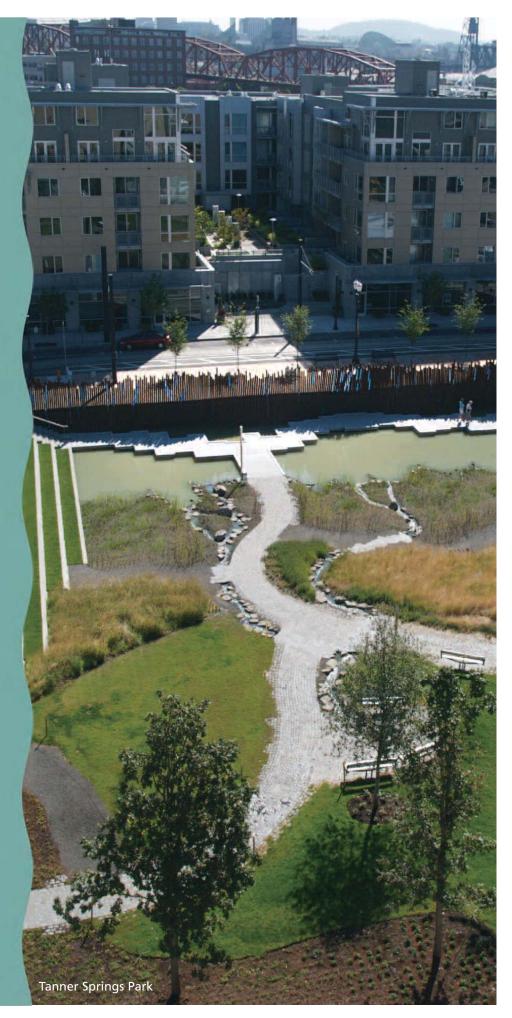
TECHNICAL MEMORANDUM

Tanner Creek Water Quality Characterization

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© Oregon Historical Society - indicating the original flow of Tanner Creek

Tanner Creek Water Quality Characterization

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Tanner Creek Water Quality Characterization

The primary objective of this technical memorandum is to evaluate whether the water in Tanner Creek is suitable to discharge to a potential restoration site for off-channel fish habitat at the confluence with the Willamette River. Other objectives include:

- Provide a summary of current and historical water quality, flow, and temperature
 monitoring data that has been collected in the Tanner Creek basin by the City of
 Portland's Bureau of Environmental Services (BES);
- Describe the evolution of land use in the basin and the subsequent changes to the drainage area that transformed it from a combined sewer basin to a stormwater-only drainage system.

The following sections summarize current and historical conditions in the basin, describe the various monitoring data sets, and discuss the future water quality and uses of this water for a potential restoration site where Tanner Creek enters the Willamette River.

Tanner Creek Basin Overview

The current Tanner Creek drainage system consists of two areas; the upper reach that is primarily residential and open space, and the lower reach that is a mix of residential, commercial and open space (Figure 1). Back in the late 1800s, Tanner Creek flowed naturally from its headwaters in the Central West Hills (a.k.a. the Sylvan Highlands) down to the shallow basin of Couch Lake that extended south of the Steel Bridge to the Fremont Bridge. As the population of Portland continued to grow in the late 19th century, Tanner Creek was rerouted underground through a system of pipes to the Willamette River (Attachment 1 shows photo of pipe construction). Couch Lake and the surrounding wetlands were filled in to make way for development and what eventually became transformed into the Pearl District. Tanner Springs Park (Attachment 2 provides photos of the park) located at NW 10th Avenue and Marshall Street, now sits about 20 feet above the former lake surface.

Land use within the Tanner Creek basin has changed over time. In the 1930s, the upper reach of the basin was almost all forested except for the zoo and sparse residential housing. Gradually, more residential areas and a commercial area were developed. Currently, about half of the upper reach is developed including Highway 26 (a U.S. highway that the Oregon Department of Transportation [ODOT] is responsible for maintaining). In the 1930s, the land use in the lower reach of the basin was almost exclusively industrial: Union Station, the Hoyt Street rail yard, and associated warehousing. The lower reach remained industrial until the late 1990s, after which a significant transition of land use began. This transition included the redevelopment of large tracts of land, many of which were considered brownfields. Currently, the area is a mix of residential and commercial uses with some open space consisting of parks or vacant land that is expected to be developed. Almost every property within the lower reach of

¹ A brownfield is a site where expansion, redevelopment or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant.

the basin is being evaluated under the Department of Environmental Quality (DEQ) Voluntary Clean-up Program (VCP). As part of the VCP site evaluation process, properties are required to evaluate stormwater quality and implement appropriate controls. The current status of the DEQ-VCP stormwater pathway evaluation is illustrated in Figure 2. Additionally, the redevelopment of this area has generally been done under the requirements of the City of Portland's Stormwater Management Manual (SWMM). The SWMM is a technical document that outlines the City's post-construction stormwater management requirements, and it applies to all development and redevelopment projects within the City of Portland on both private and public property.

Many of the pipes in the Tanner Creek conveyance system were historically combined (i.e., both stormwater and wastewater discharge to the same pipe) with combined sewer overflows (CSOs) occurring at the outfall. *The Tanner Creek Stream Diversion Project* was one of many city projects developed for managing CSOs to the Willamette River. It was an important project that contained many features for improving water quality and quantity, and was identified in the 1994 CSO Management Plan and in DEQ's Amended Stipulation and Final Order ² (BES, 1997, 2008). The purpose of the project was to construct a separated storm-only pipe system to convey runoff from undeveloped areas and treated stormwater from impervious areas to the Willamette River (see Figure 3 for break down of natural and piped flow). The completed Tanner Creek Stream Diversion Project removes about 165 million gallons of stormwater annually from the combined system. A great deal of the stormwater runoff comes from forested areas in the upper reaches of the basin (Attachment 3 provides photos of the forested headwaters) and was determined to be clean enough³ for direct discharge to the Willamette River.

An important component of the Tanner Creek Stream Diversion Project was to convey runoff from impervious surfaces into a series of water quality treatment facilities before allowing the flows to discharge to the storm-only system. As a result, four pollution reduction swales were constructed to treat flows from drainage areas along Highway 26: two in the *South* swale system (a.k.a. the Gulch area) and one each in the *Meadows* and the *Jefferson* swale systems (Attachment 4 provides the construction drawing for the swales; Attachment 5 shows post construction pictures). The swales were designed as grassy open channels (e.g., flow-through facilities) to trap pollutants by filtering and slowing flows to allow heavier particles to settle out (BES, 2005).

The scope of this City of Portland project was quite large and took many years to complete. Phase I of the project began in 1994 and final completion was in 2007. As a result of removing clean water flows from the Tanner Creek combined sewer system and directing the combined flow to the Westside tunnel, CSOs from the Tanner Creek basin have been eliminated. Tanner Creek is now a separated storm-only drainage system and is considered part of the City's Municipal Separate Storm Sewer System (MS4). As such, it is subject to the requirements of the City's National Pollutant Discharge Elimination System (NPDES) MS4 discharge permit that was issued on January 31, 2011 as a second renewal of the 1995 original permit.

Tanner Creek discharges to the Willamette River through Outfall 11. Figure 4 provides a graphic illustration of the Outfall 11 drainage area, both before and after the completion of the

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² The Amended Stipulation and Final Order from the Department of Environmental Quality (and as agreed to by the City of Portland) required BES to drastically reduce the volume of overflows to outfalls on the Willamette River by the year 2011.

³ Clean water is defined as meeting EPA discharge standards for end of pipe discharge.

Tanner Creek Stream Diversion Project. The pre-stream separation drainage area delineation was based on contour intervals and existing watershed boundaries. As illustrated, the delineation of the drainage area changed considerably after the stream diversion project was completed.

Monitoring Data and Analysis

Flow and water quality monitoring has been conducted at various time periods and locations within the Tanner Creek basin and represent both historical and current conditions. The subsections below summarize flow, water quality, and temperature monitoring data and results. These monitoring data were collected for a variety of purposes and some were targeted at only certain areas within the basin. Since much of the data have not been documented in other reports they are summarized herein.

Flow Monitoring

Flow monitoring data for Tanner Creek were collected in:

- March May 2002 five storm event hydrographs
- January 2008 May 2009

The purpose of the flow monitoring conducted in 2002 was to characterize potential Westside Tunnel CSO discharges during large storm events. The monitoring was part of a CSO Characterization Water Quality Monitoring Project along with five other outfalls in Portland.

In 2008, flow monitoring was initiated to assist BES Engineering Services with characterization of the Tanner Creek basin as part of preparing a new Stormwater System Plan. The flow monitor measured stormwater runoff from the upper reach of Tanner Creek.

2002 CSO Event Flow Monitoring

CSO event hydrograph monitoring was conducted to collect flow-composite samples at NW 10th Avenue and NW Lovejoy Street (Figure 5) a site that is located just upstream of water quality monitoring site TC2 (a site sampled in 2010) and has been retroactively labeled TC2002 (see Figure 2).

Flow was measured at this site using an ISCO 4150 flow meter that utilizes submerged areavelocity sensors. The sensor registers level and velocity information of the flow stream, and in conjunction with site-specific information (i.e., pipe size, pipe shape) calculates a flow rate. Flow data was recorded at 10-minute intervals. Due to some inaccuracies in the velocity measurements, calculated flows were determined to be inaccurate (BES, 2002). However, the recorded water levels provide an indication of relative change in flow.

Figure 6 shows the hydrographs of the five CSO events sampled in 2002. The first two events were collected during the same storm event a few hours apart. The hydrographs show a rapid response within about one hour of rainfall above 0.02 inch per hour, but just as quickly as the rising limb of the hydrograph ascends the falling limb descends as the rainfall ends.

The base flow is indicated by a 1-inch water level. During peak flows in response to up to 0.17 inches per hour of rain, the water level reaches 34 inches. Tanner Creek clearly showed very flashy characteristics most likely driven by impervious surfaces, but also by low-permeability

soils and steep slopes, and very little subsurface flow appears to enter the creek after the rainfall has ended. Due to the lack of continuous flow data, no flashiness index can be calculated.

2008-2009 Continuous Flow Monitoring

Continuous flow monitoring was conducted with a Sigma 950 flow meter from January 30, 2008 to May 8, 2009 in 15-minute intervals at NW 17th Avenue and NW Hoyt Street (Figure 5) to quantify the flow after the completion of the stream diversion project. The flow varied from below 1 cubic foot per second (cfs) in late summer to about 50 cfs during a winter storm. The rising limb of the hydrograph responds quickly to rainfall, but the falling limb declines more slowly, which could be an indication of subsurface flow entering the creek after the end of the rainfall event (Figure 6).

The Richards-Baker flashiness index (RBFI) (Baker et al, 2004), an index that allows quantifying the frequency and rapidity of short-term changes in stream flow, was computed on daily average flows and compared to other Portland area streams for which flow data is available.

The RBFI shows that while Tanner Creek (RBFI = 0.26) is flashier than the Willamette River (RBFI = 0.10) it is much less flashy than other urbanized tributaries to the Willamette River that have RBFIs of 0.32 to 0.72. The other heavily urbanized westside stream, Stephens Creek, has a RFBI of 0.69. The RFBI appears to be highly correlated to the total impervious area within a watershed, but is also affected by steepness of slopes, soil type, and the size of watershed. In the Portland area, generally, smaller watersheds tend to have steeper slopes with less permeable soils, translating to a higher RBFI.

Tanner Creek discharges to the Willamette River though Outfall 11. As Figure 5 shows, the vast majority of the catchment is forested and the total impervious area (TIA) above the flow monitoring point at NW 17th Avenue and NW Hoyt Street is about 16 percent. Other westside streams such as Fanno and Tryon Creeks have TIAs of 26 and 22 percent, respectively. The flashiness of Tanner Creek does not appear to jeopardize the possibility of enhancing the confluence area to provide off-channel aquatic habitat, since other streams with higher RBFIs have undergone successful enhancement at their confluence with the Willamette River (e.g., Stephens Creek confluence).

Water Quality Monitoring

This section summarizes the water quality monitoring data collected for Tanner Creek by BES. Water quality monitoring data for Tanner Creek were collected in:

- March May, 2002 five storm event samples
- January, May June 2003 one storm event and two dry samples
- July November 2008 two storm event and two dry samples
- April June, December 2009 four dry samples
- January June 2010 seven samples (two sampling events occurred in May, with three of the seven samples collected during storm events)

The results of and the purpose for collecting each monitoring data set (2002, 2003, and 2008-2010) are provided below. This is followed by a water quality analysis of the most recent data set.

Water Quality Data Results

2002 Data Results

The purpose of the water quality monitoring conducted in 2002 was to characterize CSO discharges during large storm events as part of a CSO Characterization Water Quality Monitoring Project, along with five other outfalls in Portland. The sampling location was just upstream of site TC2 (a site sampled in 2010) and has been retroactively labeled TC2002 (Figure 2).

Prior to the construction of the Tanner Creek Stream Diversion Project, BES collected flow-composite samples during five CSO events at a manhole located at NW 10th Avenue and NW Lovejoy Street. The sample collected on March 18, 2002 had the lowest 24-hour rainfall amounts and the lowest overall pollutant concentrations (Table 1). The other four sampling events indicate similar pollutant concentrations despite 24-hour rainfall totals ranging from 0.23 to 0.82 inches. Although these data are not representative of typical (non-CSO event) stormwater discharges, the water quality of the 2002 data set is compared to current stormwater quality in the Section "Evaluation of 2008-2010 Data" below, as it is the only historical data set that represents most of the basin.

2003 Data Results

The limited 2003 water quality sampling work in the upper reach of the basin was conducted to characterize the water quality in small tributary streams, as well as from discharge pipes that convey stormwater runoff from impervious areas.

As part of the Tanner Creek Stream Diversion Project, BES conducted limited water quality grab sampling at eight different locations during three monitoring events in 2003 (Figure 7). Five of these locations were monitored in January, two in May and one in June (Table 2). The January monitoring event was considered a storm event with greater than 0.1 inch of rain in the six hours preceding the sample collection. The other two monitoring events were considered dry.

Sample sites 1WQF to 3WQF and 4WQ to 5WQ were collected in various small streams in the vicinity of the Oregon Zoo and Hwy. 26, while samples 6AWQ and 6CWQ were collected at discharge points at the Oregon Zoo off-ramp (Note that sample sites 6AWQ and 6CWQ are very close to each other and therefore, show up as a single dot on Figure 7).

Water quality in samples 1WQF to 3WQF and 4WQ to 6CWQ was good with only E. coli exceeding the water quality criterion in three out of the seven samples.

The sample with the highest overall concentrations was collected at site 8WQ in June 2003, from a ditch at the U.S. Hwy 26/Jefferson Street off-ramp. The stormwater runoff at this location is part of ODOT's stormwater conveyance system and not waters of the State. The field report indicates that the stormwater sample was turbid and dark in color with a slight sheen, but that it had no odor. The flow was steady yet low, and did not change over the 15-minute period during which the sample was collected. Using the instream water quality criteria (WQC) as a screening tool, this sample had some pollutant concentrations above their respective WQC. Analytes for which no WQC are available were screened using conservative reference values (see footnote 3 in Table 7). Some of these analytes were at levels that may indicate a potential concern for aquatic species. Despite a total suspended solid (TSS) concentration below 100 mg/L, total copper, lead and zinc were between 7 and 16 times higher than their respective

WQC. In addition, ammonia-N was extremely high (i.e., above the EPA-proposed ammonia standard for the presence of freshwater mussels by a factor of about 12) despite the fact that the pH and temperature were fairly low. Since only one sample was collected at the 8WQ site, it cannot be determined whether this sample was truly representative of the conditions at this location.

This information was used to gauge the need for additional stormwater treatment as part of the Tanner Creek Stream Diversion Project. Even though the results were not conclusive, a series of stormwater treatment facilities were built to capture and filter much of the runoff that primarily flowed off of Highway 26 (Attachment 5 provides photos of the constructed swales). The Oregon Zoo parking lot stormwater treatment facility was another of several related projects designed to detain and treat stormwater close to its source in the upper watershed.

2008-2010 Data Results

In 2008, the BES Willamette Watershed Team initiated the collection of ambient water quality data near the Tanner Creek outfall in order to characterize conditions of the creek after the construction of the Diversion Project. The City was also interested in whether the water quality of Tanner Creek was suitable for an aquatic habitat enhancement project at the confluence to benefit anadromous salmonids migrating through the Willamette River.

Water quality samples were collected at the closest possible location to the discharge point into the Willamette River (Figure 2). Monthly grab samples were collected from a manhole located at NW Front and 9th Avenues, just upstream from Outfall 11 (TC1 in Figure 2). This sampling point represents nearly⁴ all the flow discharging to the piped stream and is considered representative of the water quality of the Tanner Creek drainage. During certain times of the year, this primary Tanner Creek outfall sampling location became inundated with Willamette River water due to increased flows and rising river levels. When this occurred, samples were collected from an alternate location at NW Marshall Street and NW 10th Avenue (TC2). During one sampling period, a third monitoring site at NW Johnson Street and NW 11th Avenue (TC3) needed to be used, as both TC1 and TC2 were inundated due to high flows in the Willamette River. These alternate locations were only used until river levels dropped below the invert of the primary sampling location. Photographs of all three monitoring sites can be seen in Attachment 6.

In 2010, the monthly characterization effort expanded to include the analysis of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and phthalates in order to generate a more robust assessment of potential pollution sources present in the basin. Three of the seven samples collected during this expanded sampling effort were targeted at storm events.

A total of 16 samples were collected between July 2008 and May 2010 (Table 3).

All three of the upstream samples (two at TC2 and one at TC3) were collected during dry weather events. A dry weather event is defined as less than 0.1 inch of rain in the preceding 24 hours. The rainfall in the seven-day period preceding the sampling events was between 0.0 and 2.1 inches.

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⁴ There may be stormwater discharges to the Tanner Creek conveyance system from the Centennial Mill site, adjacent to the outfall. A stormwater pathway evaluation is currently being conducted at the site under DEQ oversite.

The water quality for all three of these sampling events is similar to the dry weather samples collected at TC1, as indicated by the ratio of the median concentrations (Table 4). In addition, a non-parametric comparison⁵ of samples collected at TC2 and TC3 combined, and the dry and wet samples collected at TC1, clearly indicates that the samples collected at the more upstream locations are most closely related to the dry samples collected at TC1. Figure 8 provides the statistical comparison graphs. This fact appears to indicate that even though these samples were collected at more upstream locations, the dry weather water quality is not substantially different from the more downstream location. Therefore, the data collected from TC1, TC2 and TC3 can be analyzed together for a more robust dataset.

The 16 monitoring events are separated into 11 dry and 5 wet weather samples using the preceding 24-hour total rainfall of greater than 0.1 inch to indicate a wet weather event (Table 3). Figure 9 provides graphical displays of wet and dry weather concentrations for selected pollutants. Water quality in the 11 dry weather monitoring events is good and no acute water quality criteria are exceeded. The July 2008 event had the highest TSS, but by far the lowest total dissolved solids (TDS) and hardness concentrations coupled with fairly low temperature for a mid-summer monitoring event. The antecedent dry period for this event was more than seven days. All other samples from the ten events had fairly similar water quality for all pollutants analyzed. The April 2009 event had the second highest TSS concentrations of all 11 dry events and the highest total zinc concentrations. None of the other analyte concentrations appear unusual.

With the exception of the two late summer wet weather events, the five wet weather samples showed substantially higher concentrations for most of the pollutants analyzed. The March and May 2010 events had TSS concentrations over 300 mg/L, resulting in high total metal concentrations as well. The April 2010 event had TDS concentrations of over 900 mg/L, possibly resulting in the highest dissolved lead and zinc concentrations of all 16 events.

A comparison of the median concentrations of wet and dry events showed that 8 of the 23 analytes had median concentrations greater than three times the median concentrations from dry events (Table 5). The greatest difference was observed for E. coli median concentrations followed by the heavy metals and TSS. Median ammonia-N concentrations, on the other hand, were lower during the wet weather events.

Twenty-two PAHs were analyzed for four dry and three wet weather events (Table 4). Figure 10 provides graphical displays of wet and dry weather concentrations for selected PAHs. Of the 22 PAHs, 7 (acenaphthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene) were detected in every sample. More PAHs were detected during dry events than during wet events. There were substantial differences in individual PAH concentrations between the four dry and the three wet weather events. However, the sample size was too small to gain a more accurate understanding of what may have been driving the PAH concentrations.

Based on the four dry and three wet event samples collected, it appears that the median PAH concentrations are lower during wet events than dry events. For four of the seven PAHs that were detected in all five events, the ratio of median wet and dry event concentrations was below 0.5 (Table 5). These ratios are in clear contrast to the ratios found for most of the

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⁵ The Kruskall-Wallis Multiple Comparison is a non-parametric test that looks for the significance of differences among groups of data and then does a comparison among the groups to see which ones, if any, are different.

conventional pollutants that had higher wet weather concentrations. PAH-contaminated groundwater has been documented in the lower reach and has been under active remediation through the DEQ VCP. The presence of slightly higher PAH concentrations during dry weather may be a result of groundwater infiltration into the conveyance system. However, the size of the dataset is insufficient to evaluate the significance of this difference or draw any further conclusions.

PCB congeners were analyzed in seven samples collected in 2010 at TC1 or TC2. Of the PCB congeners analyzed in all seven events, very few were detected above the congener-specific method reporting limits (MRLs). Four events had no detected PCB congeners, one event (May 19, 2010) had one detected congener and two events (February 23, 2010 and March 29, 2010) had seven and eight detected congeners, respectively. Most of the detected congeners were less than two times the MRL. Since detections occurred in dry and wet weather samples, and the concentrations of the detected congeners are only slightly above the respective MRLs, it appears that the available data set is not sufficient for any further statistical analysis or assessment of the potential impact of PCBs on aquatic species.

Evaluation of 2008-2010 Data

The following subsection summarizes improvements in water quality since the separation of the Tanner Creek basin⁶, evaluates current water quality discharges, and compares Tanner Creek water quality to other westside streams.

Historical and Current Discharges

In order to evaluate changes in wet weather water quality before and after separation of the basin, historical (2002) and current (2008-2010) water quality was compared. These two data sets are not entirely comparable, because the 2002 data represent CSO discharges and the 2008-2010 data represent stormwater-only discharges. However, since CSO discharges are typically more than 80 percent stormwater, this comparison will provide an indication of stormwater quality changes, although it should be noted that it likely overestimates changes in water quality.

A comparison of the median concentrations of the 2002 and 2008-2010 wet event samples reveal that the 2002 pollutant concentrations were, with few exceptions, three to eight times higher than in 2008-2010 (Table 6). The Tanner Creek Stream Diversion Project appears to have improved the quality of the water discharging to the Willamette River. This improvement can likely be attributed to the elimination of drainage from a large developed area and its associated stormwater and wastewater discharges, and to water quality improvements implemented through City (e.g., facilities to treat highway runoff; SWMM requirements at redeveloped sites; industrial NPDES stormwater permits) and State (e.g., Cleanup program stormwater pathway controls) programs.

Water Quality Screening

While DEQ's WQC are technically not applicable to water quality data collected in Tanner Creek in 2008 to 2010 (Tanner Creek is considered part of the MS4 drainage system), they can be used as a screening tool and are useful to evaluate the water quality near the discharge point to the Willamette River. Pollutant concentrations based on metrics described in, 'Methodology for

⁶ The separation of stormwater and stream flows from wastewater and the elimination of combined overflows.

Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters' (2010 Methodology) were calculated and compared to the appropriate WQC, or in the absence of WQC, reference values (see footnote 3 in table 7) that are based on other available information (e.g., NOAA Fisheries guidance, EPA draft criterion, etc.). The 2010 Methodology defines, among other things, when a water body is considered water quality limited and needs to be placed on the State's 303(d) list. The methodology differs with each pollutant and is related to the variability in monitoring the pollutant, as well as the potential impact of the pollutant to the beneficial uses of a particular water body.

For the 2008-2010 dataset, 8 of the 15 analytes evaluated had concentrations that were above the WQC or reference values. Of the analytes most critical to aquatic species, only TSS appears to be above concentrations of potential concern, while dissolved copper, dissolved oxygen and temperature were at levels supportive of aquatic life. Analyte concentrations during dry events were generally lower and only four analytes had concentrations above the WQC or reference values, while during wet events eight analytes had concentrations higher than the WQC or reference values.

Comparison to Other Westside Streams

Tanner Creek has been diverted into a pipe with the exception of a few unnamed tributaries that still flow in open channels in the Central West Hills above Highway 26. Tanner Creek enters the stormwater system in the upper portion of the watershed and is piped underground before discharging to the Willamette River. Tanner Creek was compared to more free-flowing westside streams (BES, 2010) to evaluate its suitability as aquatic habitat, if future opportunities were to ever allow for the re-routing and daylighting of the creek. This possibility is still being considered as a means to create off-channel aquatic habitat for salmonids at the confluence area of Tanner Creek and the Willamette River.

Data collection in four of the five westside streams reviewed as part of this evaluation started as early as 1996 in Balch Creek, and 2002 in Miller, Saltzman, and Stephens Creeks (BES, 2010), and was compared to data collection in Tanner Creek that began in 2008 (Table 8). Only 16 data points were available for Tanner Creek, while the other four streams had between 75 and 175 data points for many of the analytes. The comparisons among the five streams need to be viewed with the fact in mind that the size of the data sets are vastly different, and that the data span very different time periods. In addition, not all the samples were collected close to the confluence with the Willamette River. While the Stephens and Miller Creek sampling locations represent more of the entire watershed, the Balch and Saltzman Creek sampling locations are more indicative of the upper, mostly forested portions of their respective watersheds.

For most analytes, Tanner Creek had the highest mean, median, and 95th percentile concentrations of the five westside streams assessed, while the lowest concentrations were typically found in Miller, Saltzman or Balch Creeks – waterways that are much less urbanized than Stephens and Tanner Creeks. On the other hand, stream temperatures in Tanner Creek are lower than in three of the four other streams. This is likely due to the fact that Tanner Creek is piped underground through the urbanized area. In general, the water quality in Tanner Creek is similar to Stephens Creek, the other more highly urbanized stream. Several anadromous salmonid fish species such as Chinook, Coho salmon and steelhead have been surveyed in the Stephens Creek confluence area both before and after the completion of the *Stephens Creek Confluence Habitat Enhancement Project*. Despite the overall lower water quality in Tanner Creek

as compared to other less impacted westside streams, none of the pollutants analyzed appear to be at concentrations to pose serious risks to aquatic life.

Temperature/Cold Water Refugia (CWR) Monitoring

In response to the Willamette Basin temperature Total Maximum Daily Load (TMDL), BES has been monitoring temperature of the mainstem Willamette River and some of its major tributaries. The numeric temperature criteria for the mainstem Willamette River has been set at 20°C to allow for protection as a salmonid and steelhead migration corridor. In addition, the temperature standard and the TMDL describe the need for sufficiently distributed cold water refugia (CWR) when river temperatures rise above the numeric criteria in the summer and early fall. CWR are defined as "those portions of a water body where, or times during the diel temperature cycle when, the water temperature is at least 2°C cooler than the daily maximum temperature of the adjacent well mixed flow of the water body" (OAR 340-041-0002 and OAR 340-041-0028).

Recently, the City has started to identify potential CWR to ensure these areas are protected, as well as to help guide future aquatic habitat restoration and stream enhancement projects. During an extremely hot stretch of weather in August 2009, an initial reconnaissance effort was launched to begin the process of identifying cold water "stepping stones" for migratory salmonids along the Lower Willamette River (BES, 2009). A number of areas along this stretch of the river were sampled and included both perennial streams with ample groundwater base flows and confluence channels (prime CWR), as well as piped streams with outfalls to the river.

A Forward Looking Infrared (FLIR) thermal imaging camera was employed to capture surface water temperatures in conjunction with a hand-held temperature monitor to determine if temperature differences could be detected below the water surface. The results for Tanner Creek revealed that water flowing from the outfall was close to 6°C cooler than the surface water temperature of the river (Attachment 7 shows the FLIR image for the outfall). Even though the cooler water discharging from the Tanner Creek outfall dissipated almost instantly when it mixed with the Willamette River, the information supports the potential for off-channel aquatic habitat enhancement at this site and the opportunity to create important CWR for migrating salmonids.

Conclusions

Tanner Creek basin monitoring indicates that during wet weather sampling, the concentration of many analytes is greater than during dry weather events. This is expected because the vast majority of dry weather flow comes from spring-fed tributaries in the Tanner Creek headwaters, while during wet weather flow, stormwater runoff from impervious surfaces contributes a large percentage to the total flow. However, PAH concentrations show the opposite trend - dry weather concentrations are slightly higher than wet weather concentrations. One possible explanation is that during dry weather PAH contaminated groundwater entering Tanner Creek close to the outfall makes up a higher percentage of the total flow than during wet weather sampling events. Additional cleanup efforts at some of the potentially contaminated sites could lead to improved water quality in Tanner Creek.

Future stormwater quality is expected to remain constant or improve as City and State programs are implemented in the basin. For example, all the industrial properties in the lower

reach have been evaluated by DEQ and the stormwater pathway has been determined to be insignificant. Many of these sites have temporary caps that prevent exposure to subsurface contamination and are awaiting redevelopment. During redevelopment, the City's SWMM requirements for stormwater quality treatment will be triggered, which is expected to result in reduced stormwater runoff and improved water quality.

Water quality at the Tanner Creek outfall is comparable to the urbanized Stephens Creek, but lower than less impacted westside streams such as Miller and Saltzman Creeks. However, despite the overall lower water quality in Tanner Creek, none of the pollutants analyzed appear to be at concentrations to pose serious risks to aquatic life. In addition, temperature monitoring indicates that Tanner Creek is 6°C cooler than the surface water temperature of the Willamette River. Therefore, the area around the outfall has the potential to provide off-channel aquatic habitat and the opportunity to create an important Cold Water Refugia for migrating salmonids. Additional stormwater BMPs and treatment facilities implemented as part of DEQ VCP activities, and BES redevelopment requirements in the more developed portions of the basin will further increase the potential of the Tanner Creek confluence area to provide good habitat for migrating salmonids.

