	40
Benzo(a)pyrene	148	250	59	133	250	53	35-109	11	40
Indeno(1,2,3-cd)pyrene	174	250	69	151	250	60	43-111	14	40
Dibenz(a,h)anthracene	172	250	69	150	250	60	44-110	13	40
Benzo(g,h,i)perylene	163	250	65	146	250	58	38-108	11	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.



ORELAP#: OR100021

July 29, 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 06/05/09 09:20. The following list is a summary of the Work Orders contained in this report, generated on 07/29/09 14:55.

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

Work OrderProjectProjectNumberPSF0201Portland Harbor36238

TestAmerica Portland

£U.

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.



Partial Report

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

6543 N. Burlington Ave. Portland, OR 97203 Project Name:IProject Number:3Project Manager:J

**Portland Harbor** 36238

Jennifer Shackelford

Report Created: 07/29/09 14:55

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095671	PSF0201-01	Soil	06/04/09 11:45	06/05/09 09:20
FO095672	PSF0201-02	Soil	06/04/09 12:52	06/05/09 09:20

TestAmerica Portland

Hæulu aun

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.



Partial Report

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

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager: **Portland Harbor** 36238

Jennifer Shackelford

Report Created: 07/29/09 14:55

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0201-01RE1	(FO095671)		So	il		Samp	led: 06/04/	09 11:45		
2,4-D	8151mod	22.7	3.43	31.3	ug/kg dry	1x	9060702	06/18/09 14:57	06/23/09 22:06	B, J
2,4-DB	"	ND	5.63	31.3	"		"		"	С
2,4,5-T	"	8.55	4.64	31.3	"		"	"	"	B, C, J
2,4,5-TP (Silvex)	"	ND	3.31	31.3	"		"		"	
Dalapon	"	ND	7.07	31.3	"		"		"	С
Dicamba	"	ND	3.64	31.3	"		"	"	"	С
Dichlorprop	"	ND	3.01	31.3	"		"	"	"	
Dinoseb	"	ND	5.31	31.3	"		"	"	"	С
МСРА	"	ND	251	3130	"		"		"	
MCPP	"	ND	255	3130			"	"	"	
Surrogate(s):	2,4-Dichlorophenylacetic acid			106%		30 - 140 %	"		,	" C
PSF0201-02RE1	(FO095672)		So	il		Samp	led: 06/04/	09 12:52		
2,4-D	8151mod	1790	33.1	303	ug/kg dry	10x	9060702	06/18/09 14:57	06/24/09 11:59	В
2,4-DB	"	ND	5.43	30.3	"	1x	"		06/23/09 22:45	С
2,4,5-T	"	7.66	4.48	30.3			"	"	"	B, C, J
2,4,5-TP (Silvex)	"	ND	3.19	30.3	"		"	"	"	
Dalapon	"	ND	6.82	30.3	"		"	"	"	С
Dicamba	"	ND	3.51	30.3			"	"	"	С
Dichlorprop	"	ND	2.90	30.3			"	"	"	
Dinoseb	"	ND	5.13	30.3	"		"	"	"	С
MCPA	"	ND	242	3030	"		"	"	"	
МСРР		ND	247	3030			"	"		

TestAmerica Portland

Hæulu tum

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.



Partial Report

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

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager: **Portland Harbor** 36238