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Table 2 - 2003 Water Quality Monitoring

Table 3 - 2008-2010 Water Quality Monitoring

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Table 7 - Water Quality Screening Data: 2008 - 2010

Table 8 - Comparison Among Westside Streams

Figures

Figure 1 - Outfall 11 (Tanner Creek) Drainage Area with Land Use Designations

Figure 2 - 2002, 2008-2010 Water Quality Monitoring Locations/DEQ VCP Stormwater Pathway Status/Lower Portion of Drainage Area

Figure 3 - Tanner Creek and Tributaries/Piped Flow and Natural Flow

Figure 4 - Outfall 11 Drainage Area Pre & Post Tanner Creek Stream Separation

Figure 5 - Flow Monitor Drainage and Impervious Areas

Figure 6 - Tanner Creek Storm Event Hydrographs

Figure 7 - 2003 Water Quality Monitoring Locations/Upper Portion of Drainage Area

Figure 8 - Test for Differences among TC1 - Wet, TC1 - Dry, and TC2/3 - Dry Data

Figure 9 - Wet and Dry Events Graphs for Selected Pollutants

Figure 10- Wet and Dry Events Graphs for Selected PAHs

Attachments

Attachment 1 - Tanner Creek Sewer Construction Photo

Attachment 2 - Tanner Springs Park Photos

Attachment 3 - Tanner Creek Headwater Tributary Photos

Attachment 4 - Tanner Creek Sewer Separation Pollution Reduction Swale As-built drawing

Attachment 5 - Tanner Creek Sewer Separation Pollution Reduction Swale Photos

Attachment 6 - Tanner Creek Water Quality Monitoring Location Photos

Attachment 7 - FLIR Images of Tanner Creek Outfall

Attachment 8 – 2002 BES Water Pollution Control Laboratory Results (see Supplement)

Attachment 9 – 2003 BES Water Pollution Control Laboratory Results (see Supplement)

Attachment 10–2008-2010 BES Water Pollution Control Laboratory Results (see Supplement)

Attachment 11-Test America Laboratory Results: PAH Analysis (see Supplement)

Attachment 12- Pace Analytical Laboratory Results: PCB Analysis (see Supplement)

Supplement - Tanner Creek Water Quality Characterization

(Attachments 8-12 under separate document; 'Supplement')

TABLES

	TAI	BLE 1 – 2002 C	SU Chai	racterizat	10 n			
	San	pling Location			TC	2002		
		Sampling Date	3/11/02	3/11/02	3/18/02	4/13/02	5/28/02	
		Sampling Time	9:20	14:49	22:44	19:34	14:19	
	6-h antecedent rainfall (inch)				0.10	0.16	0.07	
24-h antecedent rainfall (inch)				0.82	0.15	0.23	0.33	
	7-d anteceden	t rainfall (inch)	1.42	1.90	0.87	0.99	0.37	
Analyte ¹	Method	Units						Median
arsenic	EPA 200.8	μg/L	2.56	2.88	1.74	2.91	3.53	2.88
arsenic, dissolved	EPA 200.8	μg/L	1.15	0.92	1.23	1.75	2.64	1.23
bod - 5	SM 5210 B	mg/L	11		8	21	28	16
cadmium	EPA 200.8	μg/L	0.37	0.32	0.16	0.45	0.50	0.37
cadmium, dissolved	EPA 200.8	μg/L	< 0.1	< 0.1	< 0.1	< 0.1	0.11	< 0.1
copper	EPA 200.8	μg/L	22.8	25.7	12.1	32.4	33.9	25.7
copper, dissolved	EPA 200.8	μg/L	4.77	3.82	4.85	6.66	9.69	4.85
hardness, total	SM 2340 B CA	mg CaCO3/L	36.1		26	21.3	29.6	27.8
lead	EPA 200.8	μg/L	18.9	26.7	6.34	21.5	28.9	21.5
lead, dissolved	EPA 200.8	μg/L	0.23	0.24	0.22	0.34	0.76	0.24
mercury	EPA 200.8	μg/L	< 0.01		0.019	0.094	0.197	0.057
mercury, dissolved	EPA 200.8	μg/L	0.049		< 0.01	< 0.01	< 0.01	< 0.01
nitrogen - ammonia	EPA 350.1	mg/L	0.54		0.42	0.51	0.97	0.53
nitrogen - nitrate	EPA 300.0	mg/L	0.52		0.41	0.22	0.39	0.40
рН	SM 4500-H B	S.U.	7.3		7.2	6.6	7.0	7.1
phosphorus - total	EPA 365.4	mg/L	0.65		0.34	0.78	0.74	0.70
solids - total	SM 2540 B	mg/L	412		185	272	178	229
solids - total dissolved	SM 2540 BD	mg/L	60		130	10	58	59
solids - total suspended	SM 2540 D	mg/L	352		53	262	120	191
turbidity	SM 2130 B	ntu	160		37	50	70	60
zinc	EPA 200.8	μg/L	104	119	60.9	154	207	119
zinc, dissolved	EPA 200.8	μg/L	17.5	14.2	25	37.5	64.3	25.0

	TA	BLE 2 – 20	003 Water (Quality I	Monitori	ing						
	Sampling	Location	1WQF 2	WQF 3	WQF	4WQ	5WQ	6AWQ	6CWQ	8WQ		
	Samp	oling Date		5/13	23:39	6/13/03						
	Samp	ling Time	9:25 9:	:25 9:35 10:10 10:30 10:45 23:26								
				WET D								
6-	h antecedent rain	fall (inch)		0	.13			0.0	00	0.06		
24-	h antecedent rain	fall (inch)			.32			0.0	00	0.06		
7-	d antecedent rain	fall (inch)		0	.32			0.2	21	0.06		
Analyte ¹	Method	Units	1WQF	2WQF	3WQF	4WQ	5WQ	6AWQ	6CWQ	8WQ		
arsenic	EPA 200.8	μg/L	0.6	0.61	0.44			0.6	0.66	1.95		
arsenic, dissolved	EPA 200.8	μg/L	0.13	0.33	0.16			0.45	0.46	1.02		
cadmium	EPA 200.8	μg/L	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	1.2		
cadmium, dissolved	EPA 200.8	μg/L	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	1.17		
chromium	EPA 200.8	μg/L	2.95	2.09	2.37			1.2	1.61	14.7		
chromium, dissolved	EPA 200.8	μg/L	< 0.4	0.5	0.57			0.48	0.85	3.18		
conductivity - specific	SM 2510 B	umhos/cm	89	113	143	21	120	178	167	416		
copper	EPA 200.8	μg/L	3.56	3.26	3.57			1.51	1.33	195		
copper, dissolved	EPA 200.8	μg/L	1.35	1.35	1.22			1	0.64	103		
dissolved oxygen	SM 4500-O G	mg/L	11.8	12	12.1	12	11.8	10.7	11	7.1		
e. coli	SM 9223 B	mpn/100 m		1400	20	980	640	140	41	17000		
hardness, total	SM 2340 B CA	mg CaCO3		37.7	54.4			66.5	60	90.5		
heavy fuel oil	NWTPH-HCID	mg/L	< 0.63	< 0.63	< 0.63			< 0.63	< 0.63	< 0.63		
lead	EPA 200.8	μg/L	2.25	1.25	2.32			0.3	0.43	21.4		
lead, dissolved	EPA 200.8	μg/L	< 0.1	< 0.1	< 0.1			< 0.1	< 0.1	3.53		
mercury	EPA 200.8	ug/L	0.013	< 0.01	< 0.01			<0	<0	0.035		
mercury, dissolved	EPA 200.8	ug/L	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	0.0096		
nickel	EPA 200.8	ug/L	2.22	1.24	1.33			1.04	0.87	23.6		
nickel, dissolved	EPA 200.8	ug/L	0.39	0.38	< 0.2			0.47	0.32	14.4		
nitrogen - ammonia	EPA 350.1	mg/L	< 0.02	< 0.02	< 0.02			0.024	< 0.02	17.7		
nitrogen - nitrate	EPA 300.0	mg/L	0.88	0.58	2.2			0.92	1.8	4.1		
nitrogen - nitrite	EPA 353.2	mg/L	< 0.01	< 0.01	< 0.01			< 0.01	< 0.01	0.43		
nitrogen - total kjeldahl	EPA 351.2	mg/L	0.6	0.49	0.76			0.26	0.25	21.7		
oil/grease - total	EPA 1664	mg/L	<5	<5	<5			<5	<5	26.3		
рН	SM 4500-H B	S.U.	7.1	7.1	7.2	7.2	7.5	7.3	7.5	6.5		
phosphorus - ortho phosphate (dissolved)	EPA 365.1	mg/L	0.033	0.039	0.043			0.026	0.045	0.14		
phosphorus - total	EPA 365.4	mg/L	0.14	0.12	0.26			0.058	0.084	0.53		
solids - total	SM 2540 B	mg/L	145	97	207			147	141	305		
solids - total dissolved	SM 2540 BD	mg/L	120	83	90			140	140	230		
solids - total suspended	SM 2540 D	mg/L	23	14	117			2	6	78		
temperature	SM 2550 B	°C	5.7	6.6	5.5	6.1	5.6	12	10.8	14.9		
zinc	EPA 200.8	μg/L	9.27	15.3	7.19			4.69	12.3	803		
zinc, dissolved	EPA 200.8	μg/L	0.62	2.71	< 0.5			1.7	6.93	557		
¹ Analytical laboratory repo						1	1	1	1	,		

	Sar	npling Location		T			TC3			<u>гС1</u>		T	CC2			TC1		
TABLE 3 – 2008-2010		Sampling Date	7/28/08	10/27/08	11/17/08	4/30/09	5/27/09	6/22/09	12/29/09	1/26/10	2/23/10	5/25/10	6/21/10	8/25/08	9/22/08	3/29/10	4/27/10	5/19/10
WATER QUALITY		Sampling Time	11:01	12:01	10:35	15:43	11:23	12:07	9:25	13:31	11:04	13:58	12:41	12:38	14:20	13:05	10:22	15:44
MONITORING		1 0						DRY			1				l .	WET	1	1
Montoning	6-h anteceder	nt rainfall (inch)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.21	0.10	0.26
		ecedent rainfall	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.04	0.07	0.43	0.14	0.82	0.65	0.26
		nt rainfall (inch)	0.00	0.00	1.56	0.50	0.00	0.74	0.00	1.01	0.03	2.14	0.47	1.14	0.40	2.08	0.70	0.65
A 1.1		` ′	0.00	0.02	1.30	0.30	0.00	0.74	0.02	1.01	0.03	2.14	0.47	1.14	0.40	2.08	0.70	0.03
Analyte 1	Method	Units	-2			2	-2	-2	-2			-2	-2	T <2	-2	2		10
bod - 5 cadmium	SM 5210B /H1 EPA 200.8	mg/L	<2	<2	<2	3	<2	<2	<2	<0.1	<2 <0.1	<0.1	<2 <0.1	<2	<2	0.16	<0.1	0.25
cadmium, dissolved	EPA 200.8	μg/L μg/L								<0.1	<0.1	<0.1	<0.1			<0.16	<0.1	<0.1
conductivity - specific	SM 2510 B	μg/L μmhos/cm	73	245	224	197	169	199		149	179	148	184	238	368	72	1017	58
	EPA 200.8	μηπιος/em μg/L	6.82	1.51	0.9	4.09	1.04	0.84	1.95	2.45	1.02	2.31	2.63	1.24	3.02	18.6	7.38	40.2
copper copper, dissolved	EPA 200.8	μg/L μg/L	1.63	0.52	0.9	0.57	0.47	0.46	0.58	1.25	0.5	1.1	0.72	0.8	1.83	2.48	7.36	3.81
dissolved oxygen	SM 4500-O G	mg/L	10.7	10.5	10.1	11.5	11.6	10.8	11.5	12.8	11.2	12.4	11.3	7.4	9.5	12.3	12.3	11
e. coli	COLILERT QT	mpn/100 ml	<10.7	85	160	<10	<10	10.8	<10	10	<10	10	20	230	580	1400	360	3400
hardness, total	SM 2340 B CA	mg CaCO3/L	22.2	88.5	86.2	71	63	77.8	70.3	52.4	68.4	59.3	64.6	85.9	103	42	210	43.7
lead	EPA 200.8	μg/L	4.94	0.59	0.19	2.47	0.2	0.16	4.09	0.78	0.26	0.88	2.51	0.27	0.34	17.9	3.93	29.3
lead, dissolved	EPA 200.8	μg/L	0.14	<0.1	<0.1	<0.1	< 0.1	<0.1	<0.1	0.28	<0.1	0.21	<0.1	0.27	0.51	0.32	1.9	0.22
mercury	WPCLSOP M-	μg/L	0.11	0.1	0.1	0.1	0.1	0.1	0.1	0.004	0.0028	0.0031	0.0045	< 0.1	< 0.1	0.04	0.0078	0.038
nitrogen - ammonia	EPA 350.1	mg/L	0.26	0.08	0.089	0.095	0.071	0.1	0.12	0.044	0.099	0.022	0.046	0.065	0.066	0.053	0.074	0.24
nitrogen - nitrate	EPA 300.0	mg/L	< 0.1	0.37	0.53	0.63	0.51	0.52	0.57	1	0.65	0.87	0.69	0.61	0.56	0.88	0.75	0.38
pH	SM 4500-H B	S.U.	8.2	8	7.7	7.4	7.8	7.8	8.6	8.3	7.8	7.9	7.6	7.5	7.7	6.8	7.2	7.4
phosphorus - ortho	EPA 365.1	mg/L	0.02	0.046	0.046	0.037	0.055	0.051	0.032	0.042	0.032	0.046	0.054	0.054	0.057	0.061	0.039	0.031
phosphorus - total	EPA 365.4	mg/L	0.089	0.16	0.14	0.15	0.084	0.11	0.13	0.094	0.14	0.089	0.072	0.16	0.12	0.73	0.14	0.78
solids - total	SM 2540 B	mg/L	99	183	170	193	128	149	140	125	142	129	164	171	246	585	1040	408
solids - total dissolved	SM 2540 C	mg/L	39	171	161	136	117	137	133	114	127	120	144	168	247	113	929	63
solids - total suspended	SM 2540 D	mg/L	57	2	5	36	<2	2	4	8	8	9	24	10	7	473	24	350
temperature	SM 2550 B	°C	14.3	16.2	14.7	10.4	13.5	13.5	9.4	8.9	9.4	11.3	12.6	15.2	14.6	9.2	10.4	13.8
zinc	EPA 200.8	μg/L	12.9	5.53	3.26	27.3	2.33	4.06	9.04	8.3	3.38	8.04	12.8	6.17	9.75	105	30.8	179
zinc, dissolved	EPA 200.8	μg/L	1.56	0.8	1.36	5.39	0.96	2.2	1.1	4.81	1.18	3.2	2.34	2.58	4.27	9.43	14	12.2
PAHs and phthalates ²														_				
acenaphthene	EPA 8270M-SI	μg/L						,		0.297	1.03	0.143	0.261			0.117	0.489	0.0721
acenaphthylene	EPA 8270M-SI	μg/L								< 0.0194	0.0313	< 0.0196	< 0.0194			< 0.0194	< 0.0196	< 0.0196
anthracene	EPA 8270M-SI	μg/L								0.0271	0.0898	< 0.0196	< 0.0194			< 0.0194	0.0416	< 0.0196
benzo(a)anthracene	EPA 8270M-SI	μg/L								0.0222	0.0399	< 0.0098	< 0.00971		,	< 0.00971	0.0185	0.0146
benzo(a)pyrene	EPA 8270M-SI	μg/L								0.0178	0.0232	< 0.0098	< 0.00971			< 0.00971	0.0127	0.0129
benzo(b)fluoranthene	EPA 8270M-SI									< 0.00971	0.0108	< 0.0098	< 0.00971			< 0.00971	<0.0098	0.0125
benzo(g,h,i)perylene	EPA 8270M-SI	μg/L								<0.0194	< 0.0194	< 0.0196	< 0.0194			<0.0194	< 0.0196	<0.0196
	EPA 8270M-SI	μg/L								0.0116	0.0133	<0.0098	<0.00971			<0.00971	<0.0098	<0.0098
	EPA 8270M-SI	μg/L								< 0.971	<0.971	<0.98	<0.971			< 0.971	<0.98	1.37
butyl benzyl phthalate	EPA 8270M-SI	μg/L								<0.971	<0.971	<0.98	<0.971			< 0.971	<0.98	<0.98
chrysene	EPA 8270M-SI	μg/L								0.0248	0.0412	<0.0098	<0.00971			0.0151	0.02	0.028
	EPA 8270M-SI	μg/L								<0.00971	<0.00971	<0.0098	<0.00971			<0.00971	<0.0098	<0.0098
diethyl phthalate	EPA 8270M-SI	μg/L /I								<0.971	<0.971	<0.98	<0.971			<0.971	<0.98	<0.98
dimethyl phthalate di-n-butyl phthalate	EPA 8270M-SI EPA 8270M-SI	μg/L			<u> </u>					<0.971 <0.971	<0.971 <0.971	<0.98 <0.98	<0.971 <0.971			<0.971 <0.971	<0.98 <0.98	<0.98 <0.98
		μg/L								<0.971	<0.971	<0.98	<0.971		,	<0.971		
di-n-octyl phthalate fluoranthene	EPA 8270M-SI EPA 8270M-SI	μg/L μg/L								0.0466	0.141	<0.98	0.0206	<u> </u>		0.0342	<0.98 0.0611	<0.98 0.0426
	EPA 8270M-SI EPA 8270M-SI	μg/L μg/L								0.0466	0.141	0.0196	0.0200			0.0542	0.0611	0.0426
	EPA 8270M-SI	μg/L μg/L]					< 0.00971	0.0105	<0.0098	<0.00971	1	ļ,	< 0.00971	<0.0098	<0.0098
naphthalene	EPA 8270M-SI	μg/L μg/L								0.627	0.673	0.51	0.00971			0.129	0.687	0.0038
phenanthrene	EPA 8270M-SI	μg/L μg/L								0.027	0.673	0.085	0.128			0.0384	0.087	0.0513
pyrene	EPA 8270M-SI	μg/L μg/L	<u> </u>							0.113	0.479	< 0.0196	0.128		,	0.0384	0.193	0.0313
PCB Congeners ³	2111 02 / 01VI 01	MB/ =-	<u>. </u>	J	J					0.115	0.550	-0.0170	0.0277	1	ļ	0.0023	0.122	0.0701
Total PCBs	EPA 1668A	ng/L								ND	5.18	ND	ND			10.1	ND	0.532
1 Analytical laboratory reports			Sampling l	Locations	I.	1		i	1	1,12	2.10	112	1,12	1	1	10.1	112	. 0.002

Analytical laboratory reports are provided in Attachment 10

Analytical laboratory reports are provided in Attachment 11

Analytical laboratory reports are provided in Attachment 12

ND = not detected

Sampling Locations: TC1 – NW Front Ave & 9th TC2 – NW 10th & Marshall TC3 – NW 11th & Johnson

TABLE 4 Comparisons TC1 w	. ТС2/ТС2		Medi	an
TABLE 4 – Comparisons: TC1 vs	s. 1C2/1C3	T	C1	TC2/TC3
Analyte	Units	Wet	Dry	Dry
bod - 5	mg/L	<2	<2	<2
cadmium	μg/L	0.16	< 0.1	< 0.1
cadmium, dissolved	μg/L	0.1	< 0.1	< 0.1
conductivity - specific	μmhos/cm	238	197	169
copper	μg/L	7.38	1.73	2.31
copper, dissolved	μg/L	2.48	0.575	0.72
dissolved oxygen	mg/L	11.0	11.0	11.6
e. coli	mpn/100 ml	580	10	10
hardness, total	mg CaCO3/L	86	71	63
lead	μg/L	3.93	0.69	0.88
lead, dissolved	μg/L	0.32	< 0.10	< 0.10
mercury	μg/L	0.040	0.0034	0.0038
nitrogen - ammonia	mg/L	0.066	0.097	0.046
nitrogen - nitrate	mg/L	0.61	0.55	0.69
рН	S.U.	7.4	7.9	7.8
phosphorus - ortho phosphate (dissolved)	mg/L	0.054	0.040	0.054
phosphorus - total	mg/L	0.16	0.14	0.084
solids - total	mg/L	408	146	129
solids - total dissolved	mg/L	168	135	120
solids - total suspended	mg/L	24	6.5	9
temperature	°C	13.8	12.0	12.6
zinc	μg/L	30.8	6.92	8.04
zinc, dissolved	μg/L	9.43	1.46	2.34

	3 - 2010 COMPAR DRY EVENTS ^{1,2}			DRY			WET		Median Ratio		
Analyte	Method	Unit	Mean	Median	Max	Mean	Median	Max	WET/ DRY		
bod - 5	SM 5210B/H1	mg/L	2.09	<2	3	3.8	<2	10	1.0		
cadmium	EPA 200.8	μg/L	< 0.1	< 0.1	< 0.1	0.17	0.16	0.25	>1.6		
cadmium, dissolved	EPA 200.8	μg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1.0		
conductivity - specific	SM 2510 B	μmhos/cm	177	182	245	351	238	1017	1.3		
copper	EPA 200.8	μg/L	2.32	1.95	4.09	14.1	7.38	40.2	3.8		
copper, dissolved	EPA 200.8	μg/L	0.78	0.58	1.25	2.384	2.48	3.81	4.3		
dissolved oxygen	SM 4500-O G	mg/L	11.3	11.3	12.8	10.5	11.0	12.3	1.0		
e. coli	COLILERT QT	mpn/100 ml	31.4	<10	160	1194	580	3400	58.0		
hardness, total	SM 2340 B CA	mg CaCO ₃ /L	65.8	68.4	88.5	97	85.9	210	1.3		
lead	EPA 200.8	μg/L	1.55	0.78	4.09	10.3	3.93	29.3	5.0		
lead, dissolved	EPA 200.8	μg/L	0.13	<0.1	0.28	0.81	0.32	1.9	3.2		
mercury ³	WPCLSOP M-10	μg/L μg/L	0.0036	0.0036	0.0045	0.0286	0.0380	0.004	10.7		
-											
nitrogen - ammonia	EPA 350.1	mg/L	0.093	0.089	0.120	0.100	0.066	0.240	0.7		
nitrogen - nitrate	EPA 300.0	mg/L	0.59	0.57	1.00	0.64	0.61	0.88	1.1		
рН	SM 4500-H B	S.U.	7.9	7.8	8.6	7.3	7.4	7.7	0.9		
phosphorus - ortho phosphate (dissolved)	EPA 365.1	mg/L	0.042	0.046	0.055	0.048	0.054	0.061	1.2		
phosphorus - total	EPA 365.4	mg/L	0.11	0.11	0.16	0.39	0.16	0.78	1.5		
solids - total	SM 2540 B	mg/L	147	142	193	490	408	1040	2.9		
solids - total dissolved	SM 2540 C	mg/L	127	133	171	304	168	929	1.3		
solids - total suspended	SM 2540 D	mg/L	14	8	36	173	24	473	3.0		
temperature	SM 2550 B	°C	12.2	12.6	16.2	12.6	13.8	15.2	1.1		
zinc	EPA 200.8	μg/L	8.81	8.04	27.3	66.1	30.8	179	3.8		
zinc, dissolved	EPA 200.8	μg/L	2.26	1.56	5.39	8.50	9.43	14	6.0		
PAHs and phthalates											
acenaphthene	EPA 8270M-SI	μg/L	0.4328	0.2790	1.0300	0.2260	0.1170	0.4890	0.4		
acenaphthylene	EPA 8270M-SI	μg/L	0.0224	< 0.0195	0.0313	< 0.0195	< 0.0196	< 0.0196	1.0		
anthracene	EPA 8270M-SI	μg/L	0.0390	0.0234	0.0898	0.0269	< 0.0196	0.0416	0.8		
benzo(a)anthracene	EPA 8270M-SI	μg/L	0.0204	0.0160	0.0399	0.0143	0.0146	0.0185	0.9		
benzo(a)pyrene	EPA 8270M-SI	μg/L	0.0151	0.0138	0.0232	0.0118	0.0127	0.0129	0.9		
benzo(b)fluoranthene	EPA 8270M-SI	μg/L	0.0100	< 0.0098	0.0108	0.0107	< 0.0098	0.0125	1.0		
benzo(g,h,i)perylene	EPA 8270M-SI	μg/L	< 0.0195	< 0.0194	< 0.0194	< 0.0195	< 0.0196	< 0.0196	1.0		
benzo(k)fluoranthene	EPA 8270M-SI	μg/L	0.0111	0.0107	0.0133	< 0.0098	< 0.0098	< 0.0098	0.9		
bis(2-ethylhexyl) phthalate	EPA 8270M-SI	μg/L	< 0.9733	< 0.9710	< 0.9710	1.1070	< 0.9800	1.3700	1.0		
butyl benzyl phthalate	EPA 8270M-SI	μg/L	< 0.9733	< 0.9710	< 0.9710	< 0.9770	< 0.9800	< 0.9800	1.0		
chrysene	EPA 8270M-SI	μg/L	0.0214	0.0173	0.0412	0.0210	0.0200	0.0280	1.2		
dibenzo(a,h)anthracene	EPA 8270M-SI	μg/L	< 0.0097	< 0.0097	< 0.0097	< 0.0098	< 0.0098	< 0.0098	1.0		
diethyl phthalate	EPA 8270M-SI	μg/L	< 0.9733	< 0.9710	< 0.9710	< 0.9770	< 0.9800	< 0.9800	1.0		
dimethyl phthalate	EPA 8270M-SI	μg/L	< 0.9733	< 0.9710	< 0.9710	< 0.9770	< 0.9800	< 0.9800	1.0		
di-n-butyl phthalate	EPA 8270M-SI	μg/L	< 0.9733	< 0.9710	< 0.9710	< 0.9770	< 0.9800	< 0.9800	1.0		
di-n-octyl phthalate	EPA 8270M-SI	μg/L μg/L	< 0.9733	< 0.9710	< 0.9710	< 0.9770	< 0.9800	< 0.9800	1.0		
fluoranthene	EPA 8270M-SI	μg/L μg/L	0.0570	0.0336	0.1410	0.0460	0.0426	0.0611	1.3		
fluorene	EPA 8270M-SI	μg/L μg/L	0.2098	0.0330	0.5510	0.0893	0.0504	0.1900	0.4		
indeno (1,2,3-cd)	EPA 8270M-SI	μg/L μg/L	0.0099	< 0.0098	0.0105	< 0.0098	< 0.0098	<0.0098	1.0		
pyrene	L111 02 / 01V1-01	MB/L	0.0077	-0.0070	0.0103	30.0070	-0.0070	-0.0070	1.0		
naphthalene	EPA 8270M-SI	μg/L	0.6875	0.6500	0.9400	0.3042	0.1290	0.6870	0.2		
phenanthrene	EPA 8270M-SI	μg/L μg/L	0.2005	0.1190	0.4790	0.0942	0.0513	0.1930	0.4		
pyrene	EPA 8270M-SI	μg/L μg/L	0.1296	0.0704	0.3580	0.0875	0.0781	0.1220	1.1		

¹Due to the small number of detected PCB congeners, they were not included in this statistical comparison

² Non-detect values were set to the reporting limit when calculating the statistics

³ Due to high reporting limits during two sampling events, statistics were calculated on detected values only

TABLE 6 –	2002 and 2008-20	010	N	Iedian	Median Ratio
WET EVE	NT COMPARISO	ON	2002 1	2008-2010 ²	2002 / 2008-2010
Analyte	Method	Unit			
bod - 5	SM 5210B /H1	mg/L	16	2	8.0
cadmium	EPA 200.8	μg/L	0.37	0.16	2.3
cadmium, dissolved	EPA 200.8	μg/L	0.1	0.1	1.0
copper	EPA 200.8	μg/L	25.7	7.38	3.5
copper, dissolved	EPA 200.8	μg/L	4.85	2.48	2.0
hardness, total	SM 2340 B CA	mg CaCO3/L	27.8	85.9	0.3
lead	EPA 200.8	μg/L	21.5	3.93	5.5
lead, dissolved	EPA 200.8	μg/L	0.24	0.32	0.8
mercury	WPCLSOP M-10	μg/L	0.057	0.040	1.4
nitrogen - ammonia	EPA 350.1	mg/L	0.525	0.066	8.0
nitrogen - nitrate	EPA 300.0	mg/L	0.4	0.61	0.7
рН	SM 4500-H B	S.U.	7.1	7.4	1.0
phosphorus - total	EPA 365.4	mg/L	0.70	0.16	4.3
solids - total	SM 2540 B	mg/L	229	408	0.6
solids - total dissolved	SM 2540 C	mg/L	59	168	0.4
solids - total suspended	SM 2540 D	mg/L	191	24	8.0
zinc	EPA 200.8	μg/L	119	30.8	3.9
zinc, dissolved	EPA 200.8	μg/L	25	9.43	2.7

¹ CSO Samples ² Stormwater Samples

	QUALITY SCREENING 2008 - 2010	Chronic	Reference		Metric ⁴		
Analyte	Method	Unit	WQC 1	Values ³	Overall	Dry	Wet
cadmium	EPA 200.8	μg/L	1.1 ²		0.16	< 0.1	0.16
copper	EPA 200.8	μg/L	12 ²		18.6	4.09	18.6
copper, dissolved	EPA 200.8	μg/L		5	3.0	1.25	3.0
dissolved oxygen	SM 4500-O G	mg/L	8		9.6	11.9	8.2
e. coli	COLILERT QT	mpn/100 ml	406		1236	108	2600
lead	EPA 200.8	μg/L	3.2 ²		17.9	4.09	17.9
mercury	WPCLSOP M-10	μg/L	0.012		0.038	0.0028	0.038
nitrogen - ammonia	EPA 350.1	mg/L		0.158	0.216	0.162	0.174
nitrogen - nitrate	EPA 300.0	mg/L	10		0.85	0.76	0.83
рН	SM 4500-H B	S.U.	6.5 - 8.5		7.2 / 8.3	7.6 / 8.4	7.0 / 7.6
phosphorus - total	EPA 365.4	mg/L		0.047	0.62	0.153	0.76
solids - total dissolved	SM 2540 C	mg/L	100		232	164	656
solids - total suspended	SM 2540 D	mg/L		20	291	42	424
temperature	SM 2550 B	°C	18		16.1	16.1	15.2
zinc	EPA 200.8	μg/L	110 ²		105	12.9	105

Values in **bold** are higher than the respective WQC or Reference Value

³ Reference Values

Pollutant	Value	Unit	Basis
nitrogen - ammonia	0.158	mg/L	EPA Draft criterion, when mussels are present @ T=20°C; pH=8.5
phosphorus - total	0.047	mg/L	Proposed Willamette Valley Ecoregion Concentration *
solids - total suspended	20	mg/L	Draft Portland Plan
dissolved copper	5	μg/L	NOAA Fisheries guidance value

⁴ Metric for Comparison to WQC **

Pollutant	Metric
Heavy metals	Second highest value observed
Temperature	7-day average daily maximum approximated by the 99th percentile
Dissolved Oxygen; lower pH limit	10th percentile
All other pollutants	90th percentile

^{*} http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/2007_09_27_criteria_nutrient_ecoregions_sumtable.pdf

 $^{^{\}rm 1}$ WQC from OAR 340-041 and OAR 340-041, Table 20

 $^{^2\,}WQC$ for hardness dependent metals are based on hardness of 100 mg/L

^{**} based on 'Methodology for Oregon's 2010 Water Quality Report and List of Water Quality Limited Waters'

TABLE 8 – COMPARISON AMONG WESTSIDE STREAMS

Sampli	ng Locations	BC1	BC3	MC1	SC2	ST04	WR-C	TC	BC1	BC3	MC1	SC2	ST04	WR-C	TC	BC1	BC3	MC1	SC2	ST04	WR-C	TC
Analyte	Units			95	th Percen	tile						Mean							Median	Į.		
bod - 5	mg/L	<2	<2	<2	<2	2.15		5.8	<2	< 2.05	<2	<2	< 2.064		2.8	<2	<2	<2	<2	<2		2
conductivity-specific	μmhos	219	186	194	140	227	105	660	152	137	120	101	172	80	252	148	136	110	100	187	79	198
copper	μg/L	8.7	6.6	4.8	7.6	10.6	5.3	27.2	2.37	1.89	1.77	2.50	3.33	1.73	6.92	1.54	1.30	0.76	0.94	2.06	1.11	2.45
copper, dissolved	μg/L	1.67	1.34	1.12	1.36	3.49	1.08	3.32	0.98	0.81	0.51	0.77	1.73	0.70	1.40	0.93	0.75	0.42	0.65	1.44	0.66	0.80
dissolved oxygen	mg/L	13.8	13.9	14.2	14.0	13.7	14.2	12.5	11.0	11.3	11.3	11.2	11.4	10.8	10.9	11.0	11.2	11.2	11.3	11.4	11.0	11.0
e. coli	MPN/100 mL	979	1140	564	964	4780	320	2200	427	599	110	149	1471	95	483	63	104	20	10	560	40	85
hardness	mg CaCO3/L	98	77	82	58	95	32	146	64	55	48	41	72	27	79	67	52	45	40	78	27	71
lead	μg/L	1.91	1.16	3.16	5.93	10.33	0.80	22	0.72	0.58	0.98	1.38	2.30	0.28	5.02	0.41	0.37	0.20	0.23	0.47	0.178	0.78
lead, dissolved	μg/L	0.29	0.28	0.10	0.12	0.22	0.12	1.11	0.14	0.14	0.10	0.11	0.13	0.05	0.49	0.10	0.10	0.10	0.10	0.10	0.03	0.25
nitrogen-ammonia	mg/L	0.055	0.021	0.020	0.020	0.10	0.14	0.25	0.028	0.022	0.020	0.021	0.055	0.069	0.107	0.020	0.020	0.020	0.020	0.020	0.063	0.089
nitrogen - nitrate	mg/L	4.06	3.48	3.72	3.32	1.56	1.00	0.93	1.50	1.42	1.43	1.44	1.01	0.54	0.58	1.00	1.20	1.47	1.50	1.00	0.40	0.57
pН	S.U.	7.8	7.9	7.7	7.8	8.1	7.5	8.4	7.3	7.4	7.2	7.2	7.6	7.3	7.7	7.4	7.5	7.2	7.3	7.7	7.3	7.7
phosphorus-ortho phosphate (dissolved)	mg/L	0.06	0.09	0.10	0.07	0.14	0.04	0.06	0.03	0.05	0.05	0.040	0.07	0.030	0.042	0.026	0.040	0.041	0.031	0.056	0.030	0.042
Phosphorus - total	mg/L	0.17	0.19	0.24	0.30	0.37	0.09	0.75	0.12	0.11	0.13	0.13	0.13	0.065	0.23	0.09	0.08	0.08	0.06	0.093	0.061	0.140
solids-total	mg/L	219	192	266	337	221	96.1	767	167	145	167	165	159	73	281	146	128	123	106	152	71	171
solids-total dissolved	mg/L			170	140	180	84	520		,	121	106	138	64	195			112	98	144	64	136
solids-total suspended	mg/L	64	29	169	224	116	24	399	30	21	47	60	19	8	76	4	3	2	3	3	6	8
temperature	°C	15.6	16.2	15.2	16.5	16.9	23	15.6	10.0	10.0	9.7	9.9	10.9	13.5	12.3	9.6	9.4	9.5	9.3	10.9	12.2	13.5
zinc	μg/L	25.5	15.5	18.5	22.2	55.2	8.61	134.6	8.3	5.0	6.2	7.2	14.7	3.52	31.1	5.8	3.0	2.0	2.1	7.6	2.56	9.0
zinc, dissolved	μg/L	9.6	6.6	1.6	1.9	9.6	4.08	12.9	2.89	2.45	0.68	1.04	4.79	1.63	4.68	2.0	0.87	0.50	0.56	3.99	1.15	2.58

Sampling Locations:

BC1 - Balch Creek at NW Thompson & Cornell

BC3 - Balch Creek east of Bones Creek confluence

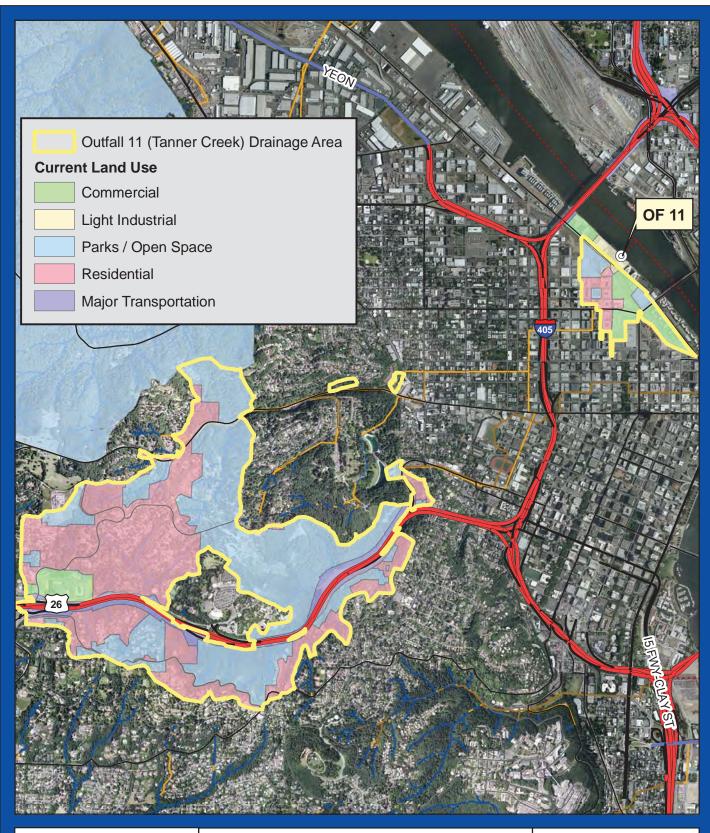
MC1 - Miller Creek – at mouth

SC2 - Saltzman Creek – west of Hwy. 30

ST04 - Stephens Creek at 7425 SW Macadam

WR-C – Willamette River at St. Johns Railroad Bridge

TC - Tanner Creek, locations TC1, TC2, and TC3



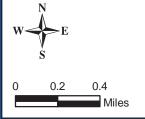


Figure 1

Outfall 11 (Tanner Creek)
Drainage Area
with Land Use Designations



Created by: Investigations & Monitoring Services Date Created: 6/15/11



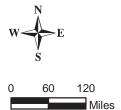
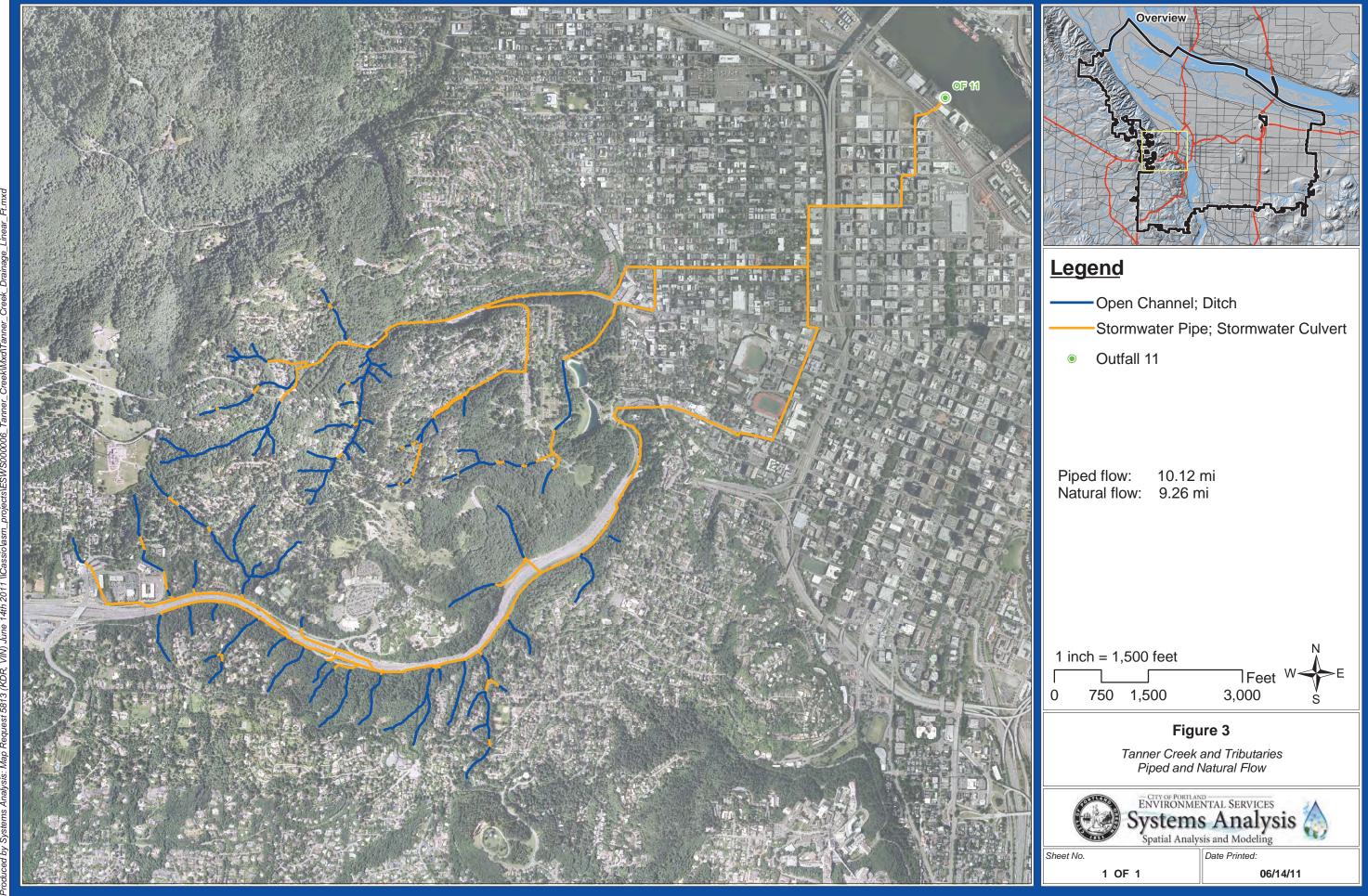


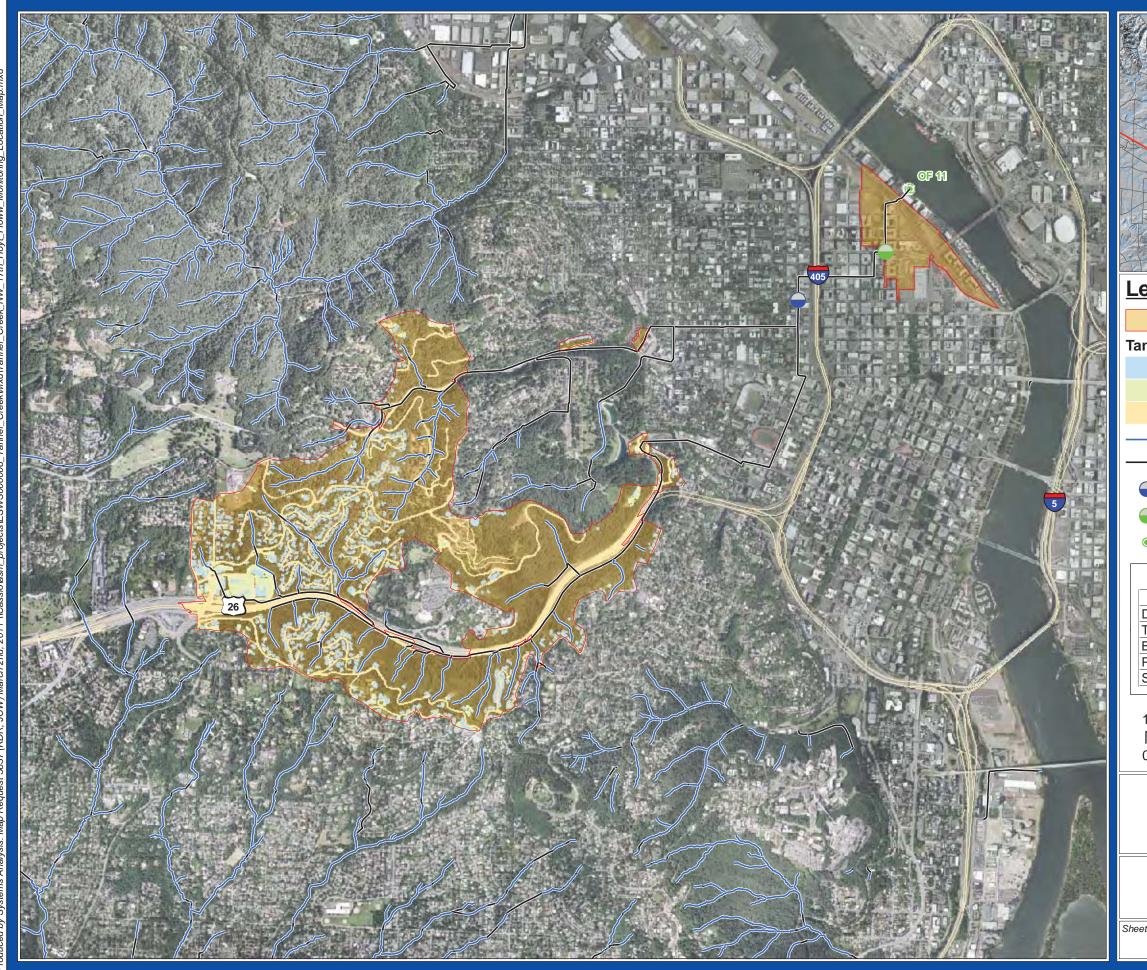
Figure 2

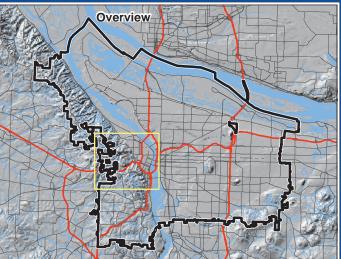
2002, 2008 - 2010 Water Quality Monitoring Locations and DEQ VCP Stormwater Pathway Status Lower Portion of Drainage Area



Created by: Investigations & Monitoring Services Date Created: 6/15/11







Legend

Outfall 11 (Tanner Creek) Drainage Area

Tanner Creek Impervious Area

Building

Parking

Street Surface

— Stream Line

— Pipe/Culvert

NW 17th & Hoyt Flow Monitor

NW 10th & Lovejoy Flow Monitor

Outfall 11

Flow Monitor Drainage Area Information									
Acres % of Total Area									
Drainage Area	873.8	100							
Total Impervious Area	141.1	16.1							
Building	43.2	4.9							
Parking	17.9	2							
Street	79.9	9.1							



Figure 5
Flow Monitor Drainage
And Impervious Areas



Sheet No.

1 OF 1

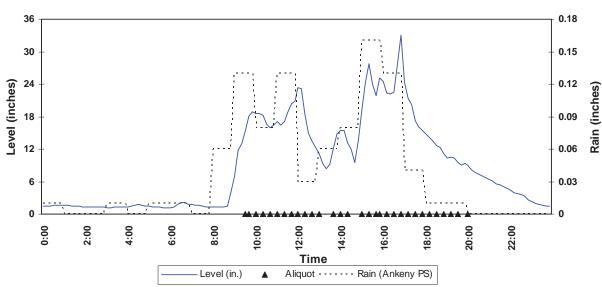
Date Printed:

06/14/11

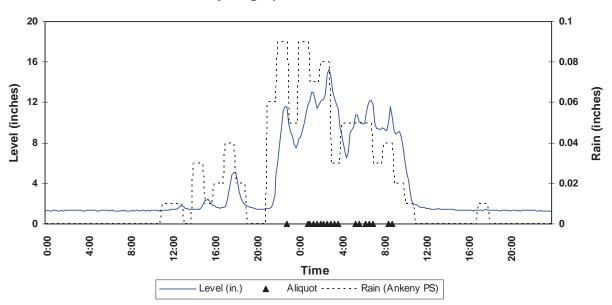
Droduced by Systems

Figure 6. Tanner Creek Storm Event Hydrographs

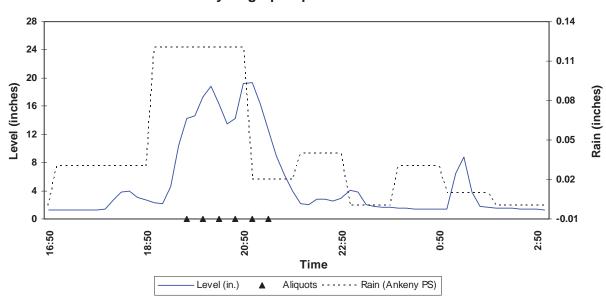




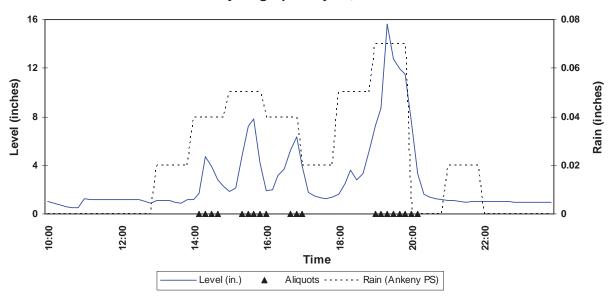
Tanner Creek CSO Characterization Hydrograph March 18-19, 2002



Tanner Creek CSO Characterization Hydrograph April 13-14 2002



Tanner Creek CSO Characterization Hydrograph May 28, 2002



Tanner Creek Diversion Project Hydrograph January 1-2, 2009

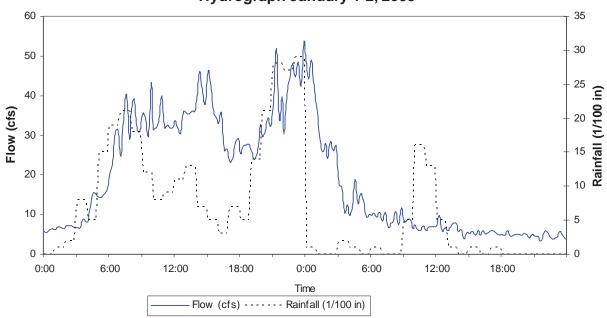








Figure 7

2003 Water Quality Monitoring Locations Upper Portion of Drainage Area

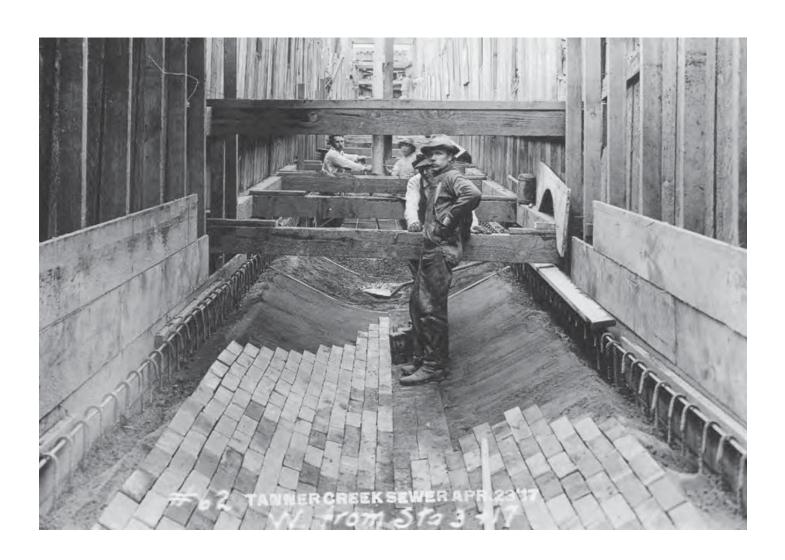


Created by: Investigations & Monitoring Services Date Created: 6/15/11

ATTACHMENTS

Attachment 1

Tanner Creek Sewer Construction Photo



Attachment 2

Tanner Springs Park Photos





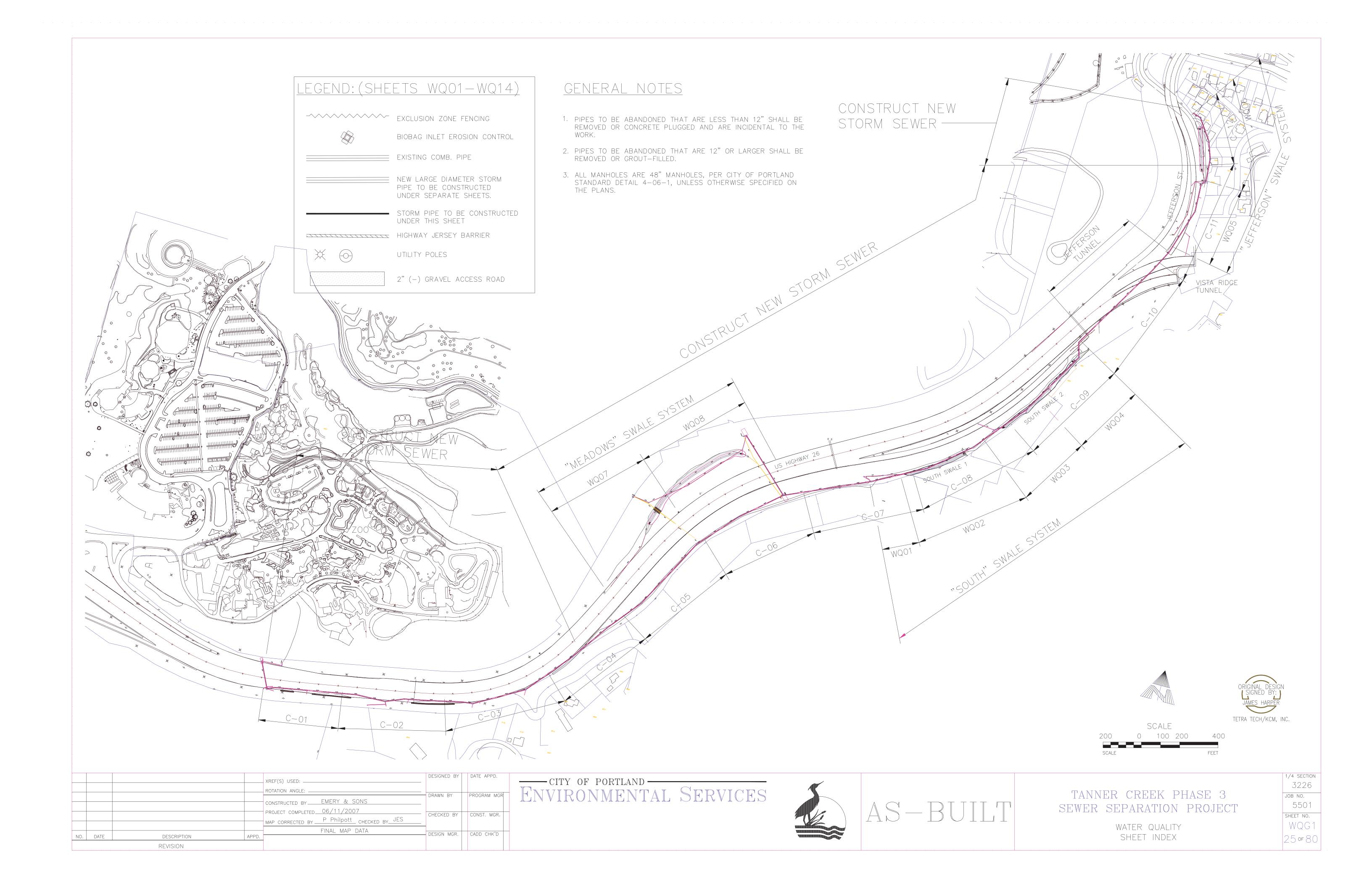




Attachment 3

Tanner Creek Headwater Tributary Photos





Attachment 5

Tanner Creek Sewer Separation Pollution Reduction Swale Photos



Jefferson Street Swale



Lower Gully Swale



Upper Gully Swale



Meadows Swale

Attachment 6

Tanner Creek Water Quality Monitoring Location Photos



TC1-NW Front & 9th Avenues



Manhole ABG349



TC2-NW Marshall Street & 10th Avenue



Manhole ABG241



TC3-NW Johnson Street & 11th Avenue

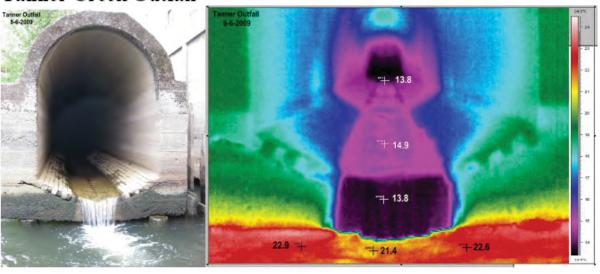


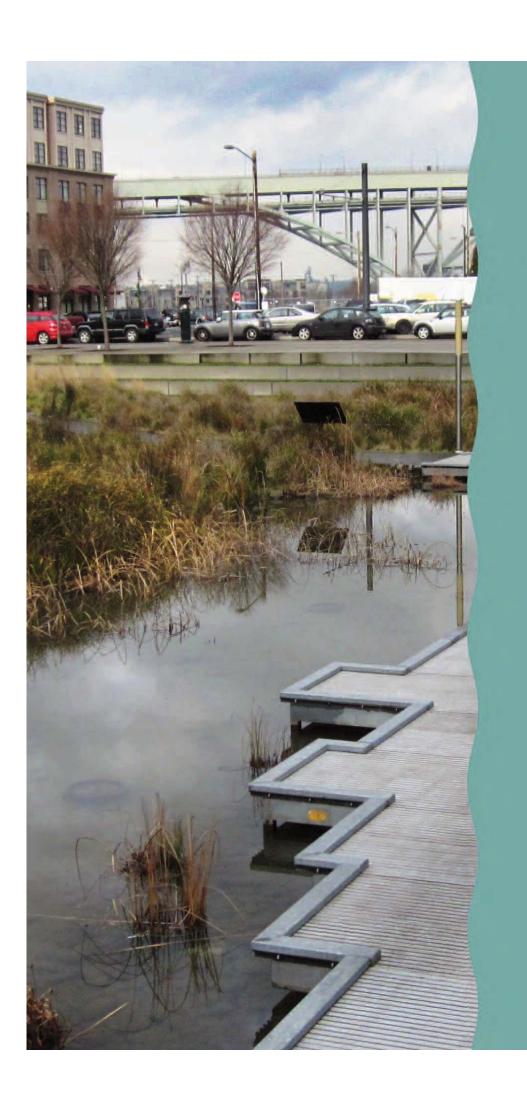
Manhole ABG395

Attachment 7

FLIR Image of Tanner Creek Outfall

Tanner Creek Outfall





Printed on recycled paper. WS 1170

Tanner Creek Water Quality Characterization

SUPPLEMENTAL ATTACHMENTS 8-12

Attachment 8

2002 BES Water Pollution Control Laboratory Results



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





AG02324

1010.001

DJH/JBB

CSOCHAR

System ID:

EID File #:

LocCode:

Collected By:

LABORATORY ANALYSIS REPORT

3/11/2002 09:20 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO020275 **VALIDATED**

03/12/02 Sample Received:

CSO CHAR WQ & FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

NW 10TH & LOVEJOY Address/Location:

TANNER BASIN

OF11 Sample Point Code:

COMPOSITE Sample Type: **STORMWTR** Sample Matrix:

Comments:

EVENT #1 - TOTAL STORM COMPOSITE.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	Nesult	Jille	WIIL	MEUIOG	
GENERAL ALKALINITY	23.6	ma CaCO2/I	0.5	SM 2320 B	03/22/02
ALKALINITY AMMONIA-NITROGEN	0.54	mg CaCO3/L mg/L	0.5	EPA 350.1	03/22/02
BOD5	0.54	mg/L	2	SM 5210 B	03/14/02
CHLORIDE	3.7	mg/L	1.0	EPA 300.0	03/12/02
NITRATE-NITROGEN	0.52	mg/L	0.10	EPA 300.0	03/12/02
pH (LAB)	7.3	pH Units	0.10	SM 4500-H B	03/12/02
SULFATE	7.3 5.12	mg/L	1.0	EPA 300.0	03/12/02
SULFIDE	<0.20	mg/L	0.2	SM 4500-S D	03/14/02
TOTAL DISSOLVED SOLIDS	<0.20 60	mg/L	1	SM 2540 BD	03/20/02
TOTAL PHOSPHORUS	0.65	mg/L	0.03	EPA 365.4	03/20/02
TOTAL SOLIDS	412	mg/L	1	SM 2540 B	03/14/02
TOTAL SUSPENDED SOLIDS	352	mg/L	1	SM 2540 D	03/13/02
TURBIDITY	160	NTU	5	SM 2130 B	03/13/02
	100	NIO	J	OW 2100 B	03/13/02
METALS		_			
CALCIUM	9.21	mg/L	0.20	EPA 200.7	03/13/02
HARDNESS, TOTAL	36.1	mg CaCO3/L	1.0	SM 2340 B CAL	03/13/02
MAGNESIUM	3.18	mg/L	0.10	EPA 200.7	03/13/02
MERCURY	0.049	μg/L	0.010	WPCLSOP M-1(03/16/02
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	03/16/02
POTASSIUM	2.18	mg/L	2.0	EPA 200.7	03/13/02
SODIUM	4.77	mg/L	1.0	EPA 200.7	03/13/02
METALS BY ICP-MS (DISSOLVED) - 6					
ARSENIC, DISSOLVED	1.15	μg/L	0.1	EPA 200.8	03/14/02
CADMIUM, DISSOLVED	<0.10	μg/L	0.02	EPA 200.8	03/14/02
COPPER, DISSOLVED	4.77	μg/L	0.2	EPA 200.8	03/14/02
IRON, DISSOLVED	117	μg/L	20.0	EPA 200.8	03/14/02
LEAD, DISSOLVED	0.23	μg/L	0.02	EPA 200.8	03/14/02
ZINC, DISSOLVED	17.5	μg/L	0.5	EPA 200.8	03/14/02
METALS BY ICP-MS (TOTAL) - 6					
ARSENIC	2.56	μg/L	0.1	EPA 200.8	03/14/02
CADMIUM	0.37	μg/L	0.1	EPA 200.8	03/14/02
COPPER	22.8	μg/L	0.2	EPA 200.8	03/14/02
IRON	8270	μg/L	20.0	EPA 200.8	03/14/02
LEAD	18.9	μg/L	0.1	EPA 200.8	03/14/02



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



AG02324

System ID:

LABORATORY ANALYSIS REPORT

3/11/2002 09:20 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO020275 **VALIDATED**

03/12/02 Sample Received:

CSO CHAR WQ & FLOW MON Page 2 of 2 Report Page: Proj./Company Name:

NW 10TH & LOVEJOY Address/Location:

TANNER BASIN

OF11 Sample Point Code:

1010.001 EID File #: COMPOSITE **CSOCHAR** Sample Type: LocCode: **STORMWTR** DJH/JBB Sample Matrix: Collected By:

Comments:

EVENT #1 - TOTAL STORM COMPOSITE.

Test Parameter	Result	Units	MRL	Method	Analysis Date
ZINC	104	μg/L	0.5	EPA 200.8	03/14/02
OUTSIDE ANALYSIS					
DISSOLVED ORGANIC CARBON	4.55	mg/L	1.0	EPA 415.1	03/13/02
TOTAL ORGANIC CARBON	4.47	mg/L	1.0	EPA 415.1	03/13/02

End of Report for Sample ID: FO020275



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AG02329

System ID:

LABORATORY ANALYSIS REPORT

3/11/2002 14:49 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO020280 **VALIDATED**

03/12/02 Sample Received:

CSO CHAR WQ & FLOW MON Page 1 of 1 Report Page: Proj./Company Name:

NW 10TH & LOVEJOY Address/Location:

TANNER BASIN

OF11 Sample Point Code:

1010.001 EID File #: COMPOSITE **CSOCHAR** Sample Type: LocCode: **STORMWTR** DJH/JBB Sample Matrix: Collected By:

Comments:

EVENT #1 - PEAK STORM COMPOSITE.

				Method	Analysis
Test Parameter	Result	Units	MRL		Date
METALS					
METALS BY ICP-MS (DISSOLVED) - 6					
ARSENIC, DISSOLVED	0.92	μg/L	0.1	EPA 200.8	03/14/02
CADMIUM, DISSOLVED	<0.10	μg/L	0.02	EPA 200.8	03/14/02
COPPER, DISSOLVED	3.82	μg/L	0.2	EPA 200.8	03/14/02
IRON, DISSOLVED	135	μg/L	20.0	EPA 200.8	03/14/02
LEAD, DISSOLVED	0.24	μg/L	0.02	EPA 200.8	03/14/02
ZINC, DISSOLVED	14.2	μg/L	0.5	EPA 200.8	03/14/02
METALS BY ICP-MS (TOTAL) - 6					
ARSENIC	2.88	μg/L	0.1	EPA 200.8	03/14/02
CADMIUM	0.32	μg/L	0.1	EPA 200.8	03/14/02
COPPER	25.7	μg/L	0.2	EPA 200.8	03/14/02
IRON	12000	μg/L	20.0	EPA 200.8	03/14/02
LEAD	26.7	μg/L	0.1	EPA 200.8	03/14/02
ZINC	119	μg/L	0.5	EPA 200.8	03/14/02

End of Report for Sample ID: FO020280



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AG02644

1010.001

System ID:

3/18/2002 22:44 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO020319

03/20/02 **VALIDATED** Sample Received:

CSO CHAR WQ & FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

NW 10TH & LOVEJOY Address/Location:

TANNER BASIN

OF11 Sample Point Code:

EID File #: COMPOSITE **CSOCHAR** Sample Type: LocCode: **STORMWTR** JBB/DJH Sample Matrix: Collected By:

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
ALKALINITY	24.3	mg CaCO3/L	0.5	SM 2320 B	03/22/02
AMMONIA-NITROGEN	0.42	mg/L	0.02	EPA 350.1	03/21/02
BOD5	8	mg/L	2	SM 5210 B	03/21/02
CHLORIDE	4.6	mg/L	1.0	EPA 300.0	03/21/02
NITRATE-NITROGEN	0.41	mg/L	0.10	EPA 300.0	03/21/02
pH (LAB)	7.2	pH Units	0.1	SM 4500-H B	03/20/02
SULFATE	4.89	mg/L	1.0	EPA 300.0	03/21/02
SULFIDE	<0.20	mg/L	0.2	SM 4500-S D	03/21/02
TOTAL DISSOLVED SOLIDS	130	mg/L	1	SM 2540 BD	03/27/02
TOTAL PHOSPHORUS	0.34	mg/L	0.03	EPA 365.4	03/28/02
TOTAL SOLIDS	185	mg/L	1	SM 2540 B	03/21/02
TOTAL SUSPENDED SOLIDS	53	mg/L	1	SM 2540 D	03/21/02
TURBIDITY	37	NTU	5	SM 2130 B	03/21/02
METALS					
CALCIUM	7.23	mg/L	0.20	EPA 200.7	03/27/02
HARDNESS, TOTAL	26.0	mg CaCO3/L	1.0	SM 2340 B CAL	03/27/02
MAGNESIUM	1.93	mg/L	0.10	EPA 200.7	03/27/02
MERCURY	0.019	μg/L	0.010	WPCLSOP M-10	03/23/02
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	03/23/02
POTASSIUM	<2.0	mg/L	2.0	EPA 200.7	03/27/02
SODIUM	4.52	mg/L	1.0	EPA 200.7	03/27/02
METALS BY ICP-MS (DISSOLVED) - 6					
ARSENIC, DISSOLVED	1.23	μg/L	0.1	EPA 200.8	03/23/02
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	03/23/02
COPPER, DISSOLVED	4.85	μg/L	0.2	EPA 200.8	03/23/02
IRON, DISSOLVED	76.8	μg/L	20.0	EPA 200.8	03/23/02
LEAD, DISSOLVED	0.22	μg/L	0.1	EPA 200.8	03/23/02
ZINC, DISSOLVED	25.0	μg/L	0.5	EPA 200.8	03/23/02
METALS BY ICP-MS (TOTAL) - 6					
ARSENIC	1.74	μg/L	0.1	EPA 200.8	03/23/02
CADMIUM	0.16	μg/L	0.02	EPA 200.8	03/23/02
COPPER	12.1	μg/L	0.2	EPA 200.8	03/23/02
IRON	2200	μg/L	20.0	EPA 200.8	03/23/02
LEAD	6.34	μg/L	0.02	EPA 200.8	03/23/02



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AG02644

System ID:

LABORATORY ANALYSIS REPORT

3/18/2002 22:44 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO020319

03/20/02 **VALIDATED** Sample Received:

CSO CHAR WQ & FLOW MON Page 2 of 2 Proj./Company Name: Report Page:

NW 10TH & LOVEJOY Address/Location:

TANNER BASIN

OF11 Sample Point Code:

1010.001 EID File #: COMPOSITE **CSOCHAR** Sample Type: LocCode: **STORMWTR** JBB/DJH Sample Matrix: Collected By:

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
ZINC	60.9	μg/L	0.5	EPA 200.8	03/23/02
OUTSIDE ANALYSIS					
DISSOLVED ORGANIC CARBON	3.53	mg/L	1.0	EPA 415.1	03/21/02
TOTAL ORGANIC CARBON	3.85	mg/L	1.0	EPA 415.1	03/21/02

End of Report for Sample ID: FO020319



Sample ID:

City of Portland Water Pollution Control Laboratory

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Sample Collected: 4/13/2002 19:34 Sample Status: COMPLETE AND

AG03386

1010.001

MJH/CJE

CSOCHAR

System ID:

EID File #:

LocCode:

Collected By:

Sample Received: 04/14/02 VALIDATED

Proj./Company Name: CSO CHAR WQ & FLOW MON Report Page: Page 1 of 2

Address/Location: NW 10TH & LOVEJOY

FO020402

TANNER BASIN

Sample Point Code: OF11

Sample Type: COMPOSITE Sample Matrix: STORMWTR

Comments:

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
GENERAL					
ALKALINITY	21.2	mg CaCO3/L	0.5	SM 2320 B	04/25/02
AMMONIA-NITROGEN	0.51	mg/L	0.02	EPA 350.1	04/25/02
BOD5	21	mg/L	2	SM 5210 B	04/15/02
CHLORIDE	2.7	mg/L	1.0	EPA 300.0	04/15/02
NITRATE-NITROGEN	0.22	mg/L	0.10	EPA 300.0	04/15/02
pH (LAB)	6.6	pH Units	0.1	SM 4500-H B	04/15/02
SULFATE	3.07	mg/L	1.0	EPA 300.0	04/15/02
SULFIDE	<0.20	mg/L	0.2	SM 4500-S D	04/17/02
TOTAL DISSOLVED SOLIDS	10	mg/L	1	SM 2540 BD	04/23/02
TOTAL PHOSPHORUS	0.78	mg/L	0.03	EPA 365.4	04/17/02
TOTAL SOLIDS	272	mg/L	1	SM 2540 B	04/15/02
TOTAL SUSPENDED SOLIDS	262	mg/L	1	SM 2540 D	04/15/02
TURBIDITY	50	NTU	5	SM 2130 B	04/15/02
METALS					
CALCIUM	6.09	mg/L	0.20	EPA 200.7	04/19/02
HARDNESS, TOTAL	21.3	mg CaCO3/L	1.0	SM 2340 B CAL	04/19/02
MAGNESIUM	1.49	mg/L	0.10	EPA 200.7	04/19/02
MERCURY	0.094	μg/L	0.010	WPCLSOP M-1(04/17/02
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	04/17/02
POTASSIUM	2.62	mg/L	4.0	EPA 200.7	04/19/02
SODIUM	3.98	mg/L	1.0	EPA 200.7	04/19/02
METALS BY ICP-MS (DISSOLVED) - 6					
ARSENIC, DISSOLVED	1.75	μg/L	0.1	EPA 200.8	04/18/02
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	04/18/02
COPPER, DISSOLVED	6.66	μg/L	0.2	EPA 200.8	04/18/02
IRON, DISSOLVED	56.0	μg/L	20.0	EPA 200.8	04/18/02
LEAD, DISSOLVED	0.34	μg/L	0.1	EPA 200.8	04/18/02
ZINC, DISSOLVED	37.5	μg/L	0.5	EPA 200.8	04/18/02
METALS BY ICP-MS (TOTAL) - 6					
ARSENIC	2.91	μg/L	0.1	EPA 200.8	04/18/02
CADMIUM	0.45	μg/L	0.1	EPA 200.8	04/18/02
COPPER	32.4	μg/L	0.2	EPA 200.8	04/18/02
IRON	4100	μg/L	20.0	EPA 200.8	04/18/02
LEAD	21.5	μg/L	0.1	EPA 200.8	04/18/02



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AG03386

1010.001

MJH/CJE

CSOCHAR

System ID:

EID File #:

LocCode:

Collected By:

Sample ID: FO020402 Sample Collected: 4/13/2002 19:34 Sample Status: COMPLETE AND Sample Received: 04/14/02 VALIDATED

Proj./Company Name: CSO CHAR WQ & FLOW MON Report Page: Page 2 of 2

Address/Location: NW 10TH & LOVEJOY

TANNER BASIN

Sample Point Code: OF11

Sample Type: COMPOSITE Sample Matrix: STORMWTR

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
ZINC	154	μg/L	0.5	EPA 200.8	04/18/02
OUTSIDE ANALYSIS					
DISSOLVED ORGANIC CARBON	4.78	mg/L	1.0	EPA 415.1	04/15/02
TOTAL ORGANIC CARBON	5.07	mg/L	1.0	EPA 415.1	04/15/02

End of Report for Sample ID: FO020402



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Sample Collected: 5/28/2002 14:19 Sample Status: COMPLETE AND

AG04768

System ID:

Sample ID: FO020564 Sample Collected: 5/28/2002 14:19 Sample Status: COMPLETE AND Sample Received: 05/29/02 VALIDATED

Proj./Company Name: CSO CHAR WQ & FLOW MON Report Page: Page 1 of 2

Address/Location: TANNER (OF11)

NW 10TH & LOVEJOY

Sample Point Code: OF11

 Sample Point Code:
 OF11
 EID File #:
 1010.001

 Sample Type:
 COMPOSITE
 LocCode:
 CSOCHAR

 Sample Matrix:
 STORMWTR
 Collected By:
 DJH/WCR

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
ALKALINITY	35.2	mg CaCO3/L	0.5	SM 2320 B	06/05/02
AMMONIA-NITROGEN	0.97	mg/L	0.02	EPA 350.1	05/31/02
BOD5	28	mg/L	2	SM 5210 B	05/30/02
CHLORIDE	7.2	mg/L	1.0	EPA 300.0	05/30/02
NITRATE-NITROGEN	0.39	mg/L	0.10	EPA 300.0	05/30/02
pH (LAB)	7.0	pH Units	0.1	SM 4500-H B	05/29/02
SULFATE	4.97	mg/L	1.0	EPA 300.0	05/30/02
SULFIDE	<0.20	mg/L	0.2	SM 4500-S D	05/30/02
TOTAL DISSOLVED SOLIDS	58	mg/L	1	SM 2540 BD	06/05/02
TOTAL PHOSPHORUS	0.74	mg/L	0.03	EPA 365.4	06/03/02
TOTAL SOLIDS	178	mg/L	1	SM 2540 B	05/30/02
TOTAL SUSPENDED SOLIDS	120	mg/L	1	SM 2540 D	05/30/02
TURBIDITY	70	NTU	5	SM 2130 B	05/30/02
METALS					
CALCIUM	8.77	mg/L	0.20	EPA 200.7	05/30/02
HARDNESS, TOTAL	29.6	mg CaCO3/L	1.0	SM 2340 B CAL	05/30/02
MAGNESIUM	1.88	mg/L	0.10	EPA 200.7	05/30/02
MERCURY	0.197	μg/L	0.010	WPCLSOP M-10	05/31/02
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	05/31/02
POTASSIUM	3.18	mg/L	4.0	EPA 200.7	05/30/02
SODIUM	7.53	mg/L	1.0	EPA 200.7	05/30/02
METALS BY ICP-MS (DISSOLVED) - 6					
ARSENIC, DISSOLVED	2.64	μg/L	0.1	EPA 200.8	05/30/02
CADMIUM, DISSOLVED	0.11	μg/L	0.1	EPA 200.8	05/30/02
COPPER, DISSOLVED	9.69	μg/L	0.2	EPA 200.8	05/30/02
IRON, DISSOLVED	68.3	μg/L	20.0	EPA 200.8	05/30/02
LEAD, DISSOLVED	0.76	μg/L	0.1	EPA 200.8	05/30/02
ZINC, DISSOLVED	64.3	μg/L	0.5	EPA 200.8	05/30/02
METALS BY ICP-MS (TOTAL) - 6					
ARSENIC	3.53	μg/L	0.1	EPA 200.8	05/30/02
CADMIUM	0.50	μg/L	0.1	EPA 200.8	05/30/02
COPPER	33.9	μg/L	0.2	EPA 200.8	05/30/02
IRON	3240	μg/L	20.0	EPA 200.8	05/30/02
LEAD	28.9	μg/L	0.1	EPA 200.8	05/30/02



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LABORATORY ANALYSIS REPORT

Sample ID: FO020564 Sample Collected: 5/28/2002 14:19 Sample Status: COMPLETE AND

Sample Received: 05/29/02 VALIDATED

Proj./Company Name: CSO CHAR WQ & FLOW MON Report Page: Page 2 of 2

Address/Location: TANNER (OF11)

 NW 10TH & LOVEJOY
 System ID:
 AG04768

 Sample Point Code:
 OF11
 EID File #:
 1010.001

 Sample Point Code:
 OF11
 EID File #: 1010.001

 Sample Type:
 COMPOSITE
 LocCode: CSOCHAR

 Sample Matrix:
 STORMWTR
 Collected By: DJH/WCR

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
ZINC	207	μg/L	0.5	EPA 200.8	05/30/02
OUTSIDE ANALYSIS					
DISSOLVED ORGANIC CARBON	9.00	mg/L	1.0	EPA 415.1	05/30/02
TOTAL ORGANIC CARBON	9.74	mg/L	1.0	EPA 415.1	05/30/02

End of Report for Sample ID: FO020564

Attachment 9

2003 BES Water Pollution Control Laboratory Results



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



AH00686

LABORATORY ANALYSIS REPORT

09:25 1/22/2003 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO030110 **VALIDATED**

01/22/03 Sample Received:

TANNER CK DIVERSION FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

ZOO CREEK EAST (SITE 30) Address/Location:

System ID: 1 2030.017 Sample Point Code: EID File #: **GRAB TANNERDV** Sample Type: LocCode: STORMWTR DAC Sample Matrix: Collected By:

Comments:

Total Processing	D. a. H	11.56	MDI	No. dland	Analysis Date
Test Parameter	Result	Units	MRL	Method	
FIELD					
CONDUCTIVITY (FIELD)	89	µmhos/cm	1	SM 2510 B	01/22/03
DISSOLVED OXYGEN (FIELD)	11.8	mg/L	0.1	SM 4500-O G	01/22/03
pH (FIELD)	7.1	pH Units	0.1	SM 4500-H B	01/22/03
TEMPERATURE	5.7	Deg. C	0.1	SM 2550 B	01/22/03
MICROBIOLOGY					
E. COLI	330	MPN/100 ml	1	COLILERT QT	01/22/03
GENERAL					
AMMONIA-NITROGEN	<0.020	mg/L	0.02	EPA 350.1	01/27/03
NITRATE-NITROGEN	0.88	mg/L	0.10	EPA 300.0	01/22/03
NITRITE-NITROGEN	<0.010	mg/L	0.01	EPA 353.2	01/23/03
O-PHOSPHATE-PHOSPHORUS, DISS	0.033	mg/L	0.02	EPA 365.1	01/23/03
TOTAL DISSOLVED SOLIDS	120	mg/L	1	SM 2540 BD	01/27/03
TOTAL KJELDAHL NITROGEN (TKN)	0.60	mg/L	0.20	PAI-DK03	01/30/03
TOTAL OIL & GREASE	<5	mg/L	5	EPA 1664	02/03/03
TOTAL PHOSPHORUS	0.14	mg/L	0.03	EPA 365.4	01/30/03
TOTAL SOLIDS	145	mg/L	1	SM 2540 B	01/23/03
TOTAL SUSPENDED SOLIDS	23	mg/L	1	SM 2540 D	01/22/03
METALS					
HARDNESS, TOTAL	39.0	mg CaCO3/L	1.0	SM 2340 B CALC	01/23/03
MERCURY	0.013	μg/L	0.010	WPCLSOP M-10.02	01/24/03
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	01/24/03
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.13	μg/L	0.1	EPA 200.8	01/24/03
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	01/24/03
CHROMIUM, DISSOLVED	< 0.40	μg/L	0.4	EPA 200.8	01/24/03
COPPER, DISSOLVED	1.35	μg/L	0.2	EPA 200.8	01/24/03
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	01/24/03
NICKEL, DISSOLVED	0.39	μg/L	0.2	EPA 200.8	01/24/03
ZINC, DISSOLVED	0.62	μg/L	0.5	EPA 200.8	01/24/03
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	0.60	μg/L	0.1	EPA 200.8	01/23/03
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	01/23/03
CHROMIUM	2.95	μg/L	0.4	EPA 200.8	01/23/03



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LABORATORY ANALYSIS REPORT

1/22/2003 09:25 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO030110 **VALIDATED**

01/22/03 Sample Received:

> Page 2 of 2 Report Page:

> > Collected By:

TANNER CK DIVERSION FLOW MON Proj./Company Name:

ZOO CREEK EAST (SITE 30) Address/Location:

AH00686 System ID: 2030.017 1 EID File #: **GRAB TANNERDV** LocCode: **STORMWTR** DAC

Comments:

Sample Type:

Sample Matrix:

Sample Point Code:

Test Parameter					Analysis
	Result	Units	MRL	Method	Date
COPPER	3.56	μg/L	0.2	EPA 200.8	01/23/03
LEAD	2.25	μg/L	0.1	EPA 200.8	01/23/03
NICKEL	2.22	μg/L	0.2	EPA 200.8	01/23/03
ZINC	9.27	μg/L	0.5	EPA 200.8	01/23/03
GC ANALYSIS					
NWTPH-HCID					
DIESEL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
GASOLINE	<0.25	mg/L	0.25	NWTPH-HCID	01/23/03
HEAVY FUEL OIL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
LUBE OIL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
OTHER	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
Surrogate Recovery (%)	81	mg/L		NWTPH-HCID	01/23/03

End of Report for Sample ID: FO030110



Sample ID:

City of Portland Water Pollution Control Laboratory

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



Sample Collected: 1/22/2003 09:35 Sample Status: COMPLETE AND

VALIDATED

Sample Received: 01/22/03

Proj./Company Name: TANNER CK DIVERSION FLOW MON Report Page: Page 1 of 2

Address/Location: ZOO CREEK WEST (SITE 29)

FO030111

 Sample Point Code:
 2
 EID File #:
 2030.017

 Sample Type:
 GRAB
 LocCode:
 TANNERDV

 Sample Matrix:
 STORMWTR
 Collected By:
 DAC

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	113	µmhos/cm	1	SM 2510 B	01/22/03
DISSOLVED OXYGEN (FIELD)	12.0	mg/L	0.1	SM 4500-O G	01/22/03
pH (FIELD)	7.1	pH Units	0.1	SM 4500-H B	01/22/03
TEMPERATURE	6.6	Deg. C	0.1	SM 2550 B	01/22/03
MICROBIOLOGY					
E. COLI	1400	MPN/100 ml	1	COLILERT QT	01/22/03
GENERAL					
AMMONIA-NITROGEN	<0.020	mg/L	0.02	EPA 350.1	01/27/03
NITRATE-NITROGEN	0.58	mg/L	0.10	EPA 300.0	01/22/03
NITRITE-NITROGEN	<0.010	mg/L	0.01	EPA 353.2	01/23/03
O-PHOSPHATE-PHOSPHORUS, DISS	0.039	mg/L	0.02	EPA 365.1	01/23/03
TOTAL DISSOLVED SOLIDS	83	mg/L	1	SM 2540 BD	01/27/03
TOTAL KJELDAHL NITROGEN (TKN)	0.49	mg/L	0.20	PAI-DK03	01/30/03
TOTAL OIL & GREASE	<5	mg/L	5	EPA 1664	02/03/03
TOTAL PHOSPHORUS	0.12	mg/L	0.03	EPA 365.4	01/30/03
TOTAL SOLIDS	97	mg/L	1	SM 2540 B	01/23/03
TOTAL SUSPENDED SOLIDS	14	mg/L	1	SM 2540 D	01/22/03
METALS					
HARDNESS, TOTAL	37.7	mg CaCO3/L	1.0	SM 2340 B CALC	01/23/03
MERCURY	<0.010	μg/L	0.010	WPCLSOP M-10.02	01/24/03
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	01/24/03
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.33	μg/L	0.1	EPA 200.8	01/24/03
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	01/24/03
CHROMIUM, DISSOLVED	0.50	μg/L	0.4	EPA 200.8	01/24/03
COPPER, DISSOLVED	1.35	μg/L	0.2	EPA 200.8	01/24/03
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	01/24/03
NICKEL, DISSOLVED	0.38	μg/L	0.2	EPA 200.8	01/24/03
ZINC, DISSOLVED	2.71	μg/L	0.5	EPA 200.8	01/24/03
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	0.61	μg/L	0.1	EPA 200.8	01/23/03
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	01/23/03
CHROMIUM	2.09	μg/L	0.4	EPA 200.8	01/23/03



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Sample ID: FO030111 Sample Collected: 1/22/2003 09:35 Sample Status: COMPLETE AND

Sample Received: 01/22/03 VALIDATED

Proj./Company Name: TANNER CK DIVERSION FLOW MON Report Page: Page 2 of 2

Address/Location: ZOO CREEK WEST (SITE 29)

 Sample Point Code:
 2
 EID File #:
 2030.017

 Sample Type:
 GRAB
 LocCode:
 TANNERDV

 Sample Matrix:
 STORMWTR
 Collected By:
 DAC

Comments:

Test Parameter					Analysis
	Result	Units	MRL	Method	Date
COPPER	3.26	μg/L	0.2	EPA 200.8	01/23/03
LEAD	1.25	μg/L	0.1	EPA 200.8	01/23/03
NICKEL	1.24	μg/L	0.2	EPA 200.8	01/23/03
ZINC	15.3	μg/L	0.5	EPA 200.8	01/23/03
GC ANALYSIS					
NWTPH-HCID					
DIESEL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
GASOLINE	<0.25	mg/L	0.25	NWTPH-HCID	01/23/03
HEAVY FUEL OIL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
LUBE OIL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
OTHER	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
Surrogate Recovery (%)	112	mg/L		NWTPH-HCID	01/23/03

End of Report for Sample ID: FO030111



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LABORATORY ANALYSIS REPORT

1/22/2003 10:10 **COMPLETE AND** Sample ID: FO030112 Sample Collected: Sample Status: **VALIDATED**

01/22/03 Sample Received:

TANNER CK DIVERSION FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

HWY 26 - SOUTH CREEK (SITE 13) Address/Location:

AH00688 System ID: 3 2030.017 Sample Point Code: EID File #: GRAB **TANNERDV** Sample Type: LocCode: STORMWTR DAC Sample Matrix: Collected By:

Comments:

Total Danswicks	Decult	l laita	MDI	Billion al	Analysis Date
Test Parameter	Result	Units	MRL	Method	
FIELD					
CONDUCTIVITY (FIELD)	143	µmhos/cm	1	SM 2510 B	01/22/03
DISSOLVED OXYGEN (FIELD)	12.1	mg/L	0.1	SM 4500-O G	01/22/03
pH (FIELD)	7.2	pH Units	0.1	SM 4500-H B	01/22/03
TEMPERATURE	5.5	Deg. C	0.1	SM 2550 B	01/22/03
MICROBIOLOGY					
E. COLI	20	MPN/100 ml	1	COLILERT QT	01/22/03
GENERAL					
AMMONIA-NITROGEN	<0.020	mg/L	0.02	EPA 350.1	01/27/03
NITRATE-NITROGEN	2.2	mg/L	0.10	EPA 300.0	01/22/03
NITRITE-NITROGEN	<0.010	mg/L	0.01	EPA 353.2	01/23/03
O-PHOSPHATE-PHOSPHORUS, DISS	0.043	mg/L	0.02	EPA 365.1	01/23/03
TOTAL DISSOLVED SOLIDS	90	mg/L	1	SM 2540 BD	01/27/03
TOTAL KJELDAHL NITROGEN (TKN)	0.76	mg/L	0.20	PAI-DK03	01/30/03
TOTAL OIL & GREASE	<5	mg/L	5	EPA 1664	02/03/03
TOTAL PHOSPHORUS	0.26	mg/L	0.03	EPA 365.4	01/30/03
TOTAL SOLIDS	207	mg/L	1	SM 2540 B	01/23/03
TOTAL SUSPENDED SOLIDS	117	mg/L	1	SM 2540 D	01/22/03
METALS					
HARDNESS, TOTAL	54.4	mg CaCO3/L	1.0	SM 2340 B CALC	01/23/03
MERCURY	<0.010	μg/L	0.010	WPCLSOP M-10.02	01/24/03
MERCURY, DISSOLVED	<0.010	μg/L	0.010	EPA 200.8	01/24/03
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.16	μg/L	0.1	EPA 200.8	01/24/03
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	01/24/03
CHROMIUM, DISSOLVED	0.57	μg/L	0.4	EPA 200.8	01/24/03
COPPER, DISSOLVED	1.22	μg/L	0.2	EPA 200.8	01/24/03
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	01/24/03
NICKEL, DISSOLVED	<0.20	μg/L	0.2	EPA 200.8	01/24/03
ZINC, DISSOLVED	<0.50	μg/L	0.5	EPA 200.8	01/24/03
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	0.44	μg/L	0.1	EPA 200.8	01/23/03
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	01/23/03
CHROMIUM	2.37	μg/L	0.4	EPA 200.8	01/23/03



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LABORATORY ANALYSIS REPORT

1/22/2003 10:10 **COMPLETE AND** Sample ID: FO030112 Sample Collected: Sample Status: **VALIDATED**

01/22/03 Sample Received:

> Page 2 of 2 Report Page:

TANNER CK DIVERSION FLOW MON Proj./Company Name: HWY 26 - SOUTH CREEK (SITE 13) Address/Location:

3

AH00688 System ID: 2030.017 EID File #: **TANNERDV** LocCode:

Collected By:

DAC

Sample Point Code: GRAB Sample Type: **STORMWTR** Sample Matrix:

Comments:

Test Parameter					Analysis
	Result	Units	MRL	Method	Date
COPPER	3.57	μg/L	0.2	EPA 200.8	01/23/03
LEAD	2.32	μg/L	0.1	EPA 200.8	01/23/03
NICKEL	1.33	μg/L	0.2	EPA 200.8	01/23/03
ZINC	7.19	μg/L	0.5	EPA 200.8	01/23/03
GC ANALYSIS					
NWTPH-HCID					
DIESEL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
GASOLINE	<0.25	mg/L	0.25	NWTPH-HCID	01/23/03
HEAVY FUEL OIL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
LUBE OIL	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
OTHER	< 0.63	mg/L	0.63	NWTPH-HCID	01/23/03
Surrogate Recovery (%)	106	mg/L		NWTPH-HCID	01/23/03

End of Report for Sample ID: FO030112



Comments:

City of Portland Water Pollution Control Laboratory

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LABORATORY ANALYSIS REPORT

1/22/2003 10:30 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO030113 **VALIDATED**

01/22/03 Sample Received:

> Page 1 of 1 Report Page:

TANNER CK DIVERSION FLOW MON Proj./Company Name: 28A HWY 26 SOUTHSIDE Address/Location:

> AH00689 System ID: 2030.017 EID File #:

Sample Point Code: **GRAB TANNERDV** Sample Type: LocCode: **STORMWTR** DAC

Sample Matrix: Collected By:

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
FIELD					
CONDUCTIVITY (FIELD)	21	µmhos/cm	1	SM 2510 B	01/22/03
DISSOLVED OXYGEN (FIELD)	12.0	mg/L	0.1	SM 4500-O G	01/22/03
pH (FIELD)	7.2	pH Units	0.1	SM 4500-H B	01/22/03
TEMPERATURE	6.1	Deg. C	0.1	SM 2550 B	01/22/03
MICROBIOLOGY					
E. COLI	980	MPN/100 ml	1	COLILERT QT	01/22/03

End of Report for Sample ID: FO030113

4



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LABORATORY ANALYSIS REPORT

1/22/2003 10:45 **COMPLETE AND** Sample ID: FO030114 Sample Collected: Sample Status: **VALIDATED**

01/22/03 Sample Received:

TANNER CK DIVERSION FLOW MON Page 1 of 1 Report Page: Proj./Company Name:

31 HWY 26 SOUTHSIDE Address/Location:

AH00690 System ID: 5 2030.017 Sample Point Code: EID File #: GRAB **TANNERDV** Sample Type: LocCode: **STORMWTR** DAC Sample Matrix: Collected By:

Comments:

Result	Units	MRL	Method	Analysis Date
120	µmhos/cm	1	SM 2510 B	01/22/03
11.8	mg/L	0.1	SM 4500-O G	01/22/03
7.5	pH Units	0.1	SM 4500-H B	01/22/03
5.6	Deg. C	0.1	SM 2550 B	01/22/03
640	MPN/100 ml	1	COLILERT QT	01/22/03
	120 11.8 7.5 5.6	120 μmhos/cm 11.8 mg/L 7.5 pH Units 5.6 Deg. C	120 µmhos/cm 1 11.8 mg/L 0.1 7.5 pH Units 0.1 5.6 Deg. C 0.1	120 μmhos/cm 1 SM 2510 B 11.8 mg/L 0.1 SM 4500-O G 7.5 pH Units 0.1 SM 4500-H B 5.6 Deg. C 0.1 SM 2550 B

End of Report for Sample ID: FO030114



Sample ID:

City of Portland Water Pollution Control Laboratory

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FO030548 Sample Collected: 5/13/2003 23:26 Sample Status: COMPLETE AND

VALIDATED

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AH04059

2030.017

CJH/DJH

TANNERDV

Report Page:

System ID:

EID File #:

LocCode:

Collected By:

Sample Received: 05/14/03

Proj./Company Name: TANNER CK DIVERSION FLOW MON

Address/Location: 36 IN PIPE FROM NORTH

HWY 26 EB ZOO OFF-RAMP

Sample Point Code:6ASample Type:GRABSample Matrix:STORMWTR

Comments:

ARSENIC

CADMIUM

CHROMIUM

est Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	178	µmhos/cm	1	SM 2510 B	05/13/03
DISSOLVED OXYGEN (FIELD)	10.7	mg/L	0.1	SM 4500-O G	05/13/03
pH (FIELD)	7.3	pH Units	0.1	SM 4500-H B	05/13/03
TEMPERATURE	12.0	Deg. C	0.1	SM 2550 B	05/13/03
MICROBIOLOGY					
E. COLI	140	MPN/100 ml	1	COLILERT QT	05/13/03
GENERAL					
AMMONIA-NITROGEN	0.024	mg/L	0.02	EPA 350.1	05/15/03
NITRATE-NITROGEN	0.92	mg/L	0.10	EPA 300.0	05/14/03
NITRITE-NITROGEN	<0.010	mg/L	0.01	EPA 353.2	05/14/03
O-PHOSPHATE-PHOSPHORUS, DISS	0.026	mg/L	0.02	EPA 365.1	05/14/0
TOTAL DISSOLVED SOLIDS	140	mg/L	1	SM 2540 BD	05/21/0
TOTAL KJELDAHL NITROGEN (TKN)	0.26	mg/L	0.20	PAI-DK03	05/16/03
TOTAL OIL & GREASE	<5.0	mg/L	5	EPA 1664	05/27/0
TOTAL PHOSPHORUS	0.058	mg/L	0.03	EPA 365.4	05/15/03
TOTAL SOLIDS	147	mg/L	1	SM 2540 B	05/14/0
TOTAL SUSPENDED SOLIDS	2	mg/L	2	SM 2540 D	05/14/03
METALS					
HARDNESS, TOTAL	66.5	mg CaCO3/L	1.0	SM 2340 B CALC	05/17/03
MERCURY	< 0.0050	μg/L	0.005	WPCLSOP M-10.02	05/16/03
MERCURY, DISSOLVED	<0.0020	μg/L	0.002	EPA 200.8	05/16/03
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.45	μg/L	0.1	EPA 200.8	05/21/03
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/21/03
CHROMIUM, DISSOLVED	0.48	μg/L	0.4	EPA 200.8	05/21/03
COPPER, DISSOLVED	1.00	μg/L	0.2	EPA 200.8	05/21/03
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/21/03
NICKEL, DISSOLVED	0.47	μg/L	0.2	EPA 200.8	05/21/03
ZINC, DISSOLVED	1.70	μg/L	0.5	EPA 200.8	05/21/03

0.60

<0.10

1.20

μg/L

μg/L

μg/L

0.1

0.1

0.4

EPA 200.8

EPA 200.8

EPA 200.8

05/21/03

05/21/03

05/21/03



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AH04059

2030.017

CJH/DJH

TANNERDV

System ID:

EID File #:

LocCode:

Collected By:

LABORATORY ANALYSIS REPORT

5/13/2003 23:26 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO030548 **VALIDATED**

05/14/03 Sample Received:

TANNER CK DIVERSION FLOW MON Page 2 of 2 Proj./Company Name: Report Page:

36 IN PIPE FROM NORTH Address/Location:

HWY 26 EB ZOO OFF-RAMP

6A Sample Point Code: GRAB Sample Type: **STORMWTR** Sample Matrix:

Comments:

Test Parameter					Analysis
	Result	Units	MRL	Method	Date
COPPER	1.51	μg/L	0.2	EPA 200.8	05/21/03
LEAD	0.30	μg/L	0.1	EPA 200.8	05/21/03
NICKEL	1.04	μg/L	0.2	EPA 200.8	05/21/03
ZINC	4.69	μg/L	0.5	EPA 200.8	05/21/03
GC ANALYSIS					
NWTPH-HCID					
DIESEL	<0.63	mg/L	0.63	NWTPH-HCID	05/16/03
GASOLINE	<0.25	mg/L	0.25	NWTPH-HCID	05/16/03
HEAVY FUEL OIL	< 0.63	mg/L	0.63	NWTPH-HCID	05/16/03
LUBE OIL	<0.63	mg/L	0.63	NWTPH-HCID	05/16/03
OTHER	<0.63	mg/L	0.63	NWTPH-HCID	05/16/03
Surrogate Recovery (%)	81	mg/L		NWTPH-HCID	05/16/03

End of Report for Sample ID: FO030548



Sample ID:

City of Portland Water Pollution Control Laboratory

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Sample Collected: 5/13/2003 23:39 Sample Status: COMPLETE AND

Sample Received: 05/14/03 VALIDATED

Proj./Company Name: TANNER CK DIVERSION FLOW MON Report Page: Page 1 of 2

Address/Location: 27 IN PIPE FROM WEST HWY 26 EB ZOO OFF-RAMP

FO030549

 HWY 26 EB ZOO OFF-RAMP
 System ID:
 AH04060

 Sample Point Code:
 6C
 EID File #:
 2030.017

Sample Type:GRABLocCode:TANNERDVSample Matrix:STORMWTRCollected By:CJH/DJH

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	167	µmhos/cm	1	SM 2510 B	05/13/03
DISSOLVED OXYGEN (FIELD)	11.0	mg/L	0.1	SM 4500-O G	05/13/03
pH (FIELD)	7.5	pH Units	0.1	SM 4500-H B	05/13/03
TEMPERATURE	10.8	Deg. C	0.1	SM 2550 B	05/13/03
MICROBIOLOGY					
E. COLI	41	MPN/100 ml	1	COLILERT QT	05/13/03
GENERAL					
AMMONIA-NITROGEN	<0.020	mg/L	0.02	EPA 350.1	05/15/03
NITRATE-NITROGEN	1.8	mg/L	0.10	EPA 300.0	05/14/03
NITRITE-NITROGEN	< 0.010	mg/L	0.01	EPA 353.2	05/14/03
O-PHOSPHATE-PHOSPHORUS, DISS	0.045	mg/L	0.02	EPA 365.1	05/14/03
TOTAL DISSOLVED SOLIDS	140	mg/L	1	SM 2540 BD	05/21/03
TOTAL KJELDAHL NITROGEN (TKN)	0.25	mg/L	0.20	PAI-DK03	05/16/03
TOTAL OIL & GREASE	<5.0	mg/L	5	EPA 1664	05/27/03
TOTAL PHOSPHORUS	0.084	mg/L	0.03	EPA 365.4	05/15/03
TOTAL SOLIDS	141	mg/L	1	SM 2540 B	05/14/03
TOTAL SUSPENDED SOLIDS	6	mg/L	2	SM 2540 D	05/14/03
METALS					
HARDNESS, TOTAL	60.0	mg CaCO3/L	1.0	SM 2340 B CALC	05/17/03
MERCURY	<0.0050	μg/L	0.005	WPCLSOP M-10.02	05/16/03
MERCURY, DISSOLVED	<0.0020	μg/L	0.002	EPA 200.8	05/16/03
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.46	μg/L	0.1	EPA 200.8	05/21/03
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/21/03
CHROMIUM, DISSOLVED	0.85	μg/L	0.4	EPA 200.8	05/21/03
COPPER, DISSOLVED	0.64	μg/L	0.2	EPA 200.8	05/21/03
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/21/03
NICKEL, DISSOLVED	0.32	μg/L	0.2	EPA 200.8	05/21/03
ZINC, DISSOLVED	6.93	μg/L	0.5	EPA 200.8	05/21/03
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	0.66	μg/L	0.1	EPA 200.8	05/21/03
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	05/21/03
CHROMIUM	1.61	μg/L	0.4	EPA 200.8	05/21/03



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LABORATORY ANALYSIS REPORT

Sample ID: FO030549 Sample Collected: 5/13/2003 23:39 Sample Status: COMPLETE AND

Sample Received: 05/14/03

VALIDATED

System ID:

EID File #:

LocCode:

Collected By:

AH04060

2030.017

CJH/DJH

TANNERDV

Proj./Company Name: TANNER CK DIVERSION FLOW MON Report Page: Page 2 of 2

Address/Location: 27 IN PIPE FROM WEST

HWY 26 EB ZOO OFF-RAMP

Sample Point Code:6CSample Type:GRABSample Matrix:STORMWTR

Comments:

					Analysis	
Test Parameter	Result	Units	MRL	Method	Date	
COPPER	1.33	μg/L	0.2	EPA 200.8	05/21/03	
LEAD	0.43	μg/L	0.1	EPA 200.8	05/21/03	
NICKEL	0.87	μg/L	0.2	EPA 200.8	05/21/03	
ZINC	12.3	μg/L	0.5	EPA 200.8	05/21/03	
GC ANALYSIS						
NWTPH-HCID						
DIESEL	< 0.63	mg/L	0.63	NWTPH-HCID	05/16/03	
GASOLINE	<0.25	mg/L	0.25	NWTPH-HCID	05/16/03	
HEAVY FUEL OIL	< 0.63	mg/L	0.63	NWTPH-HCID	05/16/03	
LUBE OIL	< 0.63	mg/L	0.63	NWTPH-HCID	05/16/03	
OTHER	< 0.63	mg/L	0.63	NWTPH-HCID	05/16/03	
Surrogate Recovery (%)	74	mg/L		NWTPH-HCID	05/16/03	

End of Report for Sample ID: FO030549



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AH04905

LABORATORY ANALYSIS REPORT

6/13/2003 09:05 **COMPLETE AND** Sample Collected: Sample Status: Sample ID: FO030650 **VALIDATED**

06/13/03 Sample Received:

TANNER CK DIVERSION FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

HWY 26 & SW JEFF OFF-RAMP Address/Location:

15 INCH STORM LINE

System ID: Sample Point Code: 8WQ EID File #: 2030.017 **GRAB TANNERDV** Sample Type: LocCode:

STORMWTR CJH Sample Matrix: Collected By:

Comments:

LAB/FO: SOME GASOLINE-RANGE HYDROCARBONS WERE DETECTED IN THE ANALYSIS FOR NWTPH-HCID, BUT NO SAMPLE WAS PROVIDED FOR FOLLOW-UP TESTING FOR NWTPH-Gx.