Jennifer Shackelford

Report Created: 07/29/09 14:55

### Chlorinated Herbicides per EPA Method 8151A Modified - Laboratory Quality Control Results TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9060702-BLK1)								Exti	acted:	06/18/09 14	:57			
2,4-D	8151mod	14.7	2.19	20.0	ug/kg wet	1x						(	06/23/09 20:09	В,
2,4-DB	"	ND	3.59	20.0	"	"							"	(
2,4,5-T	"	13.1	2.96	20.0	"	"							"	B, C,
2,4,5-TP (Silvex)	"	ND	2.11	20.0	"	"							"	
Dalapon	"	ND	4.51	20.0	"	"							"	
Dicamba	"	ND	2.32	20.0	"	"							"	
Dichlorprop	"	ND	1.92	20.0	"	"							"	
Dinoseb	"	ND	3.39	20.0	"	"							"	(
MCPA	"	ND	160	2000	"	"							"	
МСРР	"	ND	163	2000	"	"							"	
Surrogate(s): 2,4-Dichlorop	ohenylacetic acid	Recovery:	107%	L	imits: 30-140%	ó "							06/23/09 20:09	
LCS (9060702-BS1)								Ext	acted:	06/18/09 14	:57			
2,4-D	8151mod	55.7	2.19	20.0	ug/kg wet	1x		80.0	69.6%	(30-120)		(	06/23/09 20:48	I
2,4-DB	"	52.1	3.59	20.0	"	"		"	65.2%	(30-130)			"	C
2,4,5-T	"	48.0	2.96	20.0	"	"		"	60.0%	(25-125)			"	B, C
2,4,5-TP (Silvex)	"	38.8	2.11	20.0	"	"		"	48.5%	(35-100)			"	
Dalapon	"	32.8	4.51	20.0	"	"		"	41.0%	(20-110)			"	
Dicamba	"	45.1	2.32	20.0	"	"		"	56.4%	(30-115)			"	
Dichlorprop	"	46.0	1.92	20.0	"	"		"	57.5%	(50-100)			"	
Dinoseb	"	41.6	3.39	20.0	"	"		"	52.0%	(10-130)			"	C
MCPA	"	4590	160	2000	"	"		8000	57.4%	(30-105)			"	
МСРР	"	5500	163	2000	"	"		"	68.7%	(15-115)			"	
Surrogate(s): 2,4-Dichlorop	ohenylacetic acid	Recovery:	72.1%	L	imits: 45-125%	ó "							06/23/09 20:48	
Matrix Spike (9060702-M	IS1)			QC Source	e: PSF0201-0	IRE1		Ext	acted:	06/18/09 14	:57			
2,4-D	8151mod	131	3.43	31.3	ug/kg dry	1x	22.7	125	86.6%	(15-110)		(	06/23/09 23:26	Ι
2,4-DB	"	106	5.63	31.3	"	"	ND	"	84.5%	(10-135)			"	C
2,4,5-T	"	111	4.64	31.3	"	"	8.55	"	81.7%	(15-120)			"	B, C
2,4,5-TP (Silvex)	"	84.9	3.31	31.3	"	"	ND	"	67.7%	(20-105)			"	
Dalapon	"	109	7.07	31.3	"	"	ND	"	87.1%	(15-105)			"	C
Dicamba	"	95.9	3.64	31.3	"	"	ND	"	76.5%	"			"	C
Dichlorprop	"	103	3.01	31.3	"	"	ND	"	82.4%	(25-105)			"	
Dinoseb	"	83.7	5.31	31.3	"	"	ND	"	66.7%	(15-125)			"	C
MCPA	"	10900	251	3130	"	"	ND	12500	87.1%	(15-105)			"	
MCPP	"	12800	255	3130	"		ND		102%	(15-110)				

TestAmerica Portland

flun Haulus

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.

Howard Holmes, Project Manager



Partial Report

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

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager: Portland Harbor 36238

Jennifer Shackelford

Report Created: 07/29/09 14:55

### Chlorinated Herbicides per EPA Method 8151A Modified - Laboratory Quality Control Results TestAmerica Portland

QC Batch: 9060702	Soil Pre	paration M	lethod: EPA	3510/60	0 Series									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	) Analyzed	Notes
Matrix Spike Dup (9060702-	MSD1)			QC Sourc	e: PSF0201-01	RE1		Ext	racted:	06/18/09 14	:57			
2,4-D	8151mod	51.9	3.43	31.3	ug/kg dry	1x	22.7	125	23.2%	(15-110)	86.8%	(30)	06/24/09 08:04	B, R
2,4-DB	"	44.3	5.63	31.3	"		ND	"	35.3%	(10-135)	82.0%	(40)	"	R, C8
2,4,5-T	"	44.9	4.64	31.3	"		8.55	"	29.0%	(15-120)	84.9%	"		B, R, C8
2,4,5-TP (Silvex)	"	26.5	3.31	31.3	"		ND	"	21.2%	(20-105)	105%	"	"	R, J
Dalapon	"	67.2	7.07	31.3	"		ND	"	53.6%	(15-105)	47.6%	"	"	R, C8
Dicamba	"	38.3	3.64	31.3	"		ND	"	30.5%	"	85.9%	"	"	R, C8
Dichlorprop	"	46.9	3.01	31.3	"		ND	"	37.4%	(25-105)	75.1%	"	"	R
Dinoseb	"	35.2	5.31	31.3	"		ND	"	28.1%	(15-125)	81.5%	"	"	R, C8
MCPA	"	4980	251	3130	"		ND	12500	39.7%	(15-105)	74.8%	"	"	R
MCPP	"	6170	255	3130	"	"	ND	"	49.2%	(15-110)	69.6%	"	"	R
Surrogate(s): 2,4-Dichlorophen	ylacetic acid	Recovery:	60.9%	L	imits: 20-125%	<u>;</u> "							06/24/09 08:04	Ca

TestAmerica Portland

lun Haulus

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 Proj

6543 N. Burlington Ave. Portland, OR 97203 Project Name: Project Number: Project Manager:

Portland Harbor 36238

Jennifer Shackelford

Report Created: 07/29/09 14:55

#### **Notes and Definitions**

### Report Specific Notes:

<u>Report Sp</u>	pecit	ie Notes:
В	-	Analyte was detected in the associated Method Blank.
С	-	Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
C8	-	Calibration Verification recovery was above the method control limit for this analyte. A high bias may be indicated.
J	-	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
R	-	The RPD exceeded the method control limit due to sample matrix effects. The individual analyte QA/QC recoveries, however, were within acceptance limits.
Laborator	ry Ro	eporting Conventions:
DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and

- Reporting Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic
   Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*.