Total Processing	D. a. H	11.26	MDI	No. dland	Analysis Date
Test Parameter	Result	Units	MRL	Method	
FIELD					
CONDUCTIVITY (FIELD)	416	µmhos/cm	1	SM 2510 B	06/13/03
DISSOLVED OXYGEN (FIELD)	7.1	mg/L	0.1	SM 4500-O G	06/13/03
pH (FIELD)	6.5	pH Units	0.1	SM 4500-H B	06/13/03
TEMPERATURE	14.9	Deg. C	0.1	SM 2550 B	06/13/03
MICROBIOLOGY					
E. COLI	17000	MPN/100 ml	1	COLILERT QT	06/13/03
GENERAL					
AMMONIA-NITROGEN	17.7	mg/L	0.02	EPA 350.1	06/20/03
NITRATE-NITROGEN	4.1	mg/L	0.10	EPA 300.0	06/13/03
NITRITE-NITROGEN	0.43	mg/L	0.01	EPA 353.2	06/13/03
O-PHOSPHATE-PHOSPHORUS, DISS	0.14	mg/L	0.02	EPA 365.1	06/13/03
TOTAL DISSOLVED SOLIDS	230	mg/L	1	SM 2540 BD	06/18/03
TOTAL KJELDAHL NITROGEN (TKN)	21.7	mg/L	0.20	PAI-DK03	06/23/03
TOTAL OIL & GREASE	26.3	mg/L	5	EPA 1664	06/25/03
TOTAL PHOSPHORUS	0.53	mg/L	0.03	EPA 365.4	06/20/03
TOTAL SOLIDS	305	mg/L	1	SM 2540 B	06/13/03
TOTAL SUSPENDED SOLIDS	78	mg/L	2	SM 2540 D	06/13/03
METALS					
HARDNESS, TOTAL	90.5	mg CaCO3/L	1.0	SM 2340 B CALC	06/19/03
MERCURY	0.035	μg/L	0.005	WPCLSOP M-10.02	06/21/03
MERCURY, DISSOLVED	0.0096	μg/L	0.002	EPA 200.8	06/21/03
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	1.02	μg/L	0.1	EPA 200.8	06/17/03
CADMIUM, DISSOLVED	1.17	μg/L	0.1	EPA 200.8	06/17/03
CHROMIUM, DISSOLVED	3.18	μg/L	0.4	EPA 200.8	06/17/03
COPPER, DISSOLVED	103	μg/L	0.2	EPA 200.8	06/17/03
LEAD, DISSOLVED	3.53	μg/L	0.1	EPA 200.8	06/17/03
NICKEL, DISSOLVED	14.4	μg/L	0.2	EPA 200.8	06/17/03
ZINC, DISSOLVED	557	μg/L	0.5	EPA 200.8	06/17/03
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	1.95	μg/L	0.1	EPA 200.8	06/17/03
CADMIUM	1.20	μg/L	0.1	EPA 200.8	06/17/03
CHROMIUM	14.7	μg/L	0.4	EPA 200.8	06/17/03



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System ID:



LABORATORY ANALYSIS REPORT

6/13/2003 09:05 **COMPLETE AND** Sample Collected: Sample Status: Sample ID: FO030650 **VALIDATED**

06/13/03 Sample Received:

> Page 2 of 2 Report Page:

> > AH04905

TANNER CK DIVERSION FLOW MON Proj./Company Name: Address/Location:

HWY 26 & SW JEFF OFF-RAMP

15 INCH STORM LINE

8WQ 2030.017 EID File #: Sample Point Code: **GRAB TANNERDV** Sample Type: LocCode: **STORMWTR** CJH Sample Matrix: Collected By:

Comments:

LAB/FO: SOME GASOLINE-RANGE HYDROCARBONS WERE DETECTED IN THE ANALYSIS FOR NWTPH-HCID, BUT NO SAMPLE WAS PROVIDED FOR FOLLOW-UP TESTING FOR NWTPH-Gx.

Test Parameter	Result	Units	MRL	Method	Analysis Date
rest Farameter	Result	Units	IVIKL	Wethou	Date
COPPER	195	μg/L	0.2	EPA 200.8	06/17/03
LEAD	21.4	μg/L	0.1	EPA 200.8	06/17/03
NICKEL	23.6	μg/L	0.2	EPA 200.8	06/17/03
ZINC	803	μg/L	0.5	EPA 200.8	06/17/03
GC ANALYSIS					
NWTPH-HCID					
DIESEL	< 0.63	mg/L	0.63	NWTPH-HCID	06/18/03
GASOLINE	DET	mg/L	0.25	NWTPH-HCID	06/18/03
HEAVY FUEL OIL	< 0.63	mg/L	0.63	NWTPH-HCID	06/18/03
LUBE OIL	DET	mg/L	0.63	NWTPH-HCID	06/18/03
OTHER	< 0.63	mg/L	0.63	NWTPH-HCID	06/18/03
Surrogate Recovery (%)	92	mg/L		NWTPH-HCID	06/18/03
OUTSIDE ANALYSIS					
NWTPH-Dx - TA					
DIESEL RANGE HYDROCARBONS	5.51	mg/L	1.25	NWTPH-Dx	06/19/03
HEAVY OIL RANGE HYDROCARBONS	17.6	mg/L	2.50	NWTPH-Dx	06/19/03

End of Report for Sample ID: FO030650

Attachment 10

2008-10 BES Water Pollution Control Laboratory Results



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AM07056

1010.027

JXB

WESTSTR

System ID:

EID File #:

LocCode:

Collected By:

LABORATORY ANALYSIS REPORT

7/28/2008 11:01 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO080926 **VALIDATED**

07/28/08 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 1 of 1 Report Page: Proj./Company Name:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

TC1 Sample Point Code: GRAB Sample Type: **SURFWTR** Sample Matrix:

Comments:

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
FIELD					
CONDUCTIVITY (FIELD)	73	µmhos/cm	1	SM 2510 B	07/28/08
DISSOLVED OXYGEN (FIELD)	10.7	mg/L	0.1	SM 4500-O G	07/28/08
pH (FIELD)	8.2	pH Units	0.1	SM 4500-H B	07/28/08
TEMPERATURE	14.3	Deg. C	0.1	SM 2550 B	07/28/08
MICROBIOLOGY					
E. COLI	<10	MPN/100 ml	10	COLILERT QT	07/28/08
GENERAL					
AMMONIA-NITROGEN	0.26	mg/L	0.02	EPA 350.1	08/04/08
BOD5	<2	mg/L	2	SM 5210B /H10360	07/29/08
NITRATE-NITROGEN	<0.10	mg/L	0.10	EPA 300.0	07/28/08
o-PHOSPHATE-PHOSPHORUS, DISS	<0.020	mg/L	0.02	EPA 365.1	07/29/08
TOTAL DISSOLVED SOLIDS @180C	39	mg/L	5	SM 2540 C	07/29/08
TOTAL PHOSPHORUS	0.089	mg/L	0.03	EPA 365.4	07/31/08
TOTAL SOLIDS	99	mg/L	2	SM 2540 B	07/29/08
TOTAL SUSPENDED SOLIDS	57	mg/L	2	SM 2540 D	07/29/08
METALS					
HARDNESS, TOTAL	22.2	mg CaCO3/L	0.5	SM 2340 B CALC	07/29/08
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	1.63	μg/L	0.2	EPA 200.8	07/30/08
LEAD, DISSOLVED	0.14	μg/L	0.1	EPA 200.8	07/30/08
ZINC, DISSOLVED	1.56	μg/L	0.5	EPA 200.8	07/30/08
METALS BY ICP-MS (TOTAL) - 3					
COPPER	6.82	μg/L	0.2	EPA 200.8	07/30/08
LEAD	4.94	μg/L	0.1	EPA 200.8	07/30/08
ZINC	12.9	μg/L	0.5	EPA 200.8	07/30/08

End of Report for Sample ID: FO080926



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LABORATORY ANALYSIS REPORT

8/25/2008 12:38 **COMPLETE AND** Sample Collected: Sample Status: Sample ID: FO081021 **VALIDATED**

08/25/08 Sample Received:

> Page 1 of 1 Report Page:

> > AM07925

WESTSIDE STREAM WQ & FLOW MON Proj./Company Name: NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

System ID: TC1 EID File #: 1010.027 GRAB WESTSTR LocCode:

SURFWTR AJA Sample Matrix: Collected By:

Comments:

Sample Type:

Sample Point Code:

FO: THE RESULT FOR DISSOLVED OXYGEN SHOULD BE CONSIDERED AN ESTIMATE DUE TO ODD BEHAVIOR OF D.O.

SENSOR.

Test Parameter	Result	Units	MRL	Method	Analysis Date
	Resuit	Ullits	IVIKL	Wethou	Date
FIELD					
CONDUCTIVITY (FIELD)	238	µmhos/cm	1	SM 2510 B	08/25/08
DISSOLVED OXYGEN (FIELD)	EST 7.4	mg/L	0.1	SM 4500-O G	08/25/08
pH (FIELD)	7.5	pH Units	0.1	SM 4500-H B	08/25/08
TEMPERATURE	15.2	Deg. C	0.1	SM 2550 B	08/25/08
MICROBIOLOGY					
E. COLI	230	MPN/100 ml	10	COLILERT QT	08/26/08
GENERAL					
AMMONIA-NITROGEN	0.065	mg/L	0.02	EPA 350.1	09/04/08
BOD5	<2	mg/L	2	SM 5210B /H10360	08/25/08
NITRATE-NITROGEN	0.61	mg/L	0.10	EPA 300.0	08/26/08
o-PHOSPHATE-PHOSPHORUS, DISS	0.054	mg/L	0.02	EPA 365.1	08/26/08
TOTAL DISSOLVED SOLIDS @180C	168	mg/L	5	SM 2540 C	08/28/08
TOTAL PHOSPHORUS	0.16	mg/L	0.03	EPA 365.4	08/28/08
TOTAL SOLIDS	171	mg/L	2	SM 2540 B	08/25/08
TOTAL SUSPENDED SOLIDS	10	mg/L	2	SM 2540 D	08/25/08
METALS					
HARDNESS, TOTAL	85.9	mg CaCO3/L	1.0	SM 2340 B CALC	08/27/08
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.80	μg/L	0.2	EPA 200.8	08/28/08
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	08/28/08
ZINC, DISSOLVED	2.58	μg/L	0.5	EPA 200.8	08/28/08
METALS BY ICP-MS (TOTAL) - 3					
COPPER	1.24	μg/L	0.2	EPA 200.8	08/28/08
LEAD	0.27	μg/L	0.1	EPA 200.8	08/28/08
ZINC	6.17	μg/L	0.5	EPA 200.8	08/28/08

End of Report for Sample ID: FO081021



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AM08782

System ID:

Sample ID: FO081136 Sample Collected: 9/22/2008 14:20 Sample Status: COMPLETE AND

Sample Received: 09/22/08 VALIDATED

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 1 of 1

Address/Location: NW FRONT AVE & 9TH AVE

OUTFALL 11 - TANNER CREEK

 Sample Point Code:
 TC1
 EID File #:
 1010.027

 Sample Type:
 GRAB
 LocCode:
 WESTSTR

 Sample Matrix:
 SURFWTR
 Collected By:
 ECH/MJS

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
CONDUCTIVITY (FIELD)	368	µmhos/cm	1	SM 2510 B	09/22/08
DISSOLVED OXYGEN (FIELD)	9.5	mg/L	0.1	SM 4500-O G	09/22/08
pH (FIELD)	7.7	pH Units	0.1	SM 4500-H B	09/22/08
TEMPERATURE	14.6	Deg. C	0.1	SM 2550 B	09/22/08
MICROBIOLOGY					
E. COLI	580	MPN/100 ml	10	COLILERT QT	09/22/08
GENERAL					
AMMONIA-NITROGEN	0.066	mg/L	0.02	EPA 350.1	10/03/08
BOD5	<2	mg/L	2	SM 5210B /H10360	09/23/08
NITRATE-NITROGEN	0.56	mg/L	0.10	EPA 300.0	09/22/08
o-PHOSPHATE-PHOSPHORUS, DISS	0.057	mg/L	0.02	EPA 365.1	09/23/08
TOTAL DISSOLVED SOLIDS @180C	247	mg/L	5	SM 2540 C	09/24/08
TOTAL PHOSPHORUS	0.12	mg/L	0.03	EPA 365.4	10/06/08
TOTAL SOLIDS	246	mg/L	2	SM 2540 B	09/23/08
TOTAL SUSPENDED SOLIDS	7	mg/L	2	SM 2540 D	09/22/08
METALS					
HARDNESS, TOTAL	103	mg CaCO3/L	0.5	SM 2340 B CALC	09/23/08
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	1.83	μg/L	0.2	EPA 200.8	09/24/08
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	09/24/08
ZINC, DISSOLVED	4.27	μg/L	0.5	EPA 200.8	09/24/08
METALS BY ICP-MS (TOTAL) - 3					
COPPER	3.02	μg/L	0.2	EPA 200.8	09/24/08
LEAD	0.34	μg/L	0.1	EPA 200.8	09/24/08
ZINC	9.75	μg/L	0.5	EPA 200.8	09/24/08
		. 5			

End of Report for Sample ID: FO081136



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Page 1 of 1

AM09935

1010.027

ECH

WESTSTR

System ID:

EID File #:

LocCode:

Collected By:

LABORATORY ANALYSIS REPORT

10/27/2008 12:01 **COMPLETE AND** Sample ID: FO081262 Sample Collected: Sample Status: **VALIDATED**

10/27/08 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Proj./Company Name: Report Page:

OF 11 TANNER CREEK Address/Location:

NW FRONT & 9TH

TC1 Sample Point Code: GRAB Sample Type: **SURFWTR** Sample Matrix:

Comments:

est Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	245	µmhos/cm	1	SM 2510 B	10/27/08
DISSOLVED OXYGEN (FIELD)	10.5	mg/L	0.1	SM 4500-O G	10/27/08
pH (FIELD)	8.0	pH Units	0.1	SM 4500-H B	10/27/08
TEMPERATURE	16.2	Deg. C	0.1	SM 2550 B	10/27/08
MICROBIOLOGY					
E. COLI	85	MPN/100 ml	10	COLILERT QT	10/27/08
GENERAL					
AMMONIA-NITROGEN	0.080	mg/L	0.05	EPA 350.1	10/30/08
BOD5	<2	mg/L	2	SM 5210B /H10360	10/28/08
NITRATE-NITROGEN	0.37	mg/L	0.10	EPA 300.0	10/27/08
o-PHOSPHATE-PHOSPHORUS, DISS	0.046	mg/L	0.02	EPA 365.1	10/28/08
TOTAL DISSOLVED SOLIDS @180C	171	mg/L	5	SM 2540 C	10/29/08
TOTAL PHOSPHORUS	0.16	mg/L	0.03	EPA 365.4	10/30/08
TOTAL SOLIDS	183	mg/L	2	SM 2540 B	10/28/08
TOTAL SUSPENDED SOLIDS	2	mg/L	2	SM 2540 D	10/28/08
METALS					
HARDNESS, TOTAL	88.5	mg CaCO3/L	0.5	SM 2340 B CALC	10/30/08
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.52	μg/L	0.2	EPA 200.8	10/29/08
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	10/29/08
ZINC, DISSOLVED	0.80	μg/L	0.5	EPA 200.8	10/29/08
METALS BY ICP-MS (TOTAL) - 3					
COPPER	1.51	μg/L	0.2	EPA 200.8	10/29/08
LEAD	0.59	μg/L	0.1	EPA 200.8	10/29/08
ZINC	5.53	μg/L	0.5	EPA 200.8	10/29/08

End of Report for Sample ID: FO081262



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AM10770

1010.027

WESTSTR

ECH/PTB

System ID:

EID File #:

LocCode:

Collected By:

LABORATORY ANALYSIS REPORT

11/17/2008 10:35 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO081390 **VALIDATED**

11/17/08 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 1 of 1 Report Page: Proj./Company Name:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

TC1 Sample Point Code: GRAB Sample Type: **SURFWTR** Sample Matrix:

Comments:

Fest Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	224	µmhos/cm	1	SM 2510 B	11/17/08
DISSOLVED OXYGEN (FIELD)	10.1	mg/L	0.1	SM 4500-O G	11/17/08
pH (FIELD)	7.7	pH Units	0.1	SM 4500-H B	11/17/08
TEMPERATURE	14.7	Deg. C	0.1	SM 2550 B	11/17/08
MICROBIOLOGY					
E. COLI	160	MPN/100 ml	10	COLILERT QT	11/17/08
GENERAL					
AMMONIA-NITROGEN	0.089	mg/L	0.02	EPA 350.1	11/24/08
BOD5	<2	mg/L	2	SM 5210B /H10360	11/18/08
NITRATE-NITROGEN	0.53	mg/L	0.10	EPA 300.0	11/17/08
o-PHOSPHATE-PHOSPHORUS, DISS	0.046	mg/L	0.02	EPA 365.1	11/18/08
TOTAL DISSOLVED SOLIDS @180C	161	mg/L	5	SM 2540 C	11/20/08
TOTAL PHOSPHORUS	0.14	mg/L	0.03	EPA 365.4	11/20/08
TOTAL SOLIDS	170	mg/L	2	SM 2540 B	11/18/08
TOTAL SUSPENDED SOLIDS	5	mg/L	2	SM 2540 D	11/18/08
METALS					
HARDNESS, TOTAL	86.2	mg CaCO3/L	0.5	SM 2340 B CALC	11/18/08
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.80	μg/L	0.2	EPA 200.8	11/20/08
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	11/20/08
ZINC, DISSOLVED	1.36	μg/L	0.5	EPA 200.8	11/20/08
METALS BY ICP-MS (TOTAL) - 3					
COPPER	0.90	μg/L	0.2	EPA 200.8	11/20/08
LEAD	0.19	μg/L	0.1	EPA 200.8	11/20/08
ZINC	3.26	μg/L	0.5	EPA 200.8	11/20/08

End of Report for Sample ID: FO081390



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LABORATORY ANALYSIS REPORT

4/30/2009 15:43 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO095564 **VALIDATED**

04/30/09 Sample Received:

Page 1 of 1

AN04768

1010.027

WESTSTR

MJS/ECH

Report Page:

System ID:

EID File #:

LocCode:

Collected By:

WESTSIDE STREAM WQ & FLOW MON Proj./Company Name: NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

TC1 Sample Point Code: GRAB Sample Type: **SURFWTR** Sample Matrix:

Comments:

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
FIELD					
CONDUCTIVITY (FIELD)	197	µmhos/cm	1	SM 2510 B	04/30/09
DISSOLVED OXYGEN (FIELD)	11.5	mg/L	0.1	SM 4500-O G	04/30/09
pH (FIELD)	7.4	pH Units	0.1	SM 4500-H B	04/30/09
TEMPERATURE	10.4	Deg. C	0.1	SM 2550 B	04/30/09
MICROBIOLOGY					
E. COLI	<10	MPN/100 ml	10	COLILERT QT	05/01/09
GENERAL					
AMMONIA-NITROGEN	0.095	mg/L	0.02	EPA 350.1	05/08/09
BOD5	3	mg/L	2	SM 5210B /H10360	05/01/09
NITRATE-NITROGEN	0.63	mg/L	0.10	EPA 300.0	04/30/09
o-PHOSPHATE-PHOSPHORUS, DISS	0.037	mg/L	0.02	EPA 365.1	05/01/09
TOTAL DISSOLVED SOLIDS @180C	136	mg/L	5	SM 2540 C	05/04/09
TOTAL PHOSPHORUS	0.15	mg/L	0.03	EPA 365.4	05/06/09
TOTAL SOLIDS	193	mg/L	2	SM 2540 B	05/01/09
TOTAL SUSPENDED SOLIDS	36	mg/L	2	SM 2540 D	05/01/09
METALS					
HARDNESS, TOTAL	71.0	mg CaCO3/L	0.5	SM 2340 B CALC	05/06/09
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.57	μg/L	0.2	EPA 200.8	05/02/09
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/02/09
ZINC, DISSOLVED	5.39	μg/L	0.5	EPA 200.8	05/02/09
METALS BY ICP-MS (TOTAL) - 3					
COPPER	4.09	μg/L	0.2	EPA 200.8	05/05/09
LEAD	2.47	μg/L	0.1	EPA 200.8	05/05/09
ZINC	27.3	μg/L	0.5	EPA 200.8	05/05/09
		- -			

End of Report for Sample ID: FO095564



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AN05609

System ID:

Sample ID: FO095633 Sample Collected: 5/27/2009 11:23 Sample Status: COMPLETE AND

Sample Received: 05/27/09 VALIDATED

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 1 of 1

Address/Location: NW 11TH & JOHNSON

OUTFALL 11 - TANNER CREEK

Sample Point Code:TC3EID File #:1010.027Sample Type:GRABLocCode:WESTSTRSample Matrix:SURFWTRCollected By:PTB

Comments:

					Analysis
Test Parameter	Result	Units	MRL	Method	Date
FIELD					
CONDUCTIVITY (FIELD)	169	µmhos/cm	1	SM 2510 B	05/27/09
DISSOLVED OXYGEN (FIELD)	11.6	mg/L	0.1	SM 4500-O G	05/27/09
pH (FIELD)	7.8	pH Units	0.1	SM 4500-H B	05/27/09
TEMPERATURE	13.5	Deg. C	0.1	SM 2550 B	05/27/09
MICROBIOLOGY					
E. COLI	<10	MPN/100 ml	10	COLILERT QT	05/27/09
GENERAL					
AMMONIA-NITROGEN	0.071	mg/L	0.02	EPA 350.1	06/05/09
BOD5	<2	mg/L	2	SM 5210B /H10360	05/28/09
NITRATE-NITROGEN	0.51	mg/L	0.10	EPA 300.0	05/28/09
o-PHOSPHATE-PHOSPHORUS, DISS	0.055	mg/L	0.02	EPA 365.1	05/28/09
TOTAL DISSOLVED SOLIDS @180C	117	mg/L	5	SM 2540 C	05/29/09
TOTAL PHOSPHORUS	0.084	mg/L	0.03	EPA 365.4	06/15/09
TOTAL SOLIDS	128	mg/L	2	SM 2540 B	05/27/09
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	05/28/09
METALS					
HARDNESS, TOTAL	63.0	mg CaCO3/L	0.5	SM 2340 B CALC	06/01/09
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.47	μg/L	0.2	EPA 200.8	06/02/09
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	06/02/09
ZINC, DISSOLVED	0.96	μg/L	0.5	EPA 200.8	06/02/09
METALS BY ICP-MS (TOTAL) - 3					
COPPER	1.04	μg/L	0.2	EPA 200.8	06/02/09
LEAD	0.20	μg/L	0.1	EPA 200.8	06/02/09
ZINC	2.33	μg/L	0.5	EPA 200.8	06/02/09

End of Report for Sample ID: FO095633



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LABORATORY ANALYSIS REPORT

6/22/2009 12:07 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO095698 **VALIDATED**

06/22/09 Sample Received:

> Page 1 of 1 Report Page:

> > AN06309

1010.027

WESTSIDE STREAM WQ & FLOW MON Proj./Company Name: NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

TC1 Sample Point Code: GRAB Sample Type: **SURFWTR** Sample Matrix:

WESTSTR LocCode: ECH Collected By:

System ID:

EID File #:

Comments:

Fest Parameter	Result	Units	MRL	Method	Analysis Date
	Result	Units	IVIKL	Method	Date
FIELD					
CONDUCTIVITY (FIELD)	199	µmhos/cm	1	SM 2510 B	06/22/09
DISSOLVED OXYGEN (FIELD)	10.8	mg/L	0.1	SM 4500-O G	06/22/09
pH (FIELD)	7.8	pH Units	0.1	SM 4500-H B	06/22/09
TEMPERATURE	13.5	Deg. C	0.1	SM 2550 B	06/22/09
MICROBIOLOGY					
E. COLI	10	MPN/100 ml	10	COLILERT QT	06/22/09
GENERAL					
AMMONIA-NITROGEN	0.10	mg/L	0.02	EPA 350.1	07/09/09
BOD5	<2	mg/L	2	SM 5210B /H10360	06/22/09
NITRATE-NITROGEN	0.52	mg/L	0.10	EPA 300.0	06/22/09
o-PHOSPHATE-PHOSPHORUS, DISS	0.051	mg/L	0.02	EPA 365.1	06/23/09
TOTAL DISSOLVED SOLIDS @180C	137	mg/L	5	SM 2540 C	06/25/09
TOTAL PHOSPHORUS	0.11	mg/L	0.03	EPA 365.4	06/24/09
TOTAL SOLIDS	149	mg/L	2	SM 2540 B	06/22/09
TOTAL SUSPENDED SOLIDS	2	mg/L	2	SM 2540 D	06/22/09
METALS					
HARDNESS, TOTAL	77.8	mg CaCO3/L	0.5	SM 2340 B CALC	06/25/09
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.46	μg/L	0.2	EPA 200.8	06/30/09
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	06/30/09
ZINC, DISSOLVED	2.20	μg/L	0.5	EPA 200.8	06/30/09
METALS BY ICP-MS (TOTAL) - 3					
COPPER	0.84	μg/L	0.2	EPA 200.8	06/30/09
LEAD	0.16	μg/L	0.1	EPA 200.8	06/30/09
ZINC	4.06	μg/L	0.5	EPA 200.8	06/30/09

End of Report for Sample ID: FO095698



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AN12405

LABORATORY ANALYSIS REPORT

12/29/2009 09:25 **COMPLETE AND** Sample Collected: Sample Status: Sample ID: FO096402 **VALIDATED**

12/29/09 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 1 of 1 Proj./Company Name: Report Page:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

System ID: TC1 Sample Point Code: EID File #: 1010.027 **GRAB** WESTSTR LocCode: Sample Type: **SURFWTR** PTB/LAP Sample Matrix: Collected By:

Comments:

FIELD: A Conductivity result is not available due to instrument malfunction.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD	Result	Onits	WIINE	Metriou	
DISSOLVED OXYGEN (FIELD)	11.5	mg/L	0.1	SM 4500-O G	12/29/09
pH (FIELD)	8.6	pH Units	0.1	SM 4500-H B	12/29/09
TEMPERATURE	9.4	Deg. C	0.1	SM 2550 B	12/29/09
MICROBIOLOGY					
E. COLI	<10	MPN/100 ml	10	COLILERT QT	12/29/09
GENERAL					
AMMONIA-NITROGEN	0.12	mg/L	0.02	EPA 350.1	01/11/10
BOD5	<2	mg/L	2	SM 5210B /H10360	12/29/09
NITRATE-NITROGEN	0.57	mg/L	0.10	EPA 300.0	12/29/09
o-PHOSPHATE-PHOSPHORUS, DISS	0.032	mg/L	0.02	EPA 365.1	12/30/09
TOTAL DISSOLVED SOLIDS @180C	133	mg/L	5	SM 2540 C	12/30/09
TOTAL PHOSPHORUS	0.13	mg/L	0.03	EPA 365.4	01/07/10
TOTAL SOLIDS	140	mg/L	2	SM 2540 B	12/29/09
TOTAL SUSPENDED SOLIDS	4	mg/L	2	SM 2540 D	12/29/09
METALS					
HARDNESS, TOTAL	70.3	mg CaCO3/L	0.5	SM 2340 B CALC	12/30/09
METALS BY ICP-MS (DISSOLVED) - 3					
COPPER, DISSOLVED	0.58	μg/L	0.2	EPA 200.8	12/30/09
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	12/30/09
ZINC, DISSOLVED	1.10	μg/L	0.5	EPA 200.8	12/30/09
METALS BY ICP-MS (TOTAL) - 3					
COPPER	1.95	μg/L	0.2	EPA 200.8	12/30/09
LEAD	4.09	μg/L	0.1	EPA 200.8	12/30/09
ZINC	9.04	μg/L	0.5	EPA 200.8	12/30/09

End of Report for Sample ID: FO096402

Validated By: Signature on File Report Date: 11/02/10



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LABORATORY ANALYSIS REPORT

1/26/2010 13:31 **COMPLETE AND** Sample Collected: Sample Status: Sample ID: FO105156 **VALIDATED**

01/26/10 Sample Received:

> Page 1 of 2 Report Page:

System ID:

AO00928

WESTSIDE STREAM WQ & FLOW MON Proj./Company Name: Address/Location:

NW FRONT AVE & 9TH AVE

OUTFALL 11 - TANNER CREEK

Sample Point Code: TC1 EID File #: 1010.027 **GRAB** WESTSTR LocCode: Sample Type: **SURFWTR** CJK/LAP Sample Matrix: Collected By:

Comments:

QA/QC: For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for Cl1 - Cl4 congeners could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	149	µmhos/cm	1	SM 2510 B	01/26/10
DISSOLVED OXYGEN (FIELD)	12.8	mg/L	0.1	SM 4500-O G	01/26/10
pH (FIELD)	8.3	pH Units	0.1	SM 4500-H B	01/26/10
TEMPERATURE	8.9	Deg. C	0.1	SM 2550 B	01/26/10
MICROBIOLOGY					
E. COLI	10	MPN/100 ml	10	COLILERT QT	01/26/10
GENERAL					
AMMONIA-NITROGEN	0.044	mg/L	0.02	EPA 350.1	01/28/10
BOD5	<2	mg/L	2	SM 5210B /H10360	01/27/10
NITRATE-NITROGEN	1.0	mg/L	0.10	EPA 300.0	01/27/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.042	mg/L	0.02	EPA 365.1	01/27/10
TOTAL DISSOLVED SOLIDS @180C	114	mg/L	5	SM 2540 C	01/27/10
TOTAL PHOSPHORUS	0.094	mg/L	0.03	EPA 365.4	01/27/10
TOTAL SOLIDS	125	mg/L	2	SM 2540 B	01/26/10
TOTAL SUSPENDED SOLIDS	8	mg/L	2	SM 2540 D	01/26/10
METALS					
HARDNESS, TOTAL	52.4	mg CaCO3/L	0.5	SM 2340 B CALC	01/27/10
MERCURY	0.0040	μg/L	0.002	WPCLSOP M-10.02	02/05/10
METALS BY ICP-MS (DISSOLVED) - 4					
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	02/06/10
COPPER, DISSOLVED	1.25	μg/L	0.2	EPA 200.8	02/06/10
LEAD, DISSOLVED	0.28	μg/L	0.1	EPA 200.8	02/06/10
ZINC, DISSOLVED	4.81	μg/L	0.5	EPA 200.8	02/06/10
METALS BY ICP-MS (TOTAL) - 4					
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	02/03/10
COPPER	2.45	μg/L	0.2	EPA 200.8	02/03/10
LEAD	0.78	μg/L	0.1	EPA 200.8	02/03/10
ZINC	8.30	μg/L	0.5	EPA 200.8	02/03/10
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -P	ACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/01/10
POLYNUCLEAR AROMATICS & PHTHALATES - 1	Ā				



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LABORATORY ANALYSIS REPORT

1/26/2010 13:31 **COMPLETE AND** Sample Collected: Sample Status: Sample ID: FO105156 **VALIDATED**

01/26/10 Sample Received:

System ID:

AO00928

WESTSIDE STREAM WQ & FLOW MON Page 2 of 2 Proj./Company Name: Report Page:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

TC1 EID File #: 1010.027 Sample Point Code: **GRAB** WESTSTR LocCode: Sample Type: **SURFWTR** CJK/LAP Sample Matrix: Collected By:

Comments:

QA/QC: For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for Cl1 - Cl4 congeners could be low estimates.

Result	Units	MRL	Method	Date
0 297				01/28/10
				01/28/10
	. •			01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
				01/28/10
	. •			01/28/10
				01/28/10
				01/28/10
				01/28/10
	. •			01/28/10
				01/28/10
	0.297 <0.0194 0.0271 0.0222 0.0178 <0.00971 <0.0194 0.0116 <0.971 <0.971 0.0248 <0.00971 <0.971 <0.971 <0.971 <0.971 <0.971 <0.971 <0.971 <0.971 0.0466 0.139 <0.00971 0.627 0.110 0.113	<0.0194 μg/L 0.0271 μg/L 0.0222 μg/L 0.0178 μg/L <0.00971 μg/L <0.0194 μg/L <0.0116 μg/L <0.971 μg/L <0.971 μg/L <0.971 μg/L <0.971 μg/L <0.0971 μg/L <0.0971 μg/L <0.0971 μg/L <0.10971 μg/L <0.971 μg/L <0.139 μg/L <0.00971 μg/L 0.110 μg/L	<0.0194	<0.0194

End of Report for Sample ID: FO105156



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VALIDATED

AO01912

LABORATORY ANALYSIS REPORT

2/23/2010 11:04 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO105256

02/23/10 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

System ID: TC1 1010.027 Sample Point Code: EID File #: GRAB WESTSTR Sample Type: LocCode: **SURFWTR** MAW/LAP Sample Matrix: Collected By:

Comments:

Test Parameter	Result	Units	MRL	Method	Analysi: Date
FIELD					
CONDUCTIVITY (FIELD)	179	µmhos/cm	1	SM 2510 B	02/23/10
DISSOLVED OXYGEN (FIELD)	11.2	mg/L	0.1	SM 4500-O G	02/23/10
pH (FIELD)	7.8	pH Units	0.1	SM 4500-H B	02/23/10
TEMPERATURE	9.4	Deg. C	0.1	SM 2550 B	02/23/10
MICROBIOLOGY					
E. COLI	<10	MPN/100 ml	10	COLILERT QT	02/23/10
GENERAL					
AMMONIA-NITROGEN	0.099	mg/L	0.02	EPA 350.1	03/09/10
BOD5	<2	mg/L	2	SM 5210B /H10360	02/23/10
NITRATE-NITROGEN	0.65	mg/L	0.10	EPA 300.0	02/23/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.032	mg/L	0.02	EPA 365.1	02/24/10
TOTAL DISSOLVED SOLIDS @180C	127	mg/L	5	SM 2540 C	02/24/10
TOTAL PHOSPHORUS	0.14	mg/L	0.03	EPA 365.4	02/25/10
TOTAL SOLIDS	142	mg/L	2	SM 2540 B	02/23/10
TOTAL SUSPENDED SOLIDS	8	mg/L	2	SM 2540 D	02/23/10
METALS					
HARDNESS, TOTAL	68.4	mg CaCO3/L	0.5	SM 2340 B CALC	02/24/10
MERCURY	0.0028	μg/L	0.002	WPCLSOP M-10.02	03/12/10
METALS BY ICP-MS (DISSOLVED) - 4					
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	03/06/10
COPPER, DISSOLVED	0.50	μg/L	0.2	EPA 200.8	03/06/10
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	03/06/10
ZINC, DISSOLVED	1.18	μg/L	0.5	EPA 200.8	03/06/10
METALS BY ICP-MS (TOTAL) - 4					
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	03/03/10
COPPER	1.02	μg/L	0.2	EPA 200.8	03/03/10
LEAD	0.26	μg/L	0.1	EPA 200.8	03/03/10
ZINC	3.38	μg/L	0.5	EPA 200.8	03/03/10
DUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -	PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	03/18/10



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Sample Collected: 2/23/2010 11:04 Sample Status: COMPLETE AND

AO01912

System ID:

Sample ID: FO105256 Sample Collected: 2/23/2010 11:04 Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 2 of 2

Address/Location: NW FRONT AVE & 9TH AVE

OUTFALL 11 - TANNER CREEK

 Sample Point Code:
 TC1
 EID File #:
 1010.027

 Sample Type:
 GRAB
 LocCode:
 WESTSTR

 Sample Matrix:
 SURFWTR
 Collected By:
 MAW/LAP

Comments:

est Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	1.03	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Acenaphthylene	0.0313	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Anthracene	0.0898	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Benzo(a)anthracene	0.0399	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Benzo(a)pyrene	0.0232	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Benzo(b)fluoranthene	0.0108	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Benzo(ghi)perylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Benzo(k)fluoranthene	0.0133	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Bis(2-ethylhexyl) phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/01/10
Butyl benzyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/01/10
Chrysene	0.0412	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Dibenzo(a,h)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Diethyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/01/10
Dimethyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/01/10
Di-n-butyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/01/10
Di-n-octyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	03/01/10
Fluoranthene	0.141	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Fluorene	0.551	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Indeno(1,2,3-cd)pyrene	0.0105	μg/L	0.00971	EPA 8270M-SIM	03/01/10
Naphthalene	0.673	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Phenanthrene	0.479	μg/L	0.0194	EPA 8270M-SIM	03/01/10
Pyrene	0.358	μg/L	0.0194	EPA 8270M-SIM	03/01/10

End of Report for Sample ID: FO105256



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LABORATORY ANALYSIS REPORT

3/29/2010 13:05 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO105367 **VALIDATED**

03/29/10 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

AO02996 System ID: TC1 1010.027 Sample Point Code: EID File #: GRAB WESTSTR Sample Type: LocCode: **STORMWTR** PHA/LAP Sample Matrix: Collected By:

Comments:

Fest Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	72	µmhos/cm	1	SM 2510 B	03/29/10
DISSOLVED OXYGEN (FIELD)	12.3	mg/L	0.1	SM 4500-O G	03/29/10
pH (FIELD)	6.8	pH Units	0.1	SM 4500-H B	03/29/10
TEMPERATURE	9.2	Deg. C	0.1	SM 2550 B	03/29/10
MICROBIOLOGY					
E. COLI	1400	MPN/100 ml	10	COLILERT QT	03/29/10
GENERAL					
AMMONIA-NITROGEN	0.053	mg/L	0.02	EPA 350.1	04/01/10
BOD5	3	mg/L	2	SM 5210B /H10360	03/30/10
NITRATE-NITROGEN	0.88	mg/L	0.10	EPA 300.0	03/29/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.061	mg/L	0.02	EPA 365.1	03/30/10
TOTAL DISSOLVED SOLIDS @180C	113	mg/L	5	SM 2540 C	03/30/10
TOTAL PHOSPHORUS	0.73	mg/L	0.03	EPA 365.4	03/31/10
TOTAL SOLIDS	585	mg/L	2	SM 2540 B	03/31/10
TOTAL SUSPENDED SOLIDS	473	mg/L	2	SM 2540 D	03/29/10
METALS					
HARDNESS, TOTAL	42.0	mg CaCO3/L	0.5	SM 2340 B CALC	03/30/10
MERCURY	0.040	μg/L	0.002	WPCLSOP M-10.02	04/02/10
METALS BY ICP-MS (DISSOLVED) - 4					
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	04/02/10
COPPER, DISSOLVED	2.48	μg/L	0.2	EPA 200.8	04/02/10
LEAD, DISSOLVED	0.32	μg/L	0.1	EPA 200.8	04/02/10
ZINC, DISSOLVED	9.43	μg/L	0.5	EPA 200.8	04/02/10
METALS BY ICP-MS (TOTAL) - 4					
CADMIUM	0.16	μg/L	0.1	EPA 200.8	03/31/10
COPPER	18.6	μg/L	0.2	EPA 200.8	03/31/10
LEAD	17.9	μg/L	0.1	EPA 200.8	03/31/10
ZINC	105	μg/L	0.5	EPA 200.8	03/31/10
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PA					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	04/22/10

Validated By: Signature on File Report Date: 11/02/10



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Sample ID: FO105367 Sample Collected: 3/29/2010 13:05 Sample Status: COMPLETE AND

Sample Received: 03/29/10 VALIDATED

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 2 of 2

Address/Location: NW FRONT AVE & 9TH AVE

 OUTFALL 11 - TANNER CREEK
 System ID:
 AO02996

 Sample Point Code:
 TC1
 EID File #:
 1010.027

Sample Type:GRABLocCode:WESTSTRSample Matrix:STORMWTRCollected By:PHA/LAP

Comments:

Fest Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	0.117	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Acenaphthylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Anthracene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Benzo(a)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Benzo(a)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Benzo(b)fluoranthene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Benzo(ghi)perylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Benzo(k)fluoranthene	<0.00971	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Bis(2-ethylhexyl) phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	04/03/10
Butyl benzyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	04/03/10
Chrysene	0.0151	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Dibenzo(a,h)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Diethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	04/03/10
Dimethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	04/03/10
Di-n-butyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	04/03/10
Di-n-octyl phthalate	<0.971	μg/L	0.971	EPA 8270M-SIM	04/03/10
Fluoranthene	0.0342	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Fluorene	0.0504	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Indeno(1,2,3-cd)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	04/03/10
Naphthalene	0.129	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Phenanthrene	0.0384	μg/L	0.0194	EPA 8270M-SIM	04/03/10
Pyrene	0.0623	μg/L	0.0194	EPA 8270M-SIM	04/03/10

End of Report for Sample ID: FO105367



Sample ID:

City of Portland Water Pollution Control Laboratory

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4/27/2010 10:22 **COMPLETE AND** Sample Collected: Sample Status:

AO03934

04/27/10 **VALIDATED** Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 1 of 2 Proj./Company Name: Report Page:

NW FRONT AVE & 9TH AVE Address/Location:

FO105476

OUTFALL 11 - TANNER CREEK

System ID: TC1 1010.027 Sample Point Code: EID File #: GRAB WESTSTR Sample Type: LocCode: **STORMWTR** CJK Sample Matrix: Collected By:

Comments:

Result	Units	MRL	Method	Analysis Date
1017	µmhos/cm	1	SM 2510 B	04/27/10
12.3	mg/L	0.1	SM 4500-O G	04/27/10
7.2	pH Units	0.1	SM 4500-H B	04/27/10
10.4	Deg. C	0.1	SM 2550 B	04/27/10
360	MPN/100 ml	10	COLILERT QT	04/27/10
0.074	mg/L	0.02	EPA 350.1	04/27/10
<2	mg/L	2	SM 5210B /H10360	04/28/10
0.75	mg/L	0.10	EPA 300.0	04/27/10
0.039	mg/L	0.02	EPA 365.1	04/28/10
929	mg/L	5	SM 2540 C	04/28/10
0.14	mg/L	0.03	EPA 365.4	05/11/10
1040	mg/L	2	SM 2540 B	04/28/10
24	mg/L	2	SM 2540 D	04/29/10
210	mg CaCO3/L	0.5	SM 2340 B CALC	04/28/10
0.0078	μg/L	0.002	WPCLSOP M-10.02	04/30/10
<0.10	μg/L	0.1	EPA 200.8	05/01/10
3.00	μg/L	0.2	EPA 200.8	05/01/10
1.90	μg/L	0.1	EPA 200.8	05/01/10
14.0	μg/L	0.5	EPA 200.8	05/01/10
<0.10	μg/L	0.1	EPA 200.8	05/03/10
7.38	μg/L	0.2	EPA 200.8	05/03/10
3.93	μg/L	0.1	EPA 200.8	05/03/10
30.8	μg/L	0.5	EPA 200.8	05/03/10
ACE				
Completed	ng/L		EPA 1668 MOD	05/17/10
	1017 12.3 7.2 10.4 360 0.074 <2 0.75 0.039 929 0.14 1040 24 210 0.0078 <0.10 3.00 1.90 14.0 <0.10 7.38 3.93 30.8 ACE	1017 μmhos/cm 12.3 mg/L 7.2 pH Units 10.4 Deg. C 360 MPN/100 ml 0.074 mg/L <2 mg/L 0.75 mg/L 0.039 mg/L 929 mg/L 0.14 mg/L 1040 mg/L 24 mg/L 210 mg CaCO3/L 0.0078 μg/L <0.10 μg/L 3.00 μg/L 1.90 μg/L 1.90 μg/L 1.90 μg/L 1.90 μg/L <0.10 μg/L 3.00 μg/L 1.90 μg/L 1.90 μg/L 1.90 μg/L 1.90 μg/L 3.01 μg/L 3.02 μg/L 3.03 μg/L 3.03 μg/L 3.04 μg/L 3.05 μg/L 3.07 μg/L 3.08 μg/L 3.08 μg/L 3.08 μg/L	1017 μmhos/cm 1 12.3 mg/L 0.1 7.2 pH Units 0.1 10.4 Deg. C 0.1 360 MPN/100 ml 10 0.074 mg/L 0.02 <2 mg/L 2 0.75 mg/L 0.10 0.039 mg/L 0.02 929 mg/L 5 0.14 mg/L 0.03 1040 mg/L 2 24 mg/L 2 210 mg CaCO3/L 0.5 0.0078 μg/L 0.10 3.00 μg/L 0.2 1.90 μg/L 0.1 3.00 μg/L 0.5 <0.10 μg/L 0.1 3.00 μg/L 0.5 <0.10 μg/L 0.5 <0.10 μg/L 0.5 <0.10 μg/L 0.1 3.00 μg/L 0.5 <0.10 μg/L 0.1 3.00 μg/L 0.5 <0.10 μg/L 0.5	1017 μmhos/cm 1 SM 2510 B 12.3 mg/L 0.1 SM 4500-O G 7.2 pH Units 0.1 SM 4500-H B 10.4 Deg. C 0.1 SM 2550 B 360 MPN/100 ml 10 COLILERT QT 0.074 mg/L 2 SM 5210B /H10360 0.75 mg/L 0.10 EPA 300.0 0.039 mg/L 0.02 EPA 365.1 929 mg/L 5 SM 2540 C 0.14 mg/L 0.03 EPA 365.4 1040 mg/L 2 SM 2540 B 24 mg/L 2 SM 2540 D 210 mg CaCO3/L 0.5 SM 2340 B CALC 0.0078 μg/L 0.002 WPCLSOP M-10.02 <0.10 μg/L 0.1 EPA 200.8 3.00 μg/L 0.2 EPA 200.8 1.90 μg/L 0.1 EPA 200.8 1.90 μg/L 0.1 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 1.90 μg/L 0.1 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 1.90 μg/L 0.1 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 1.90 μg/L 0.5 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 EPA 200.8 <0.10 μg/L 0.1 EPA 200.8 EPA 200.8

Validated By: Signature on File Report Date: 11/02/10



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LABORATORY ANALYSIS REPORT

4/27/2010 10:22 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO105476 **VALIDATED**

04/27/10 Sample Received:

> Page 2 of 2 Report Page:

System ID:

EID File #:

AO03934

1010.027

WESTSTR

WESTSIDE STREAM WQ & FLOW MON Proj./Company Name: Address/Location:

NW FRONT AVE & 9TH AVE

OUTFALL 11 - TANNER CREEK

TC1 Sample Point Code: GRAB Sample Type: Sample Matrix:

LocCode: **STORMWTR** CJK Collected By:

Comments:

est Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	0.489	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Acenaphthylene	< 0.0196	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Anthracene	0.0416	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Benzo(a)anthracene	0.0185	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Benzo(a)pyrene	0.0127	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Benzo(b)fluoranthene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Benzo(ghi)perylene	< 0.0196	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Benzo(k)fluoranthene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Bis(2-ethylhexyl) phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	04/29/10
Butyl benzyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	04/29/10
Chrysene	0.0200	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Dibenzo(a,h)anthracene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Diethyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	04/29/10
Dimethyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	04/29/10
Di-n-butyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	04/29/10
Di-n-octyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	04/29/10
Fluoranthene	0.0611	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Fluorene	0.190	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Indeno(1,2,3-cd)pyrene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	04/29/10
Naphthalene	0.687	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Phenanthrene	0.193	μg/L	0.0196	EPA 8270M-SIM	04/29/10
Pyrene	0.122	μg/L	0.0196	EPA 8270M-SIM	04/29/10

End of Report for Sample ID: FO105476



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Sample Collected: 5/19/2010 15:44 Sample Status: COMPLETE AND

AO04718

System ID:

Sample ID: FO105596 Sample Collected: 5/19/2010 15:44 Sample Status: COMPLETE ANI VALIDATED

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 1 of 2

Address/Location: NW FRONT AVE & 9TH AVE

OUTFALL 11 - TANNER CREEK

 Sample Point Code:
 TC1
 EID File #:
 1010.027

 Sample Type:
 GRAB
 LocCode:
 WESTSTR

 Sample Matrix:
 STORMWTR
 Collected By:
 CJK/PTB

Comments:

Fest Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	58	µmhos/cm	1	SM 2510 B	05/19/10
DISSOLVED OXYGEN (FIELD)	11.0	mg/L	0.1	SM 4500-O G	05/19/10
pH (FIELD)	7.4	pH Units	0.1	SM 4500-H B	05/19/10
TEMPERATURE	13.8	Deg. C	0.1	SM 2550 B	05/19/10
MICROBIOLOGY					
E. COLI	3400	MPN/100 ml	10	COLILERT QT	05/19/10
GENERAL					
AMMONIA-NITROGEN	0.24	mg/L	0.02	EPA 350.1	05/25/10
BOD5	10	mg/L	2	SM 5210B /H10360	05/20/10
NITRATE-NITROGEN	0.38	mg/L	0.10	EPA 300.0	05/20/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.031	mg/L	0.02	EPA 365.1	05/20/10
TOTAL DISSOLVED SOLIDS @180C	63	mg/L	5	SM 2540 C	05/20/10
TOTAL PHOSPHORUS	0.78	mg/L	0.03	EPA 365.4	05/26/10
TOTAL SOLIDS	408	mg/L	2	SM 2540 B	05/20/10
TOTAL SUSPENDED SOLIDS	350	mg/L	2	SM 2540 D	05/20/10
METALS					
HARDNESS, TOTAL	43.7	mg CaCO3/L	0.5	SM 2340 B CALC	06/04/10
MERCURY	0.038	μg/L	0.002	WPCLSOP M-10.02	05/21/10
METALS BY ICP-MS (DISSOLVED) - 4					
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/20/10
COPPER, DISSOLVED	3.81	μg/L	0.2	EPA 200.8	05/20/10
LEAD, DISSOLVED	0.22	μg/L	0.1	EPA 200.8	05/20/10
ZINC, DISSOLVED	12.2	μg/L	0.5	EPA 200.8	05/20/10
METALS BY ICP-MS (TOTAL) - 4					
CADMIUM	0.25	μg/L	0.1	EPA 200.8	05/22/10
COPPER	40.2	μg/L	0.2	EPA 200.8	05/22/10
LEAD	29.3	μg/L	0.1	EPA 200.8	05/22/10
ZINC	179	μg/L	0.5	EPA 200.8	05/22/10
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS	-PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	06/04/10
POLYNUCLEAR AROMATICS & PHTHALATES	- TA				



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AO04718

1010.027

CJK/PTB

WESTSTR

System ID:

EID File #:

LocCode:

Collected By:

LABORATORY ANALYSIS REPORT

5/19/2010 15:44 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO105596 **VALIDATED**

05/19/10 Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 2 of 2 Report Page: Proj./Company Name:

NW FRONT AVE & 9TH AVE Address/Location:

OUTFALL 11 - TANNER CREEK

TC1 Sample Point Code: GRAB Sample Type: **STORMWTR** Sample Matrix:

Comments:

Fest Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	0.0721	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Acenaphthylene	<0.0196	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Anthracene	<0.0196	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Benzo(a)anthracene	0.0146	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Benzo(a)pyrene	0.0129	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Benzo(b)fluoranthene	0.0125	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Benzo(ghi)perylene	<0.0196	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Benzo(k)fluoranthene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Bis(2-ethylhexyl) phthalate	1.37	μg/L	0.98	EPA 8270M-SIM	05/24/10
Butyl benzyl phthalate	<0.98	μg/L	0.98	EPA 8270M-SIM	05/24/10
Chrysene	0.028	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Dibenzo(a,h)anthracene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Diethyl phthalate	<0.98	μg/L	0.98	EPA 8270M-SIM	05/24/10
Dimethyl phthalate	<0.98	μg/L	0.98	EPA 8270M-SIM	05/24/10
Di-n-butyl phthalate	<0.98	μg/L	0.98	EPA 8270M-SIM	05/24/10
Di-n-octyl phthalate	<0.98	μg/L	0.98	EPA 8270M-SIM	05/24/10
Fluoranthene	0.0426	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Fluorene	0.0275	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Indeno(1,2,3-cd)pyrene	<0.0098	μg/L	0.0098	EPA 8270M-SIM	05/24/10
Naphthalene	0.0966	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Phenanthrene	0.0513	μg/L	0.0196	EPA 8270M-SIM	05/24/10
Pyrene	0.0781	μg/L	0.0196	EPA 8270M-SIM	05/24/10

End of Report for Sample ID: FO105596



Sample ID:

City of Portland Water Pollution Control Laboratory

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FO105620 Sample Collected: 5/25/2010 13:58 Sample Status: COMPLETE AND

VALIDATED

AO04894

1010.027

JJM

WESTSTR

System ID:

EID File #:

LocCode:

Collected By:

Sample Received: 05/25/10

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 1 of 2

Address/Location: NW 10TH & MARSHALL

OUTFALL 11 - TANNER CREEK

Sample Point Code:TC2Sample Type:GRABSample Matrix:SURFWTR

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	148	µmhos/cm	1	SM 2510 B	05/25/10
DISSOLVED OXYGEN (FIELD)	12.4	mg/L	0.1	SM 4500-O G	05/25/10
pH (FIELD)	7.9	pH Units	0.1	SM 4500-H B	05/25/10
TEMPERATURE	11.3	Deg. C	0.1	SM 2550 B	05/25/10
MICROBIOLOGY					
E. COLI	10	MPN/100 ml	10	COLILERT QT	05/25/10
GENERAL					
AMMONIA-NITROGEN	0.022	mg/L	0.02	EPA 350.1	06/07/10
BOD5	<2	mg/L	2	SM 5210B /H10360	05/26/10
NITRATE-NITROGEN	0.87	mg/L	0.10	EPA 300.0	05/26/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.046	mg/L	0.02	EPA 365.1	05/26/10
TOTAL DISSOLVED SOLIDS @180C	120	mg/L	5	SM 2540 C	05/27/10
TOTAL PHOSPHORUS	0.089	mg/L	0.03	EPA 365.4	05/26/10
TOTAL SOLIDS	129	mg/L	2	SM 2540 B	05/26/10
TOTAL SUSPENDED SOLIDS	9	mg/L	2	SM 2540 D	05/26/10
METALS					
HARDNESS, TOTAL	59.3	mg CaCO3/L	0.5	SM 2340 B CALC	06/04/10
MERCURY	0.0031	μg/L	0.002	WPCLSOP M-10.02	05/28/10
METALS BY ICP-MS (DISSOLVED) - 4					
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	05/26/10
COPPER, DISSOLVED	1.10	μg/L	0.2	EPA 200.8	05/26/10
LEAD, DISSOLVED	0.21	μg/L	0.1	EPA 200.8	05/26/10
ZINC, DISSOLVED	3.20	μg/L	0.5	EPA 200.8	05/26/10
METALS BY ICP-MS (TOTAL) - 4					
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	05/26/10
COPPER	2.31	μg/L	0.2	EPA 200.8	05/26/10
LEAD	0.88	μg/L	0.1	EPA 200.8	05/26/10
ZINC	8.04	μg/L	0.5	EPA 200.8	05/26/10
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -	PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	06/04/10



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AO04894

5/25/2010 13:58 **COMPLETE AND** Sample ID: Sample Collected: Sample Status: FO105620

05/25/10 **VALIDATED** Sample Received:

WESTSIDE STREAM WQ & FLOW MON Page 2 of 2 Report Page: Proj./Company Name:

NW 10TH & MARSHALL Address/Location:

OUTFALL 11 - TANNER CREEK

System ID: TC2 1010.027 Sample Point Code: EID File #: GRAB WESTSTR Sample Type: LocCode: **SURFWTR** JJM Sample Matrix: Collected By:

Comments:

est Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	0.143	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Acenaphthylene	<0.0196	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Anthracene	<0.0196	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Benzo(a)anthracene	<0.00980	μg/L μg/L	0.00980	EPA 8270M-SIM	06/01/10
Benzo(a)pyrene	<0.00980	μg/L	0.00980	EPA 8270M-SIM	06/01/10
Benzo(b)fluoranthene	<0.00980	. •	0.00980	EPA 8270M-SIM	06/01/10
、 /		μg/L			
Benzo(ghi)perylene	<0.0196	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Benzo(k)fluoranthene	<0.00980	μg/L	0.00980	EPA 8270M-SIM	06/01/10
Bis(2-ethylhexyl) phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	06/01/10
Butyl benzyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	06/01/10
Chrysene	<0.00980	μg/L	0.00980	EPA 8270M-SIM	06/01/10
Dibenzo(a,h)anthracene	<0.00980	μg/L	0.00980	EPA 8270M-SIM	06/01/10
Diethyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	06/01/10
Dimethyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	06/01/10
Di-n-butyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	06/01/10
Di-n-octyl phthalate	<0.980	μg/L	0.980	EPA 8270M-SIM	06/01/10
Fluoranthene	< 0.0196	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Fluorene	0.0533	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Indeno(1,2,3-cd)pyrene	<0.00980	μg/L	0.00980	EPA 8270M-SIM	06/01/10
Naphthalene	0.510	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Phenanthrene	0.0850	μg/L	0.0196	EPA 8270M-SIM	06/01/10
Pyrene	< 0.0196	μg/L	0.0196	EPA 8270M-SIM	06/01/10

End of Report for Sample ID: FO105620



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Sample Collected: 6/21/2010 12:41 Sample Status: COMPLETE AND

AO05710

System ID:

Sample ID: FO105706 Sample Collected: 6/21/2010 12:41 Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 1 of 2

Address/Location: NW 10TH & MARSHALL

OUTFALL 11 - TANNER CREEK

Sample Point Code:TC2EID File #:1010.027Sample Type:GRABLocCode:WESTSTRSample Matrix:SURFWTRCollected By:ECH

Comments:

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	184	µmhos/cm	1	SM 2510 B	06/21/10
DISSOLVED OXYGEN (FIELD)	11.3	mg/L	0.1	SM 4500-O G	06/21/10
pH (FIELD)	7.6	pH Units	0.1	SM 4500-H B	06/21/10
TEMPERATURE	12.6	Deg. C	0.1	SM 2550 B	06/21/10
MICROBIOLOGY					
E. COLI	20	MPN/100 ml	10	COLILERT QT	06/21/10
GENERAL					
AMMONIA-NITROGEN	0.046	mg/L	0.02	EPA 350.1	07/01/10
BOD5	<2	mg/L	2	SM 5210B /H10360	06/22/10
NITRATE-NITROGEN	0.69	mg/L	0.10	EPA 300.0	06/22/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.054	mg/L	0.02	EPA 365.1	06/22/10
TOTAL DISSOLVED SOLIDS @180C	144	mg/L	5	SM 2540 C	06/23/10
TOTAL PHOSPHORUS	0.072	mg/L	0.03	EPA 365.4	06/22/10
TOTAL SOLIDS	164	mg/L	2	SM 2540 B	06/22/10
TOTAL SUSPENDED SOLIDS	24	mg/L	2	SM 2540 D	06/22/10
METALS					
HARDNESS, TOTAL	64.6	mg CaCO3/L	0.5	SM 2340 B CALC	06/22/10
MERCURY	0.0045	μg/L	0.002	WPCLSOP M-10.02	06/25/10
METALS BY ICP-MS (DISSOLVED) - 4					
CADMIUM, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	06/24/10
COPPER, DISSOLVED	0.72	μg/L	0.2	EPA 200.8	06/24/10
LEAD, DISSOLVED	<0.10	μg/L	0.1	EPA 200.8	06/24/10
ZINC, DISSOLVED	2.34	μg/L	0.5	EPA 200.8	06/24/10
METALS BY ICP-MS (TOTAL) - 4					
CADMIUM	<0.10	μg/L	0.1	EPA 200.8	06/24/10
COPPER	2.63	μg/L	0.2	EPA 200.8	06/24/10
LEAD	2.51	μg/L	0.1	EPA 200.8	06/24/10
ZINC	12.8	μg/L	0.5	EPA 200.8	06/24/10
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS	-PACE				
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	06/30/10
POLYNUCLEAR AROMATICS & PHTHALATES	- TA				



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AO05710

System ID:

Proj./Company Name: WESTSIDE STREAM WQ & FLOW MON Report Page: Page 2 of 2

Address/Location: NW 10TH & MARSHALL

OUTFALL 11 - TANNER CREEK

Sample Point Code:TC2EID File #:1010.027Sample Type:GRABLocCode:WESTSTRSample Matrix:SURFWTRCollected By:ECH

Comments:

est Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	0.261	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Acenaphthylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Anthracene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Benzo(a)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Benzo(a)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Benzo(b)fluoranthene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Benzo(ghi)perylene	< 0.0194	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Benzo(k)fluoranthene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Bis(2-ethylhexyl) phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	06/28/10
Butyl benzyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	06/28/10
Chrysene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Dibenzo(a,h)anthracene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Diethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	06/28/10
Dimethyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	06/28/10
Di-n-butyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	06/28/10
Di-n-octyl phthalate	< 0.971	μg/L	0.971	EPA 8270M-SIM	06/28/10
Fluoranthene	0.0206	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Fluorene	0.0958	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Indeno(1,2,3-cd)pyrene	< 0.00971	μg/L	0.00971	EPA 8270M-SIM	06/28/10
Naphthalene	0.940	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Phenanthrene	0.128	μg/L	0.0194	EPA 8270M-SIM	06/28/10
Pyrene	0.0277	μg/L	0.0194	EPA 8270M-SIM	06/28/10

End of Report for Sample ID: FO105706

Attachment 11

Test America Laboratory Results PAH Analysis



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

ORELAP#: OR100021

February 17, 2010

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

RE: Main - 36238

Enclosed are the results of analyses for samples received by the laboratory on 01/26/10 16:00. The following list is a summary of the Work Orders contained in this report, generated on 02/17/10 09:53.

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

Work Order	<u>Project</u>	<u>ProjectNumber</u>
PTA0661	Main - 36238	Westside Stream WQ

TestAmerica Portland



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Main - 36238

6543 N. Burlington Ave. Project Number: Westside Stream WQ Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 02/17/10 09:53

	ANALYTICAL REPO	ORT FOR SAM	PLES	
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 105156	PTA0661-01	Water	01/26/10 13:31	01/26/10 16:00

TestAmerica Portland

Howard Holmes, Project Manager







6543 N. Burlington Ave.

Project Number: Westside Stream WQ

Portland, OR 97203

Project Manager: Jennifer Shackelford

02/17/10 09:53

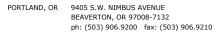
Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTA0661-01 (FC	O 105156)		W	ater		Samp	led: 01/26/	10 13:31		
Bis(2-ethylhexyl)phtha	late EPA 8270m	ND		0.971	ug/l	1x	10A0733	01/28/10 12:00	02/03/10 14:29	
Butyl benzyl phthalate	"	ND		0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND		0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND		0.971	"	"	"	"	"	
Diethyl phthalate	"	ND		0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND		0.971	"	"	"	"	"	
Acenaphthene	"	0.297		0.0194	"	"	"	"	02/05/10 17:47	
Acenaphthylene	"	ND		0.0194	"	"	"	"	•	
Anthracene	"	0.0271		0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0222		0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0178		0.00971	"		"	"	"	
Benzo (b) fluoranthene	. "	ND		0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND		0.0194	"	"	"	"	"	
Benzo (k) fluoranthen	e "	0.0116		0.00971			"	"	"	
Chrysene	"	0.0248		0.00971	"	"	"	"	,,	
Dibenzo (a,h) anthracei	ne "	ND		0.00971	"	"	"	"	,,	
Fluoranthene	"	0.0466		0.0194	"	"	"	"	,,	
Fluorene	"	0.139		0.0194	"		"	"		
Indeno (1,2,3-cd) pyren	ne "	ND		0.00971	"	,,	"	"	,	
Naphthalene	"	0.627		0.0194			"	,,	"	
Phenanthrene	"	0.110		0.0194			"	,,	"	
Pyrene	"	0.110		0.0194	"	"	"	"	"	
Common at a Color				67.3%		25 - 125 %				"
0 17	luorene-d10 Pvrene-d10			67.3% 107%		23 - 125 % 23 - 150 %				"
	Benzo (a) pyrene-d12			82.8%		10 - 125 %				"

TestAmerica Portland

Howard Holmes, Project Manage





6543 N. Burlington Ave.

Project Number: Westside Stream WQ

Portland, OR 97203

Project Manager: Jennifer Shackelford

02/17/10 09:53

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

TestAmerica Portland

QC Batch: 10A0733	Water P	reparation N	Method: 35	20B Liq-	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10A0733-BLK1)						_		Ext	racted:	01/28/10 12	:00			
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND		1.00	ug/l	1x						(02/03/10 11:40	
Butyl benzyl phthalate	"	ND		1.00	"	"							"	
Di-n-butyl phthalate	"	ND		1.00	"	"							"	
Di-n-octyl phthalate	"	ND		1.00	"	"							"	
Diethyl phthalate	"	ND		1.00	"	"							"	
Dimethyl phthalate	"	ND		1.00	"	"							"	
Acenaphthene	"	ND		0.0200	"	"						(02/05/10 14:04	
Acenaphthylene	"	ND		0.0200	"	"							"	
Anthracene	"	ND		0.0200	"	"							"	
Benzo (a) anthracene	"	ND		0.0100	"	,,							"	
Benzo (a) pyrene	"	ND		0.0100	"	,,							"	
Benzo (b) fluoranthene	,,	ND		0.0100	"								"	
Benzo (ghi) perylene	,,	ND		0.0200	"								"	
Benzo (k) fluoranthene	,,	ND		0.0100	,,								,,	
Chrysene	"	ND		0.0100	,,							_	"	
Dibenzo (a,h) anthracene	"	ND		0.0100	,,						_		"	
Fluoranthene	,,	ND		0.0200	,,				_	_	_	_	,,	
	,,				,,	,							,,	
Fluorene	,	ND		0.0200	,,						-	-	,,	
Indeno (1,2,3-cd) pyrene		ND		0.0100					-		-			
Naphthalene		ND		0.0200										
Phenanthrene	"	ND		0.0200	"						-		"	
Pyrene		ND		0.0200	"								"	
Surrogate(s): Fluorene-d10		-	5.3%	Lin	nits: 25-1259								02/05/10 14:04	
Pyrene-d10			130%		23-150								"	
Benzo (a) pyrene-d12		9	9.8%		10-125	%							"	
LCS (10A0733-BS1)								Ext	racted:	01/28/10 12	:00			
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.53		1.00	ug/l	1x		4.00	113%	(20-150)	_	(02/03/10 12:48	
Butyl benzyl phthalate	"	4.59		1.00	"	,,		"	115%	"			"	
Di-n-butyl phthalate	"	4.42		1.00	"	"		"	110%	,,			"	
Di-n-octyl phthalate	"	4.41		1.00	"			"	110%	,,			"	
Diethyl phthalate	"	4.09		1.00	,,	,,		"	102%	,,			"	
Dimethyl phthalate	"	4.09		1.00	,,			"	99.9%				"	
Acenaphthene	,,	1.02		0.0200	"	,,		1.25	81.7%	(35-120)			02/05/10 15:44	
-	,,			0.0200	,,	,,		1.23				'	02/05/10 15:44	
Acenaphthylene		1.10			,,			,,	87.8%	(34-116)			,,	
Anthracene		1.08		0.0200				"	86.0%	(24-119)				
Benzo (a) anthracene		1.33		0.0100	"			"	107%	(36-128)		-	"	
Benzo (a) pyrene		1.28		0.0100		"		"	102%	(17-128)				
Benzo (b) fluoranthene	"	1.22		0.0100	"	"		"	97.4%	(37-131)			"	