   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

um

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
 425-47
 425-47

 11922 E. First Ave. Spokane, WA 99206-5302
 509-97
 509-97

 9405 SW Ninbus Ave.Beavertoin, OR 97008 7145
 507-98
 507-98

 9000 M. International Airpoir Rd Ste A11
 Archorage
 409502-1149
 907-86

425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 503-996 9200 FAX 966 9210 907-564 9200 FAX 563-9210

-		С	HAIN OF CUSTODY REPORT	<b>DY REPORT</b>	Work C	)rder #: P	Work Order #: PCF D2D (	
CLIENTE CIA, I Portland	Alend		INVOICE TO:			TURNAROU	ND REQUEST	[
REPORT TO:	T. Charboll Ch	A.	Charl	harles Lutle		in Busine	in Business Days *	
ADDRESS: UCUN			,	<i>C</i>		Organic & Inorganic Analyses	anic Analyses       3     2     1     <1	
PHONE	HAX.		P.O. NUMBER 36238	8		Petroleum Hydrocarbon Analyses	7	
PROJECT NAME: V			PRESER	PRESERVATIVE		5 4 3	2 1 <1	
PROJECT NUMBER: YUS + YU	ritaria Harby	A A			<u>31</u>	]   [  a	] ] ]	
TUT TUT	Tarias Tara	5 114 1947	REQUESTED ANALYSES	ANALYSES		OTHER Specify	y:	
		15 9	ن ع)		* lurnarouna	I Kequests less than 3	* Iurnaround Kequests tess than standard may incur Rush Charges	Sex.
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	12 18 17 17 17 17 17 17 17	2014 175 1924 1924		MATRIX (W, S, O)	# OF CONT.	LOCATION/ TA COMMENTS WO ID	<u> </u>
FOODSUTI	WH 109 1145	XXX	××		0			
rt ns bood	1352	$\chi   \chi   \chi$	XX		0			
FU009.	yell D	X	X		3			
F0095674	1420	X	×		3			
FO OGSW75	مرجهن	×	×		3			[
F0095676	\$ 0942	×	×		3			
7								
~		-						
	-							
10								
RELEASED BY: PRINT NAME: LEVEN	eremy Bitther HEM. Cloy if furthind TIME 0605	y if further	DATE: 060509 A TIME: 0810	RECEIVED BY: PRINT NAME:	FIRM	FIRM: TAP	рате: <b>6 / 5/</b> 02 Тиме: 26 <b>4</b> 0	30
RELEASED BY: PRINT NAME:	FIRM: THE		DATE: 6/5/ - 7 TIME: 0.9.2.0	PRINT NAME ALAAA		FIRM: THO		3
X CONTRARKS:	*) ROADON UNE CALDEBRITTON NAC ANABULK OIDE	NANC, ON OL	ute o i ot	ina de la			TEMP:	
							TAL. 1000(0408	] %

		TestAmerica Portland Sample Receiving Checklist
Work Clien		
Residu Quote	ial Chl #:	plete This Section: Yes No Yes No lorine Check Required: uctions:
Time I	Zone: T/EST	CDT/CST MDT/MST PDT/PST OTHER
Coc	oler #(s erature	g Checks:       Temperature out of Range:         s):
	Yes	No       Initials:         Initials:       Initials:         Initials:
		<ul> <li>8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.</li> <li>9. HF Dilution required?</li> <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>
		<ul> <li>12. Were VOA/Oil Syringe samples without headspace?</li> <li>13. Were VOA vials preserved? HCL Sodium Thiosulfate Ascorbic Acid</li> </ul>
		<ul> <li>14. Did samples require preservation with sodium thiosulfate?</li> <li>15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.</li> <li>16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.</li> <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>
		<ul> <li>19. Was Standard Turn Around (TAT) requested?</li> <li>20. Receipt date(s) &lt; 48 hours past the collection date(s)? If no, notify PM.</li> </ul>

	TestAr	nerica P	ortlar	nd
Sam	ple Re	eceiving	g Ch	ecklist

Work Order #: PSFOLOI
-----------------------

Logi	n Ch	ecks: Initials:
ΝΆ	Yes	No
	$\Sigma$	21. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
$\mathbf{k}$		22. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If
/		no, document on NOD and contact PM.
	$\Sigma$	23. Did the chain of custody include "received by" and "relinquished by" signatures,
	'	dates and times?
	$\not\!$	24. Were special log in instructions read and followed?
	Ø	25. Were tests logged checked against the COC?
X		26. Were rush notices printed and delivered?
Þ		27. Were short hold notices printed and delivered?
	$\not$	28. Were subcontract COCs printed?
$\triangleright$		29. Was HF dilution logged?
1		

### Labeling and Storage Checks:

No

Y∉s

Ń

 $\Box$ 

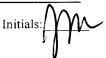
Π

NΑ

 $\mathbf{N}$ 

N

 $\mathbf{\nabla}$ 



30. Were the subcontracted samples/containers put in Sx fridge?

- 31. Were sample bottles and COC double checked for dissolved/filtered metals?
- 32. Did the sample ID, Date, and Time from label match what was logged?
- 33. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
- 34. Were HF stickers affixed to each container, and containers stored in Sx fridge?
- 35. Was an NOD for created for noted discrepancies and placed in folder?

 ${\rm Document}$  any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Printed on recycled paper