TestAmerica Portland

Howard Holmes, Project Manager





6543 N. Burlington Ave. Project Number: Westside Stream WQ Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 02/17/10 09:53

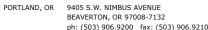
${\bf Polynuclear\ Aromatic\ Compounds\ per\ EPA\ 8270M-SIM\ -\ Laboratory\ Quality\ Control\ Results}$

TestAmerica Portland

Part	Analyte	Method	Result	MDL*	MRL	Units	Dil	Source	Spike	% DEC	(Limits)	% RPD	(Limit	s) Analyzed	Note
Hence (glu) perylene EPA 8270m 1.24 0.0200 ugl 1x 1.25 98.94 26-126 0.02051 15.44 Hence (A) Discensifience 1.23 0.0100 "	LCS (10A0722 DS1)							Result	Amt	REC	01/29/10 12				
Bezzo (1) fluorumbenee 1.23	,	EDA 9270m	1.24		0.0200	ng/l	1v							02/05/10 15:44	
Chipseage (1) and presence 1,139 0,0100 1 1,115 1,115 1,115 1,115						_								02/03/10 13.44	
Place Plac		,				,,			,,		, ,			,,	
Floorentheme 1.16 0.0000 " " " " " " " " " " " " " " " " "	•	,				,,							-	,,	
Fluence 1.27		,,					,,						-	,,	
Service 1.28 1.28 1.28 1.28 1.20		,,				,,			,,					,,	
Naphthalene 1.26		,,				,,	,,		,,			-	-	,,	
Name		,,				,,			,,		, ,			,,	
Surrogate(s) Fluorene-d10 Recovery 65.0% Limits 23-125% Surrogate(s) Fluorene-d10 Pyrene-d10 112% 22-150% Surrogate(s) Surrogate(s) Fluorene-d10 112% Surrogate(s) Surr	•	,,				,,								,,	
Surrogate(s) Fluorene-110 Recovery: 65,0% Limits: 25-125% 23-150% 23-1		,				,,			,,					,,	
Pyrene-d10 Reno (a) pyrene-d12 Reno (b) Reno (b	<u>*</u>									12970	(21-141)				
Marrix Spike (10A0733-MS)			Recovery:		Lin									02/05/10 15:44	
Matrix Spike (10A0733-MS1)	·													"	
Bis (2-ethylbrid) bithalate EPA 8270m 6.47 2.88 ug/l 3x 1.39 3.85 132% (10-150) 0.203/10 13:22 Butyl benzyl phthalate " 4.85 2.88 " " ND " 126% " " " Di-n-butyl phthalate " 4.56 2.88 " " ND " 119% " " " Di-n-butyl phthalate " 5.51 2.88 " " ND " 143% " " " Di-n-butyl phthalate " 3.56 2.88 " " ND " 143% " " " " " Di-n-butyl phthalate " 3.86 2.88 " " ND " 100% " " " " " " Di-n-butyl phthalate " 3.30 2.88 " " ND " 150% " " " " " " Di-n-butyl phthalate " 3.30 2.88 " " ND " 100% 3.5% 132" " " " " Di-n-butyl phthalate " 3.30 2.88 " " ND " 150% 3.5% 132" " " " " " Di-n-butyl phthalate " 0.821 0.962 " " ND " 100% 3.5% 35-120 " " " " Di-n-butyl phthalate " 0.878 0.962 " " ND " 90.8% (3-120) 0.205/10 16:44 T To-n-butyl phthalate " 0.986 1.00	Benzo (a) pyrene-u12			02.070		10-12570									
Suryl berzyl phthalate " 4.85	Matrix Spike (10A0733-MS1)				QC Source:	PTA0633-03			Ext	racted:	01/28/10 12	:00			
1.00 1.00	Bis(2-ethylhexyl)phthalate	EPA 8270m	6.47		2.88	ug/l	3x	1.39	3.85	132%	(10-150)			02/03/10 13:22	
Directly lighthalate " 5.51	Butyl benzyl phthalate	"	4.85		2.88	"	"	ND	"	126%	"			"	
Directly liphthalate 3.36	Di-n-butyl phthalate	"	4.56		2.88	"	"	ND	"	119%	"			"	
Differently phthalate " 3.30	Di-n-octyl phthalate	"	5.51		2.88	"	"	ND	"	143%	"			"	
Difficulty fulfilinate 1.5.0 1.2.0 1	Diethyl phthalate	"	3.86		2.88	"	"	ND	"	100%	"			"	
Acenaphthylene " 0.878 0.0962 " " ND " 73.0% (34-116) " " Anthracene " 1.09 0.0962 " " ND " 90.8% (24-119) " " Benzo (a) anthracene " 1.21 0.0481 " " 0.0105 " 100% (22-129) " " Benzo (a) pyrene Benzo (a) pyrene " 1.07 0.0481 " " 0.0116 " 88.1% (4-112) " " Benzo (a) pyrene Benzo (b) fluoranthene " 1.10 0.0481 " " 0.0156 " 90.1% (0-136) " " " " " Benzo (b) fluoranthene Benzo (b) fluoranthene " 1.12 0.0962 " " 0.0303 " 90.3% (0-126) " " " " " " " " " " " " " " " "	Dimethyl phthalate	"	3.30		2.88	"	"	ND	"	85.9%	"			"	
Anthracene " 1.09 0.0962 " " ND " 90.8% (24-119) " Benzo (a) anthracene " 1.21 0.0481 " " 0.0105 " 100% (22-129) " Benzo (a) pyrene " 1.07 0.0481 " " 0.0116 " 88.1% (4-112) " Benzo (b) fluoranthene " 1.10 0.0481 " " 0.0156 " 90.1% (0-136) " Benzo (b) fluoranthene " 1.12 0.0962 " " 0.0303 " 90.3% (0-126) " Benzo (b) fluoranthene " 1.07 0.0481 " " ND " 88.8% (0-145) " Benzo (b) fluoranthene " 1.07 0.0481 " " ND " 88.8% (0-145) " Benzo (b) fluoranthene " 1.31 0.0481 " " 0.0448 " 105% (7-137) " Benzo (a) anthracene " 1.11 0.0481 " " 0.0448 " 105% (7-137) " Benzo (a) anthracene " 1.11 0.0481 " " 0.0448 " 105% (7-137) " Benzo (a) anthracene " 1.11 0.0481 " " 0.0466 " 94.2% (30-125) " Benzo (a) anthracene " 1.11 0.0962 " " 0.0406 " 94.2% (30-125) " Benzo (a) anthracene " 1.11 0.0962 " " 0.0406 " 94.2% (30-125) " Benzo (a) anthracene " 1.11 0.0962 " " 0.0406 " 94.2% (30-125) " Benzo (a) anthracene " 1.11 0.0962 " " 0.0406 " 94.2% (30-125) " Benzo (a) anthracene " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0119 " 89.2% (0-135) " Benzo (a) anthracene " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0481 " " 0.0	Acenaphthene	"	0.821		0.0962	"	5x	ND	1.20	68.3%	(35-120)			02/05/10 16:44	
Benzo (a) anthracene " 1.21 0.0481 " " 0.0105 " 100% (22-129) " " Benzo (a) pyrene " 1.07 0.0481 " " 0.0116 " 88.1% (4-112) " Benzo (a) pyrene " 1.10 0.0481 " " 0.0156 " 90.1% (0-136) " " Benzo (ghi) perylene " 1.12 0.0962 " " 0.0303 " 90.3% (0-126) " " Benzo (ghi) perylene " 1.31 0.0481 " " ND " 88.8% (0-145) " " Chrysene " 1.31 0.0481 " " 0.0448 " 105% (7-137) " Dibenzo (a,h) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " " Fluoranthene " 1.17 0.0962 " " 0.0406 " 94.2% (30-125) " " Fluoranthene " 1.11 0.0962 " " ND " 92.4% (27-124) " Benzo (a,h) anthracene " 1.11 0.0962 " " ND " 92.4% (27-124) " " Shaphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " " Shaphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " " Shaphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " " Shaphthalene " 1.12 0.0962 " " 0.0202 " 80.5% (30-126) " " Shaphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " " Shaphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126) " " " Shaphthalene " 0.0962 " " 0.0315 " 91.0% (34-126) " " " " Shaphthalene " 0.0962 " " 0.0962 " " 0.0315 " 91.0% (34-126) " " " " " Shaphthalene " 0.0962 " " 0.0315 " 91.0% (34-126) " " " " " Shaphthalene " 0.0962 " " 0.0962 " " 0.0315 " 91.0% (34-126) " " " "	Acenaphthylene	"	0.878		0.0962	"	"	ND	"	73.0%	(34-116)			"	
Benzo (a) pyrene " 1.07 0.0481 " " 0.0116 " 88.1% (4-112) " Benzo (b) fluoranthene " 1.10 0.0481 " " 0.0156 " 90.1% (0-136) " Benzo (b) fluoranthene " 1.12 0.0962 " " 0.0303 " 90.3% (0-126) " Benzo (b) fluoranthene " 1.07 0.0481 " " ND " 88.8% (0-145) " Chrysene " 1.31 0.0481 " " 0.0448 " 105% (7-137) " Dibenzo (a,b) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " Benzo (a,b) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " Benzo (a,b) anthracene " 1.11 0.0962 " " 0.0406 " 94.2% (30-125) " Benzo (a,b) anthracene " 1.11 0.0962 " " ND " 92.4% (27-124) " Benzo (a,b) anthracene " 1.11 0.0962 " " ND " 92.4% (27-124) " Benzo (a,b) anthracene " 0.0481 " " 0.0406 " 94.2% (30-125) " Benzo (a,b) anthracene " 1.11 0.0962 " " 0.0406 " 94.2% (30-125) " Benzo (a,b) anthracene " 1.11 0.0962 " " 0.0481 " " 0.0119 " 89.2% (0-135) " " Benzo (a,b) anthracene " 1.12 0.0962 " " 0.0202 " 80.5% (30-126) " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " " 0.0987 0.0962 " " 0.0202 " 80.5% (30-126) " " Benzo (a,b) anthracene " " 0.0987 0.0962 " " 0.0315 " 91.0% (34-126) " " Benzo (a,b) anthracene " " 0.0987 0.0962 " " 0.0315 " 91.0% (34-126) " " Benzo (a,b) anthracene " " 0.098	Anthracene	"	1.09		0.0962	"	"	ND	"	90.8%	(24-119)			"	
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Benzo (ghi) perylene " 1.12 0.0962 " " 0.0303 " 90.3% (0-126) " Benzo (ghi) perylene " 1.07 0.0481 " " ND " 88.8% (0-145) " Chrysene " 1.31 0.0481 " " 0.0448 " 105% (7-137) " Dibenzo (a,h) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " Fluoranthene " 1.17 0.0962 " " 0.0406 " 94.2% (30-125) " Fluoranthene " 1.11 0.0962 " " ND " 92.4% (27-124) " Indeno (1,2,3-cd) pyrene " 1.08 0.0481 " " 0.0119 " 89.2% (0-135) " Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) " " Dibenzo (34-126) " " Naphthalene " 0.987 0.0962 " " 0.0315 " 91.0% (34-126)	Benzo (a) pyrene	"	1.07		0.0481	"	"	0.0116	"	88.1%	(4-112)			"	
Benzo (k) fluoranthene " 1.07 0.0481 " " ND " 88.8% (0-145) " " Chrysene " 1.31 0.0481 " " 0.0448 " 105% (7-137) " " Dibenzo (a,h) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " " Fluoranthene " 1.17 0.0962 " " 0.0406 " 94.2% (30-125) " " Fluoranthene " 1.11 0.0962 " " ND " 92.4% (27-124) " " Indeno (1,2,3-cd) pyrene " 1.08 0.0481 " " 0.0119 " 89.2% (0-135) " Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) " " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) " " " Dibenzo (3,1) and " " " " " Dibenzo (3,1) and " " " " Dibenzo (3,1) and " " " " " Dibenzo (3,1) and " " " " Dibenzo (3,1) and " " " " Dibenzo (3,1) and " " " " " Dibenzo (3,1) and " " " " " Dibenzo (3,1) and " " " " Dibenzo (3,1) and " " " " " " Dibenzo (3,1) and " " " " " " " " " " " " " " " " " " "	Benzo (b) fluoranthene	"	1.10		0.0481	"	"	0.0156	"	90.1%	(0-136)			"	
Chrysene " 1.31 0.0481 " " 0.0448 " 105% (7-137) " Dibenzo (a,h) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " Fluoranthene " 1.17 0.0962 " " 0.0406 " 94.2% (30-125) " Fluorene " 1.11 0.0962 " " ND " 92.4% (27-124) " Indeno (1,2,3-ed) pyrene " 1.08 0.0481 " " 0.0119 " 89.2% (0-135) " Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) "	Benzo (ghi) perylene	"	1.12		0.0962	"	"	0.0303	"	90.3%	(0-126)			"	
Dibenzo (a,h) anthracene " 1.11 0.0481 " " ND " 92.3% (0-141) " Fluoranthene " 1.17 0.0962 " " 0.0406 " 94.2% (30-125) " Fluorene " 1.11 0.0962 " " ND " 92.4% (27-124) " Indeno (1,2,3-ed) pyrene " 1.08 0.0481 " " 0.0119 " 89.2% (0-135) " Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) "	Benzo (k) fluoranthene	"	1.07		0.0481	"	"	ND	"	88.8%	(0-145)			"	
Fluoranthene " 1.17 0.0962 " " 0.0406 " 94.2% (30-125) " Fluorene " 1.11 0.0962 " " ND " 92.4% (27-124) " Indeno (1,2,3-ed) pyrene " 1.08 0.0481 " " 0.0119 " 89.2% (0-135) " Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) "	Chrysene	"	1.31		0.0481	"	"	0.0448	"	105%	(7-137)			"	
Fluorene " 1.11 0.0962 " " ND " 92.4% (27-124) " Indeno (1,2,3-cd) pyrene " 1.08 0.0481 " " 0.0119 " 89.2% (0-135) " Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) "	Dibenzo (a,h) anthracene	"	1.11		0.0481	"	"	ND	"	92.3%	(0-141)			"	
No service 1.11 0.0962 ND 92.4% (27-124) 1.11 ND 92.4% (27-12	Fluoranthene	"	1.17		0.0962	"	"	0.0406	"	94.2%	(30-125)			"	
Naphthalene " 0.987 0.0962 " " 0.0202 " 80.5% (30-126) " Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) "	Fluorene	"	1.11		0.0962	"	"	ND	"	92.4%	(27-124)			"	
Phenanthrene " 1.12 0.0962 " " 0.0315 " 91.0% (34-126) "	ndeno (1,2,3-cd) pyrene		1.08		0.0481	"	"	0.0119	"	89.2%	(0-135)			"	
1.12 0.002 0.013 71.00 (34-120)	Naphthalene		0.987		0.0962	"	"	0.0202	"	80.5%	(30-126)			"	
0.00/2 1 1.00/2	Phenanthrene	•	1.12		0.0962	"	"	0.0315	"	91.0%	(34-126)			"	
ryrene " 1.55 0.0962 " " 0.0962 " 121% (14-168) "	Pyrene		1.55		0.0962	"	"	0.0962	"	121%	(14-168)			"	

TestAmerica Portland

Howard Holmes, Project Manager





6543 N. Burlington Ave. Project Number: Westside Stream WQ Report Created:

Portland, OR 97203 Project Manager: Jennifer Shackelford 02/17/10 09:53

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results TestAmerica Portland QC Batch: 10A0733 Water Preparation Method: 3520B Liq-Liq REC (Limits) Source Spike Analyte Method Result MDL* MRL Units Dil (Limits) Analyzed Notes Matrix Spike (10A0733-MS1) QC Source: PTA0633-03 Extracted: 01/28/10 12:00 Limits: 10-125% 02/05/10 16:44 Surrogate(s): Benzo (a) pyrene-d12 Recovery: 80.0% Matrix Spike Dup (10A0733-MSD1) QC Source: PTA0633-03 Extracted: 01/28/10 12:00 Bis(2-ethylhexyl)phthalate EPA 8270m 6.50 2.88 3 x 1 39 3.85 133% (10-150)0.638% (50) 02/03/10 13:55 ug/l Butyl benzyl phthalate 4.79 2.88 ND 124% 1.20% 4.51 2.88 ND 117% 1.17% Di-n-butyl phthalate 5.51 2.88 ND 143% 0.0979% " Di-n-octvl phthalate Diethyl phthalate 4.18 2.88 ND 109% 8.06% 2.88 ND 101% 16.6% Dimethyl phthalate 3.90 0.870 0.0962 ND 72.4% 02/05/10 17:17 Acenaphthene 5x 1.20 (35-120)5.79% (45) Acenaphthylene 0.945 0.0962 ND 78.6% (34-116)7.39% Anthracene 0.994 0.0962 ND 82.7% (24-119)9.26%0.0481 0.0105 Benzo (a) anthracene 1.18 (22-129)2.46% 0.0481 0.0116 Benzo (a) pyrene 1.07 88.1% (4-112)0.0590% Benzo (b) fluoranthene 1.06 0.0481 0.0156 86.8% (0-136)3.80% Benzo (ghi) perylene 1.12 0.0962 0.0303 90.8% (0-126)Benzo (k) fluoranthene 1.10 0.0481 ND 91.2% (0-145)2.72% Chrysene 1.27 0.0481 0.0448 102% (7-137)3.18% Dibenzo (a,h) anthracene 1.11 0.0481 ND 92.2% (0-141)0.0564% " Fluoranthene 1.05 0.0962 0.0406 84.3% (30-125)Fluorene 1.14 0.0962 ND 95.0% (27-124)2.74% Indeno (1,2,3-cd) pyrene 1.09 0.0481 0.0119 89.6% (0-135)0.439% Naphthalene 1.10 0.0962 0.0202 90.1% (30-126) 0.0962 Phenanthrene 1.01 0.0315 81.3% (34-126) 11.2% 0.0962 0.0962 1 47 114% (14-168)6 23% Pyrene 02/05/10 17:17 Surrogate(s): Fluorene-d10 Recovery: 60.8% Limits: 25-125% 98.3% 23-150% Pyrene-d10

10-125%

TestAmerica Portland

Howard Holmes, Project Manager

Benzo (a) pyrene-d12

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

77.4%



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

THE LEADER IN ENVIRONMENTAL TESTING

City of Portland Water Pollution Laboratory Main - 36238 Project Name:

6543 N. Burlington Ave. Report Created: Project Number: Westside Stream WQ Portland, OR 97203 Project Manager: Jennifer Shackelford 02/17/10 09:53

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported

as Estimated Results.

Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution

found on the analytical raw data.

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

percent solids, where applicable.

Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Electronic Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Signature

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Howard Holmes, Project Manager

estAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 11922 E. First Ave, Spokane, WA 99206-5302 9405 SW Nimbus Ave, Beaterton, OR 97008-7145 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

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TestAmerica Portland Sample Receiving Checklist

		k Orde nt Nan	ne and Project: City of Fortland	ved: 1/26/10 1600 Westside Stream WR
•	Time	Zone:	Caption Chapting Appropri	
	1121	17111	Tepivel [Mpiwis] (Medires	I LJAK LJOTHER
	Co	oler #(s serature	7	Temperature out of Range: Not enough or No IceIce MeltedW/in 4 Hrs of collectionOther:
	N/A	Yes	No	Initials: f^{5}
	Ø		1. If ESI client, were temp blanks received? If	no, document on NOD.
	(p		2. Cooler Seals intact? (N/A if hand delivered)	if no, document on NOD.
	/	ø	3. Chain of Custody present? If no, document	on NOD.
		/pr	4. Bottles received intact? If no, document on	NOD.
		\wp	5. Sample is not multiphasic? If no, document	on NOD.
		Ź	6. Proper Container and preservatives used? In	fno, document on NOD.
	Ø		7. pH of all samples checked and meet require	ments? If no, document on NOD.
	Ø		8. Cyanide samples checked for sulfides and m	neet requirements? If no, notify PM.
	Þ		9. HF Dilution required?	
		P d	10. Sufficient volume provided for all analysis PM before proceeding.	
			11. Did chain of custody agree with samples re	
	F-791	<u>г</u>	12. Is the "Sampled by" section of the COC co.	•
			13. Were VOA/Oil Syringe samples without h	
	ليكما		14. Were VOA vials preserved? HCI Soc	
•	171		15. Did samples require preservation with sodi	
			 16. If yes to #14, was the residual chlorine test 17. Are dissolved/field filtered metals bottles s 	
	يعر آيا		 18. Is sufficient volume provided for client recono, document on NOD and contact PM before 19. Are analyses with short holding times recently 	proceeding.
	,		20. Was Standard Turn Around (TAT) request	ed?
			21. Receipt date(s) < 48 hours past the collection	on date(s)? If no, notify PM.

TestAmerica Portland Sample Receiving Checklist

Work Order #: PTAOCOCOL

	Logi	n Ch	ecks:	• •	Initials: VS	
	N/A	Yes	No		Name and American Ame	
•		otag	<u> </u>	. Sufficient volume provided for all analysis? If no, d	ocument on NOD & contact PM.	
	Ø		<u>23</u>	. Sufficient volume provided for client requested MS	/MSD or matrix duplicates? If	
	•			, document on NOD and contact PM.		
		$\not\square$	<u> </u>	. Did the chain of custody include "received by" and	"relinquished by" signatures,	
				tes and times?	,	
	otag		25	. Were special log in instructions read and followed?		
		Z	☐ 26	Were tests logged checked against the COC?		
	Z		☐ 27	Were rush notices printed and delivered?		
	Ø		<u>28</u>	Were short hold notices printed and delivered?		
		Ø	<u> </u>	Were subcontract COCs printed?		
			<u> </u>	Was HF dilution logged?		
, fo						
Ti sh a in ini ini ini ini ini ini ini ini ini	Labe	ling	and Sto	orage Checks:	Initials: PS	
	N/A	Yes	No			
		\mathbb{Z}	☐ 31.	Were the subcontracted samples/containers put in S	x fridge?	
•	Ø			Were sample bottles and COC double checked for d		
	/	\square		Did the sample ID, Date, and Time from label match		
•	Ø			Were Foreign sample stickers affixed to each contain		
,	/			eign fridge?		
	Z		35.	Were HF stickers affixed to each container, and con	tainers stored in Sy fridge?	
·	\square			Was an NOD for created for noted discrepancies and		
	Docum form (nent a NOD)	ny proble	ems or discrepancies and the actions taken to resolve		



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

ORELAP#: OR100021

March 19, 2010

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

RE: Main - 36238

Enclosed are the results of analyses for samples received by the laboratory on 02/23/10 16:30. The following list is a summary of the Work Orders contained in this report, generated on 03/19/10 17:23.

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

Work Order	<u>Project</u>	<u>ProjectNumber</u>
PTB0651	Main - 36238	Westside Stream WQ

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

City of Portland Water Pollution Laboratory Project Name: Main - 36238

6543 N. Burlington Ave.Project Number:Westside Stream WQReport Created:Portland, OR 97203Project Manager:Jennifer Shackelford03/19/10 17:23

ANALYTICAL REPORT FOR SAMPLES									
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received					
FO105256	PTB0651-01	Water	02/23/10 11:04	02/23/10 16:30					

TestAmerica Portland

Howard Holmes, Project Manager



PORTLAND, OR

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



City of Portland Water Pollution Laboratory Main - 36238 Project Name:

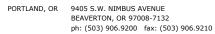
6543 N. Burlington Ave. Report Created: Project Number: Westside Stream WQ Portland, OR 97203 Project Manager: Jennifer Shackelford 03/19/10 17:23

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	M	lethod Re	esult	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTB0651-01 (I	FO105256)			W	ater		Samp	led: 02/23/	10 11:04		
Bis(2-ethylhexyl)phtl	halate EP	A 8270m	ND		0.971	ug/l	1x	10C0004	03/01/10 11:00	03/09/10 18:49	
Butyl benzyl phthalat	te	"	ND		0.971	"	"	"	"	"	
Di-n-butyl phthalate		"	ND		0.971	"	"	"	"	"	
Di-n-octyl phthalate		"	ND		0.971	"	"	"	"	"	
Diethyl phthalate		"	ND		0.971	"	"	"	"	"	
Dimethyl phthalate		"	ND		0.971	"	"	"	"	"	
Acenaphthene		"	1.03		0.0194	"	"	"	"	03/08/10 17:48	
Acenaphthylene		" 0.0	0313		0.0194	"	"	"	"	"	
Anthracene		" 0.0	0898		0.0194	"	"	"	"	"	
Benzo (a) anthracen	e	" 0.0	1399		0.00971	"	"	"	"	"	
Benzo (a) pyrene		" 0.0	0232		0.00971	"	"	"	"		
Benzo (b) fluorantho	ene	" 0.0	0108		0.00971	"	"	"	"		
Benzo (ghi) perylene		"	ND		0.0194	"	"	"	"		
Benzo (k) fluorantho	ene	" 0.0	0133		0.00971	"	"	"	"		
Chrysene		" 0.0	0412		0.00971	"	"	"	"		
Dibenzo (a,h) anthrac	cene	"	ND		0.00971	"	"	"			
Fluoranthene		" 0	.141		0.0194	"	"	"	"	"	
Fluorene		" 0	.551		0.0194	"	"	"	"		
Indeno (1,2,3-cd) py	rene	" 0.0	0105		0.00971	"	"	"	"	"	
Naphthalene		" 0	.673		0.0194	"	"	"	"	"	
Phenanthrene		" 0	.479		0.0194	"	"	"	"		
Pyrene		" 0	.358		0.0194	"	"	"	"	"	
Surrogate(s):	Fluorene-d10				84.2%		25 - 125 %				"
,	Pyrene-d10				92.0%		23 - 150 %				"
	Benzo (a) pyrene-d12				75.0%		10 - 125 %				"

TestAmerica Portland





6543 N. Burlington Ave. Project Number: Westside Stream WQ Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 03/19/10 17:23

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

TestAmerica Portland

QC Batch: 10C0004	Water P	reparation	Method: 35	20B Liq-l	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10C0004-BLK1)								Extr	racted:	03/01/10 11	:00			
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND		1.00	ug/l	1x							03/09/10 15:30	
Butyl benzyl phthalate	"	ND		1.00	"	"							"	
Di-n-butyl phthalate	"	ND		1.00	"	"							"	
Di-n-octyl phthalate	"	ND		1.00	"	"							"	
Diethyl phthalate	"	ND		1.00	"	"							"	
Dimethyl phthalate	"	ND		1.00	"	"							"	
Acenaphthene	"	ND		0.0200	"	"							03/08/10 17:18	
Acenaphthylene	"	ND		0.0200	"	"							"	
Anthracene	"	ND		0.0200	"	"							"	
Benzo (a) anthracene	"	ND		0.0100	"	"							"	
Benzo (a) pyrene	"	ND		0.0100	"	"							"	
Benzo (b) fluoranthene	"	ND		0.0100	"	"							"	
Benzo (ghi) perylene	"	ND		0.0200	"	"							"	
Benzo (k) fluoranthene	"	ND		0.0100	"	"							"	
Chrysene	"	ND		0.0100	"	"							"	
Dibenzo (a,h) anthracene	"	ND		0.0100	"	"							"	
Fluoranthene	"	ND		0.0200	"	"							"	
Fluorene	"	ND		0.0200	"	"							"	
Indeno (1,2,3-cd) pyrene	"	ND		0.0100	"	"							"	
Naphthalene	"	ND		0.0200	"	"							"	
Phenanthrene	"	ND		0.0200	"	"							"	
Pyrene	"	ND		0.0200	"	"							"	
Surrogate(s): Fluorene-d10		Recovery:	80.4%	Lin	its: 25-1259	6							03/08/10 17:16	8
Pyrene-d10			104%		23-150								"	
Benzo (a) pyrene-d12			74.3%		10-125	%							"	
LCS (10C0004-BS1)								Extr	racted:	03/01/10 11	:00			
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.24		1.00	ug/l	1x		4.00	80.9%	(20-150)			03/09/10 16:03	
Butyl benzyl phthalate	"	3.17		1.00	"	"		"	79.3%	"			"	
Di-n-butyl phthalate	"	2.97		1.00	"	"		"	74.3%	"			"	
Di-n-octyl phthalate	"	3.26		1.00	"	"		"	81.5%	"			"	
Diethyl phthalate	"	2.68		1.00	"	"		"	66.9%	,,			"	
Dimethyl phthalate	"	2.58		1.00	"	"		"	64.5%	"			"	
Acenaphthene	"	1.18		0.0200	"	"		1.25	94.3%	(35-120)			03/08/10 14:46	
Acenaphthylene	"	1.23		0.0200	"	"		,,	98.7%	(34-116)			"	
Anthracene	"	1.24		0.0200	"	"		"	99.5%	(24-119)			"	
Benzo (a) anthracene	"	1.47		0.0100	"	"		"	117%	(36-128)			"	
Benzo (a) pyrene	"	1.20		0.0100	"	"		"	95.9%	(17-128)				
Benzo (b) fluoranthene		1.07		0.0100					85.4%	(37-131)			,,	

TestAmerica Portland

Howard Holmes, Project Manager





6543 N. Burlington Ave. Project Number: Westside Stream WQ Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 03/19/10 17:23

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

TestAmerica Portland

	***************************************	1 cpai atioi	1 Method: 3	320B Liq-	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits) Analyzed	Note
LCS (10C0004-BS1)								Ext	racted:	03/01/10 11	1:00			
Benzo (ghi) perylene	EPA 8270m	1.22		0.0200	ug/l	1x		1.25	97.4%	(26-126)			03/08/10 14:46	
Benzo (k) fluoranthene	"	1.04		0.0100	"	"		"	82.9%	(18-145)			"	
Chrysene	"	1.36		0.0100	"	"		"	109%	(16-137)			"	
Dibenzo (a,h) anthracene	"	1.34		0.0100	"	"		"	107%	(20-141)			"	
Fluoranthene	"	1.31		0.0200	"	"		"	105%	(31-125)			"	
Fluorene	"	1.25		0.0200	"	"		"	100%	(27-124)			"	
Indeno (1,2,3-cd) pyrene	"	1.30		0.0100	"	"		"	104%	(30-135)			"	
Naphthalene	"	1.19		0.0200	"	"		"	95.5%	(30-113)			"	
Phenanthrene	"	1.17		0.0200	"	"		"	93.6%	(34-126)			"	
Pyrene	"	1.62		0.0200	"	"		"	129%	(21-141)			"	
Surrogate(s): Fluorene-d10		Recovery:	83.2%	Lin	nits: 25-125	%							03/08/10 14:46	
Pyrene-d10		,	105%		23-150	1%							"	
Benzo (a) pyrene-d12			83.9%		10-125	%							"	
LCS Dup (10C0004-BSD1)								Ext	racted:	03/01/10 11	1.00			
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.22		1.00	ug/l	1x		4.00	80.5%	(20-150)	0.485%	6 (50)	03/09/10 16:37	
Butyl benzyl phthalate	"	3.16		1.00	"	,,		,,	79.1%	"	0.313%		"	
Di-n-butyl phthalate	"	2.96		1.00	,,			,,	74.1%	,,	0.291%		"	
Di-n-octyl phthalate	"	3.23		1.00	,,			,,	80.8%	,,	0.852%		"	
Diethyl phthalate	"	2.73		1.00	,,			,,	68.3%	,,	2.00%		"	
Dimethyl phthalate	"	2.64		1.00	,,			,,	66.0%	,,	2.22%		"	
Acenaphthene	"	1.18		0.0200	,,			1.25	94.4%	(35-120)	0.176%		03/08/10 15:16	
Acenaphthylene	"	1.24		0.0200	,,			"	99.3%	(34-116)	0.6119		"	
Anthracene	"	1.25		0.0200	,,			,,	99.6%	(24-119)	0.1289		"	
Benzo (a) anthracene	,,	1.46		0.0100	,,			,,	117%	(36-128)	0.470%		,,	
Benzo (a) pyrene	,,	1.24		0.0100	,,			,,	99.2%	(17-128)	3.34%		,,	
Benzo (b) fluoranthene	,,	1.22		0.0100	,,			,,	97.2%	(37-131)	12.9%		,,	
Benzo (ghi) perylene	"	1.23		0.0200	,,			,,	98.8%	(26-126)	1.44%		"	
Benzo (k) fluoranthene	"	1.11		0.0100	,,			,,	88.7%	(18-145)	6.73%		"	
Chrysene	"	1.37		0.0100	,,			,,	109%	(16-137)	0.385%		"	
Dibenzo (a,h) anthracene		1.35		0.0100	"			,,	108%	(20-141)	1.06%			
Fluoranthene	"	1.29		0.0200	,,			,,	103%	(31-125)	2.00%		"	
Fluorene	,,	1.27		0.0200	,,			,,	101%	(27-124)	1.24%		,,	
Indeno (1,2,3-cd) pyrene	,,	1.31		0.0200	,,			,,	101%	(30-135)	1.11%		,,	
Naphthalene	,,	1.16		0.0200	,,			,,	92.7%	(30-133)	2.95%		,,	
Phenanthrene	,,	1.17		0.0200	,,			,,	94.0%	(34-126)	0.4589		,,	
Prienantifrene Pyrene	,,	1.17		0.0200	,,	,,		,,	121%	(21-141)	6.58%		"	
yrene		1.31		0.0200					141/0	(21-141)	0.58%	'		

TestAmerica Portland

Howard Holmes, Project Manager



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Main - 36238

6543 N. Burlington Ave.

Project Number: Westside Stream WQ

Portland, OR 97203

Project Manager: Jennifer Shackelford

03/19/10 17:23

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

TestAmerica Portland

QC Batch: 10C0004 Water Preparation Method: 3520B Liq-Liq

Analyte Method Result MDL* MRL Units Dil Source Spike % (Limits) % (Limits) Analyzed Notes Result Amt REC RPD

LCS Dup (10C0004-BSD1) Extracted: 03/01/10 11:00

Surrogate(s): Benzo (a) pyrene-d12 Recovery: 88.6% Limits: 10-125% 03/08/10 15:16

TestAmerica Portland

Howard Holmes, Project Manager



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

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



City of Portland Water Pollution Laboratory

Main - 36238 Project Name:

6543 N. Burlington Ave. Portland, OR 97203

Project Manager: Jennifer Shackelford

Westside Stream WQ

Report Created: 03/19/10 17:23

Notes and Definitions

Project Number:

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported

as Estimated Results.

Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution

found on the analytical raw data.

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

percent solids, where applicable.

Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Electronic Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Signature

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Howard Holmes, Project Manager

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY REPORT

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 11922 E. First Ave, Spokane, WA 99206-5302

9405 SW Nimbus Ave, Beaverton, OR 97008-7145 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210 425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290

TAL-1000(0408) TA WO ID * Turnaround Requests less than standard may incur Rush Charges <u>.</u> 7/ 0 PAGE OF Work Order #: OTBOLOST TURNAROUND REQUEST LOCATION/ COMMENTS Organic & Inorganic Analyses in Business Days * OTHER Specify: #OF CONT. N MATRIX (W, S, O) JANGE Lytle RECEIVED BY: PRINT NAME: RECEIVED BY PRINT NAME: REQUESTED ANALYSES PRESERVATIVE P.O. NUMBER: -FIRM: City of Portland Jehnifor Shackelford PROJECT NAME: Westside Stram WQ PROJECT NUMBER: 4 FLOW MOTT. Pleise send to PART 4010 5756 | 2/23/10 1109 SAMPLING DATE/TIME CLIENT SAMPLE DENTIFICATION SAMPLED BY: REPORT TO: ADDRESS: PRINT NAME: PRINT NAME: CLIENT:

TestAmerica Portland

Sample Receiving Checklist

	k Orde nt Nar	er #: TBOLS Date/Time Received: 2/23/10 1030									
	Zone: OT/EST	CDT/CST MDT/MST PDT/PST AK OTHER									
Ć	ooler #(s perature	g Checks: s): Not enough or No Ice es: 5-10 gi #1 Digi #2 IR Gun Other: Other:									
N/A	Yes	No Initials; M									
Ø		1. If ESI client, were temp blanks received? If no, document on NOD.									
Z		2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.									
	Z	3. Chain of Custody present? If no, document on NOD.									
	Z	4. Bottles received intact? If no, document on NOD.									
	Z	5. Sample is not multiphasic? If no, document on NOD.									
4	Ø	6. Proper Container and preservatives used? If no, document on NOD.									
		7. pH of all samples checked and meet requirements? If no, document on NOD.									
		8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.									
		9. HF Dilution required?									
		 10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding. 11. Did chain of custody agree with samples received? If no, document on NOD. 									
		12. Is the "Sampled by" section of the COC completed?									
		13. Were VOA/Oil Syringe samples without headspace?									
		☐ 14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid									
		15. Did samples require preservation with sodium thiosulfate?									
		16. If yes to #14, was the residual chlorine test negative? If no, document on NOD.									
Z		17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.									
		 18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? I no, document on NOD and contact PM before proceeding. 19. Are analyses with short holding times received in hold? 									
لسساحمي		20. Was Standard Turn Around (TAT) requested?									
		21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.									

TestAmerica Portland Sample Receiving Checklist

Work Order #: **PTB045**

			•	1
Logi	in Ch	ecks	:	Initials:
N/A	Yes	No		V
	Ø		22. Sufficient volume provided for all analysis? If no, docum	ent on NOD & contact PM.
\mathbb{Z}			23. Sufficient volume provided for client requested MS/MSI	or matrix duplicates? If
			no, document on NOD and contact PM.	•
	\square		24. Did the chain of custody include "received by" and "relin	equished by" signatures,
			dates and times?	
			25. Were special log in instructions read and followed?	
			26. Were tests logged checked against the COC?	
			27. Were rush notices printed and delivered?	•
\square			28. Were short hold notices printed and delivered?	
	otag		29. Were subcontract COCs printed?	
			30. Was HF dilution logged?	
				1
Lab	eling	and	Storage Checks:	Initials:
N/A	Yes	No		
	\mathbb{Z}		31. Were the subcontracted samples/containers put in Sx frid	ge?
			32. Were sample bottles and COC double checked for dissol-	ved/filtered metals?
			33. Did the sample ID, Date, and Time from label match wha	at was logged?
			34. Were Foreign sample stickers affixed to each container a	nd containers stored in
•			foreign fridge?	
1			35. Were HF stickers affixed to each container, and containe	rs stored in Sx fridge?
			36. Was an NOD for created for noted discrepancies and pla	ced in folder?
	ment a		oblems or discrepancies and the actions taken to resolve them	on a Notice of Discrepancy



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

ORELAP#: OR100021

April 23, 2010

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

RE: Westside Streams

Enclosed are the results of analyses for samples received by the laboratory on 03/30/10 17:00. The following list is a summary of the Work Orders contained in this report, generated on 04/23/10 14:09.

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

Work Order	Project	ProjectNumber	
PTC0967	Westside Streams	36238	

TestAmerica Portland



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford04/23/10 14:09

ANALYTICAL REPORT FOR SAMPLES										
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received						
FO105367	PTC0967-01	Water	03/29/10 13:05	03/30/10 17:00						

TestAmerica Portland

Howard Holmes, Project Manager



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford04/23/10 14:09

Analytical Case Narrative

TestAmerica - Portland, OR

PTC0967

TestAmerica Portland

Howard Holmes, Project Manager



Westside Streams

9405 S.W. NIMBUS AVENUE

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



City of Portland Water Pollution Laboratory Project Name:

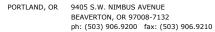
6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 04/23/10 14:09

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTC0967-01 (FO105367)			W	ater		Samp	led: 03/29/	10 13:05		
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND		0.971	ug/l	1x	10D0095	04/03/10 16:50	04/12/10 09:20	
Butyl benzyl phthalate	"	ND		0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND		0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND		0.971	"	"	"	"	"	
Diethyl phthalate	"	ND		0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND		0.971	"	"	"	"	"	
Acenaphthene	"	0.117		0.0194	"	"	"	"	04/09/10 17:33	
Acenaphthylene	"	ND		0.0194	"	"	"	"	"	
Anthracene	"	ND		0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	ND		0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	ND		0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND		0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND		0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND		0.00971	"	"	"	"	"	
Chrysene	"	0.0151		0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND		0.00971	"	"	"	"	"	
Fluoranthene	"	0.0342		0.0194	"	"	"	"	"	
Fluorene	"	0.0504		0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene		ND		0.00971	"	"	"	"		
Naphthalene	"	0.129		0.0194	"	"	"	"	"	
Phenanthrene		0.0384		0.0194	"	"	"	"	"	
Pyrene	"	0.0623		0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10				82.0%		25 - 125 %	"			"
Pyrene-d10				96.0%		23 - 150 %	"			"
Benzo (a) pyrei	ne-d12			72.6%		10 - 125 %	"			"

TestAmerica Portland





City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 04/23/10 14:09

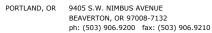
Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10D0095	Water P	reparation	Method: 35	20B Liq-l	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Note
Blank (10D0095-BLK1)								Extr	acted:	04/03/10 16	:50			
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND		1.00	ug/l	1x							04/12/10 07:08	
Butyl benzyl phthalate	"	ND		1.00	"	"							"	
Di-n-butyl phthalate	"	ND		1.00	"	"							"	
Di-n-octyl phthalate	"	ND		1.00	"	"								
Diethyl phthalate	"	ND		1.00	"	"						-	"	
Dimethyl phthalate	"	ND		1.00	"	"							"	
Acenaphthene	"	ND		0.0200	"	"							04/09/10 15:34	
Acenaphthylene	"	ND		0.0200	"	"								
Anthracene	"	ND		0.0200	"	"								
Benzo (a) anthracene	"	ND		0.0100	"	"							"	
Benzo (a) pyrene	"	ND		0.0100	"	"							"	
Benzo (b) fluoranthene	"	ND		0.0100	"	"							"	
Benzo (ghi) perylene	"	ND		0.0200	"	"							"	
Benzo (k) fluoranthene	"	ND		0.0100	"	"							"	
Chrysene	"	ND		0.0100	"	"							"	
Dibenzo (a,h) anthracene	"	ND		0.0100	"	"							"	
Fluoranthene	"	ND		0.0200	"	"							"	
Fluorene	"	ND		0.0200	"								"	
Indeno (1,2,3-cd) pyrene	"	ND		0.0100	"								"	
Naphthalene	"	ND		0.0200	"									
Phenanthrene	"	ND		0.0200	"								"	
Pyrene	"	ND		0.0200	"	"							"	
Surrogate(s): Fluorene-d10		Recovery:	81.4%	Lin	nits: 25-1259	% "							04/09/10 15:34	t
Pyrene-d10			90.7%		23-150	% "							"	
Benzo (a) pyrene-d12			71.8%		10-125	% "							"	
LCS (10D0095-BS1)								Extr	acted:	04/03/10 16	:50			
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.33		1.00	ug/l	1x		4.00	83.3%	(20-150)			04/12/10 07:42	
Butyl benzyl phthalate	"	3.32		1.00	"	"		"	83.0%	"			"	
Di-n-butyl phthalate	"	3.13		1.00	"	"		"	78.3%	"			"	
Di-n-octyl phthalate	"	3.19		1.00	"	"		"	79.7%	"			"	
Diethyl phthalate		2.91		1.00	"	"		"	72.7%	"			"	
Dimethyl phthalate	"	2.81		1.00	"	"		"	70.3%				"	
Acenaphthene	"	1.20		0.0200	"	"		1.25	96.3%	(35-120)			04/09/10 16:04	
Acenaphthylene	"	1.28		0.0200	"	"		"	102%	(34-116)			"	
Anthracene	,,	1.26		0.0200	"	,,		,,	101%	(24-119)			"	
Benzo (a) anthracene	,,	1.37		0.0100	,,	,,		,,	109%	(36-128)			,,	
Benzo (a) pyrene	"	1.13		0.0100	,,	,,		"	90.7%	(17-128)			,,	
benzo (a) pyrene		1.13		0.0100					20.170	(17-120)				

TestAmerica Portland

Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 04/23/10 14:09

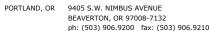
Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10D0095	Water P	reparation	Method:	3520B Liq-	Liq									
Analyte	Method	Result	MDL	* MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limit	s) Analyzed	Notes
LCS (10D0095-BS1)								Ext	racted:	04/03/10 16	:50			
Benzo (ghi) perylene	EPA 8270m	1.18		0.0200	ug/l	1x		1.25	94.6%	(26-126)			04/09/10 16:04	
Benzo (k) fluoranthene	"	1.01		0.0100	"	"		"	80.8%	(18-145)			"	
Chrysene	"	1.29		0.0100	"	"		"	103%	(16-137)			"	
Dibenzo (a,h) anthracene	"	1.32		0.0100	"	"		"	106%	(20-141)			"	
Fluoranthene	"	1.23		0.0200	"	"		"	98.3%	(31-125)			"	
Fluorene	"	1.25		0.0200	"	"		"	99.9%	(27-124)			"	
Indeno (1,2,3-cd) pyrene	"	1.27		0.0100	"	"		"	102%	(30-135)			"	
Naphthalene	"	1.16		0.0200	"	"		"	92.9%	(30-113)			"	
Phenanthrene	"	1.18		0.0200	"	"		"	94.1%	(34-126)			"	
Pyrene	"	1.42		0.0200	"	"		"	114%	(21-141)			"	
Surrogate(s): Fluorene-d10		Recovery:	95.8%	Lii	nits: 25-1259	6 "							04/09/10 16:04	
Pyrene-d10			105%		23-150								"	
Benzo (a) pyrene-d1.	2		83.6%		10-125	% "							"	
Matrix Spike (10D0095-MS1)					PTC0969-0					04/03/10 16				
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.08		3.88	ug/l	4x	0.585	3.88	89.9%	(10-150)			04/12/10 08:15	
Butyl benzyl phthalate	"	3.49		3.88	"	"	ND	"	90.0%	"			"	
Di-n-butyl phthalate	"	3.36		3.88	"	"	ND	"	86.5%	"			"	
Di-n-octyl phthalate	"	3.46		3.88	"	"	ND	"	89.1%	"			"	
Diethyl phthalate	"	3.02		3.88	"	"	ND	"	77.7%	"			"	
Dimethyl phthalate	"	2.72		3.88	"	"	ND	"	70.1%	"			"	
Acenaphthene	"	1.14		0.0777	"	"	0.0429	1.21	90.4%	(35-120)			04/09/10 16:33	
Acenaphthylene	"	1.18		0.0777	"	"	ND	"	97.2%	(34-116)			"	
Anthracene	"	1.37		0.0777	"	"	0.138	"	101%	(24-119)			"	
Benzo (a) anthracene	"	2.07		0.0388	"	"	0.585	"	122%	(22-129)			"	
Benzo (a) pyrene	"	1.73		0.0388	"	"	0.522	"	99.5%	(4-112)			"	
Benzo (b) fluoranthene	"	1.79		0.0388	"	"	0.562	"	101%	(0-136)			"	
Benzo (ghi) perylene	"	1.74		0.0777	"	"	0.463	"	105%	(0-126)			"	
Benzo (k) fluoranthene	"	1.66		0.0388	"	"	0.424	"	102%	(0-145)			"	
Chrysene	"	2.31		0.0388	"	"	0.805	"	124%	(7-137)			"	
Dibenzo (a,h) anthracene	"	1.39		0.0388	"	"	0.121	"	104%	(0-141)			"	
Fluoranthene	"	3.23		0.0777	"	"	1.87	"	112%	(30-125)			"	
Fluorene	"	1.20		0.0777	"	"	0.0529	"	94.3%	(27-124)			"	
Indeno (1,2,3-cd) pyrene	"	1.71		0.0388	"	"	0.421	"	106%	(0-135)			"	
Naphthalene	"	1.03		0.0777	"	"	0.0235	"	82.6%	(30-126)			"	
Phenanthrene	"	2.16		0.0777	"	"	0.814	"	111%	(34-126)			"	
Pyrene	"	3.49		0.0777	"	"	1.63	"	154%	(14-168)			"	
Surrogate(s): Fluorene-d10 Pyrene-d10		Recovery:	85.8% 103%	Lir	nits: 25-125% 23-150								04/09/10 16:33	

TestAmerica Portland

Howard Holmes, Project Manager





THE LEADER IN ENVIRONMENTAL TESTING

City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 04/23/10 14:09

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results TestAmerica Portland QC Batch: 10D0095 3520B Liq-Liq Water Preparation Method: REC (Limits) Source Spike Analyte Method Result MDL* MRL Units Dil (Limits) Analyzed Notes Matrix Spike (10D0095-MS1) QC Source: PTC0969-07 Extracted: 04/03/10 16:50 04/09/10 16:33 77.1% Surrogate(s): Benzo (a) pyrene-d12 Recovery: Limits: 10-125% Matrix Spike Dup (10D0095-MSD1) QC Source: PTC0969-07 Extracted: 04/03/10 16:50 Bis(2-ethylhexyl)phthalate (10-150) 04/12/10 08:49 EPA 8270m 4 09 3.88 0.585 3.88 90.1% 0.245% (50) ug/l Butyl benzyl phthalate 3.65 3.88 ND 94.0% 4.41% 3.49 3.88 ND 89.9% 3.83% Di-n-butyl phthalate 3.88 ND 8.25% Di-n-octvl phthalate 3.76 96.8% Diethyl phthalate 3.14 3.88 ND 80.9% 4 04% 2.88 3.88 ND 74.1% 5.55% Dimethyl phthalate 0.0777 0.0429 04/09/10 17:03 Acenaphthene 1.10 1.21 87.5% (35-120)3.23% (45) Acenaphthylene 1 17 0.0777 ND 96 4% (34-116)0.896% Anthracene 1.32 0.0777 0.138 97.4% (24-119)4.04%0.0388 0.585 Benzo (a) anthracene 1.86 105% (22-129)14.8% 0.0388 0.522 Benzo (a) pyrene 1.50 80.5% (4-112)21.2% Benzo (b) fluoranthene 1.54 0.0388 0.562 80.5% (0-136)22.7% Benzo (ghi) perylene 1.50 0.0777 0.463 85.6% (0-126)20.6% Benzo (k) fluoranthene 1.42 0.0388 0.424 82.3% (0-145)20.9% Chrysene 2.00 0.0388 0.805 98.5% (7-137)22.9% Dibenzo (a,h) anthracene 1.28 0.0388 0.121 95.6% (0-141)8.87% Fluoranthene 2.71 0.0777 1.87 69.4% (30-125)47.3% R2 Fluorene 1.18 0.0777 0.0529 92.6% (27-124)1.78% Indeno (1,2,3-cd) pyrene 1.50 0.0388 0.421 88 9% (0-135)17.8% Naphthalene 1.05 0.0777 0.0235 84.7% (30-126) 0.0777 Phenanthrene 1.95 0.814 93.5% (34-126) 17.2% 0.0777 3 03 1 63 115% (14-168)28 4% Pyrene 04/09/10 17:03 Surrogate(s): Fluorene-d10 Recovery: 83.5% Limits: 25-125% 102% Pvrene-d10 23-150% Benzo (a) pyrene-d12 75.8% 10-125%

TestAmerica Portland

Howard Holmes, Project Manager



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



City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford04/23/10 14:09

Notes and Definitions

Report Specific Notes:

R2 - The RPD exceeded the acceptance limit.

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA _ Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B.
 *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.

Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the

dilution found on the analytical raw data.

Reporting - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*.

Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Dil

Howard Holmes, Project Manage

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

age, AK 99502-1119 503-906-9200 FAX 563-9210

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

* Turnaround Requests less than standard may incur Rush Charges. TA WO ID 7 Work Order #: MCOOL \mathcal{N} TURNAROUND REQUEST DATE 3 TIME: LOCATION/ COMMENTS in Business Days * MATRIX # OF (W, S, O) CONT. OTHER RECEIVED BY CHAIN OF CUSTODY REPORT RECEIVED BY: PRINT NAME: Charles Lythe REQUESTED ANALYSES PRESERVATIVE P.O. NUMBER: 36 258 - FIRM (ity of fortland IME: 11211) 27-10 SUM - WHICH LATER 87-10 SUM - WICE 87-10 SUM - WICE to Phu thanks PROJECT NAME: Wests de Stram WQ PROJECT NUMBER: 4 FLOW MON. 3/29/10 1305 ADDRESS: Jennifer Shuchelford SAMPLING DATE/TIME 10105367 CLIENT SAMPLE IDENTIFICATION ADDITIONAL REMARKS SAMPLED BY: RELEASED BY: RELEASED BY:

TestAmerica Portland Sample Receiving Checklist

	k Ord nt Nai	der #: PTCOGLOT Date/Time Received: 3/30/10 1700 me and Project: CITY Of Portland
	Zone: DT/EST	CDT/CST MDT/MST PDT/PST AK OTHER
Ĉo	oler #(eratur	Temperature out of Range: Solution Solution
N/A	Yes	No Initials: M
		1. If ESI client, were temp blanks received? If no, document on NOD.
		2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	Z	☐ 3. Chain of Custody present? If no, document on NOD.
		4. Bottles received intact? If no, document on NOD.
	Z	5. Sample is not multiphasic? If no, document on NOD.
		6. Proper Container and preservatives used? If no, document on NOD.
		7. pH of all samples checked and meet requirements? If no, document on NOD.
		8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
		9. HF Dilution required?
		10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
		11. Did chain of custody agree with samples received? If no, document on NOD.
		12. Is the "Sampled by" section of the COC completed?
		13. Were VOA/Oil Syringe samples without headspace?
		14. Were VOA vials preserved? HCl Sodium Thiosulfate Ascorbic Acid
		15. Did samples require preservation with sodium thiosulfate?
		16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
		17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
		18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
لسكاني		☐ 19. Are analyses with short holding times received in hold?☐ 20. Was Standard Turn Around (TAT) requested?
		21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland Sample Receiving Checklist

Work Order #: PTCOQLO7

	Logi	n Ch	ecks	3:	Initials
	N/A	Yes	No		
				22.	Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
					Sufficient volume provided for client requested MS/MSD or matrix duplicates? If
				no,	document on NOD and contact PM.
				24.	Did the chain of custody include "received by" and "relinquished by" signatures,
				date	es and times?
		Z,		25.	Were special log in instructions read and followed?
				26.	Were tests logged checked against the COC?
	Z_{\perp}			27.	Were rush notices printed and delivered?
				28.	Were short hold notices printed and delivered?
W		\mathbb{Z}		29.	Were subcontract COCs printed?
4	otag			30.	Was HF dilution logged?
	•				1
	Lab	eling	and	Sto	orage Checks: Initials
	N/A	Yes	No		
~	M			31.	Were the subcontracted samples/containers put in Sx fridge?
γ.	\mathbb{Z}				Were sample bottles and COC double checked for dissolved/filtered metals?
					Did the sample ID, Date, and Time from label match what was logged?
					Were Foreign sample stickers affixed to each container and containers stored in
	•				eign fridge?
				35.	Were HF stickers affixed to each container, and containers stored in Sx fridge?
	\mathbb{Z}			36.	Was an NOD for created for noted discrepancies and placed in folder?
		ment a (NOD		roblo	ems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy



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

ORELAP#: OR100021

June 04, 2010

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

RE: Westside Streams

Enclosed are the results of analyses for samples received by the laboratory on 04/28/10 12:10. The following list is a summary of the Work Orders contained in this report, generated on 06/04/10 17:25.

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

Work Order	<u>Project</u>	<u>ProjectNumber</u>
PTD0835	Westside Streams	36238

TestAmerica Portland

Teresa Morrison For Howard Holmes, Project Manager

Tenk Morris



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford06/04/10 17:25

ANALYTICAL REPORT FOR SAMPLES											
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received							
FO 105476	PTD0835-01	Water	04/27/10 10:22	04/28/10 12:10							

TestAmerica Portland

Tenk Morrisi

Teresa Morrison For Howard Holmes, Project Manager



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford06/04/10 17:25

Analytical Case Narrative

TestAmerica - Portland, OR

PTD0835

PAH + Phthalates (EPA 8270 SIM): High recoveries were observed for Benzo(a)anthracene in the MS/MSD of PTD0783-03. The LCS recovery and MS/MSD RPD were within acceptance limits, indicating that the failure was due to a reproducible matrix interference.

PCB Congeners (EPA 1668A): This analysis was subcontracted to Pace Analytical; see attached report.

TestAmerica Portland

Temk Morris

Teresa Morrison For Howard Holmes, Project Manager



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



City of Portland Water Pollution Laboratory

Westside Streams Project Name:

36238

6543 N. Burlington Ave. Portland, OR 97203

Project Manager: Jennifer Shackelford

Report Created: 06/04/10 17:25

Polynuclear Aromatic Compounds per EPA 8270M-SIM

Project Number:

TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTD0835-01 (FO 105476)			W	ater		Samp	led: 04/27/	10 10:22		
Bis(2-ethylhexyl)pht	thalate	EPA 8270m	ND		0.980	ug/l	1x	10D0921	04/29/10 15:25	05/11/10 01:41	
Butyl benzyl phthala	ite	"	ND		0.980	"	"	"	"	"	
Di-n-butyl phthalate		"	ND		0.980	"	"	"	"	"	
Di-n-octyl phthalate		"	ND		0.980	"	"	"	"	"	
Diethyl phthalate		"	ND		0.980	"	"	"	"	"	
Dimethyl phthalate		"	ND		0.980		"	"	"	"	
Acenaphthene		"	0.489		0.0196	"	"	"	"	05/11/10 16:05	
Acenaphthylene		"	ND		0.0196	"	"	"	"	•	
Anthracene		"	0.0416		0.0196	"	"	"	"	"	
Benzo (a) anthracen	ne	"	0.0185		0.00980		"	"	"	"	
Benzo (a) pyrene		"	0.0127		0.00980		"	"	"	"	
Benzo (b) fluoranthe	ene	"	ND		0.00980		"	"	"	"	
Benzo (ghi) perylene	e	"	ND		0.0196	"	"	"	"	"	
Benzo (k) fluoranthe	ene	"	ND		0.00980		"	"	"	"	
Chrysene		"	0.0200		0.00980		"	"	"	"	
Dibenzo (a,h) anthra	cene	"	ND		0.00980		"	"	"	"	
Fluoranthene		,,	0.0611		0.0196		"		"		
Fluorene		,,	0.190		0.0196		"	"	"		
Indeno (1,2,3-cd) pyr	rene	,,	ND		0.00980		"	"	"		
Naphthalene			0.687		0.0196		"	"	"		
Phenanthrene		"	0.193		0.0196		"	"	"		
Pyrene		"	0.122		0.0196	"	"	"	"		
Surrogate(s):	Fluorene-d10				88.0%		25 - 125 %	"			"
~(9).	Pyrene-d10				115%		23 - 150 %	"			"
	Benzo (a) pyrene	-d12			80.1%		10 - 125 %	"			"

TestAmerica Portland

Tenk Morrisi

Teresa Morrison For Howard Holmes, Project Manager





City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 06/04/10 17:25

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

TestAmerica Portland

QC Batch: 10D0921	Water P	reparation	Method: 3	520B Liq-	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10D0921-BLK1)								Extr	acted:	04/29/10 15	:25			
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND		1.00	ug/l	1x							05/10/10 16:25	
Butyl benzyl phthalate	"	ND		1.00	"	"						-	"	
Di-n-butyl phthalate	"	ND		1.00	"	"							"	
Di-n-octyl phthalate	"	ND		1.00	"	"							"	
Diethyl phthalate	"	ND		1.00	"	"							"	
Dimethyl phthalate	"	ND		1.00	"	"							"	
Acenaphthene	"	ND		0.0200	"	"							05/08/10 11:32	
Acenaphthylene	"	ND		0.0200	"	"							"	
Anthracene	"	ND		0.0200	"	"							"	
Benzo (a) anthracene	"	ND		0.0100	"	"							"	
Benzo (a) pyrene	"	ND		0.0100	"	"							"	
Benzo (b) fluoranthene	"	ND		0.0100	"	"							"	
Benzo (ghi) perylene	"	ND		0.0200	"	"							"	
Benzo (k) fluoranthene	,,	ND		0.0100	"	"							"	
Chrysene	,,	ND		0.0100	"	,,							"	
Dibenzo (a,h) anthracene	,,	ND		0.0100	"								"	
Fluoranthene	"	ND		0.0200	"	"							,,	
Fluorene	,,	ND		0.0200	"	,,							,,	
Indeno (1,2,3-cd) pyrene	,,	ND		0.0100	"	,,							,,	
Naphthalene	,,	ND		0.0200	"	,,		_					,,	
Phenanthrene	,,	ND		0.0200	"	,,			_				,,	
Pyrene	,,	ND		0.0200	"	,,							,,	
2-Methylnaphthalene	,,	ND		0.0200	,,	,,							"	
1-Methylnaphthalene		ND ND		0.0200	,,	,,						_	,,	
Surrogate(s): Fluorene-d10		Recovery:	103%		nits: 25-125%	· "							05/08/10 11:32	
Pyrene-d10		Recovery.	121%	Lin	23-1509	,							"	
Benzo (a) pyrene-d12			83.3%		10-1259								"	
LCS (10D0921-BS1)								Extr	acted:	04/29/10 15	:25			
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.83		1.00	ug/l	1x		4.00	95.8%	(20-150)			05/10/10 16:57	
Butyl benzyl phthalate	"	4.06		1.00	"	"		"	101%	"			"	
Di-n-butyl phthalate	"	3.64		1.00	"	"		"	91.1%	"			"	
Di-n-octyl phthalate	"	4.18		1.00	"	"		"	104%	"			"	
Diethyl phthalate	"	3.30		1.00	"	"		"	82.6%	"			"	
Dimethyl phthalate	"	3.23		1.00	"	"		"	80.8%	"			"	
Acenaphthene	"	1.24		0.0200	"	"		1.25	99.5%	(35-120)			05/11/10 14:55	
Acenaphthylene	"	1.35		0.0200	"	"		"	108%	(34-116)			"	
Anthracene		1.36		0.0200	"	"		"	109%	(24-119)			"	
Benzo (a) anthracene		1.55		0.0100	"			,,	124%	(36-128)			,,	

TestAmerica Portland

Teresa Morrison For Howard Holmes, Project Manager

Tenk Morrisi





THE LEADER IN ENVIRONMENTAL TESTING

OC Patala 1000021

City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

Water Dresquetien Methods

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/04/10 17:25

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

TestAmerica Portland

2520D I : . I : .

QC Batch: 10D0921		Water I	Preparation	Method:	3520B Liq	-Liq									
Analyte		Method	Result	MDL	* MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (10D092	1-BS1)								Exti	acted:	04/29/10 15	5:25			
Benzo (a) pyrene		EPA 8270m	1.26		0.0100	ug/l	1x		1.25	101%	(17-128)			05/11/10 14:55	
Benzo (b) fluoranthe	ene	"	1.17		0.0100	"	"		"	93.4%	(37-131)			"	
Benzo (ghi) perylene	e	"	1.30		0.0200	"	"		"	104%	(26-126)			"	
Benzo (k) fluoranthe	ene	"	1.16		0.0100	"	"		"	92.9%	(18-145)			"	
Chrysene		"	1.42		0.0100	"	"		"	113%	(16-137)			"	
Dibenzo (a,h) anthracene		"	1.46		0.0100	"	"		"	117%	(20-141)			"	
Fluoranthene		"	1.33		0.0200	"	"		"	106%	(31-125)			"	
Fluorene		"	1.24		0.0200	"	"		"	98.9%	(27-124)			"	
Indeno (1,2,3-cd) py	rene	"	1.42		0.0100	"	"		"	113%	(30-135)			"	
Naphthalene		"	1.27		0.0200	"	"		"	102%	(30-113)			"	
Phenanthrene		"	1.27		0.0200	"	"		"	102%	(34-126)			"	
Pyrene		"	1.75		0.0200	"	"		"	140%	(21-141)			"	
Surrogate(s):	Fluorene-d10		Recovery:	95.2%	L	imits: 25-125%	"							05/11/10 14:55	
	Pyrene-d10			128%		23-150%	5 "							"	
	Benzo (a) pyrene-d12			92.7%		10-125%	5 "							"	
Matrix Snike	(10D0921-MS1)				QC Source	e: PTD0783-03	3		Exti	acted:	04/29/10 15	5:25			
Bis(2-ethylhexyl)pht	•	EPA 8270m	4.34		1.94	ug/l	2x	0.613	3.88	96.0%	(10-150)			05/10/10 20:15	
Butyl benzyl phthala	ite	"	4.05		1.94	"	"	ND	"	104%	"			•	
Di-n-butyl phthalate		"	3.91		1.94	"	"	ND	"	101%	"			•	
Di-n-octyl phthalate		"	4.82		1.94	"	"	ND	"	124%	"			•	
Diethyl phthalate		"	4.57		1.94	"	"	ND	"	118%	"			•	
Dimethyl phthalate		"	3.26		1.94	"	"	ND	"	83.9%	"			•	
Acenaphthene		"	1.16		0.0388	"	"	ND	1.21	95.3%	(35-120)			05/08/10 17:32	
Acenaphthylene		"	1.23		0.0388	"	"	ND	"	101%	(34-116)			"	
Anthracene		"	1.35		0.0388	"	"	ND	"	111%	(24-119)			"	
Benzo (a) anthracen	e	"	1.60		0.0194	"	"	ND	"	132%	(22-129)			•	M
Benzo (a) pyrene		"	1.18		0.0194	"	"	ND	"	97.2%	(10-112)			•	
Benzo (b) fluoranthe	ene	"	1.24		0.0194	"	"	ND	"	102%	(10-136)			"	
Benzo (ghi) perylene	2	"	1.26		0.0388	"	"	ND	"	104%	(10-126)			"	
Benzo (k) fluoranthe	ene		1.18		0.0194	"	"	ND	"	97.5%	(10-145)			"	
Chrysene		"	1.45		0.0194	"	"	ND	"	119%	(10-137)			"	
Dibenzo (a,h) anthra	cene	"	1.40		0.0194	"	"	ND	"	115%	(10-141)			"	
Fluoranthene		"	1.32		0.0388	"	"	ND	"	109%	(30-125)			"	
Fluorene		"	1.27		0.0388	"	"	ND	"	104%	(27-124)			"	
Indeno (1,2,3-cd) py	rene	"	1.35		0.0194	"	"	ND	"	112%	(10-135)			"	
Naphthalene		"	1.02		0.0388	"	"	ND	"	84.1%	(30-126)			"	
Phenanthrene		"	1.35		0.0388	"	"	ND	"	112%	(34-126)			"	
Pyrene		,,	1.74		0.0388	"	"	ND	"	144%	(14-168)			,	

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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.

Teresa Morrison For Howard Holmes, Project Manager



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

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



City of Portland Water Pollution Laboratory Pro

Project Name: Westside Streams
Project Number: 36238

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

1.07

1.29

1.69

Recovery:

89.2%

112%

69.0%

Report Created: 06/04/10 17:25

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results TestAmerica Portland QC Batch: 10D0921 Water Preparation Method: 3520B Liq-Liq REC (Limits) Source Spike Analyte Method Result MDL* MRL Units Dil (Limits) Analyzed Notes Matrix Spike (10D0921-MS1) QC Source: PTD0783-03 Extracted: 04/29/10 15:25 Surrogate(s): Fluorene-d10 Limits: 25-125% 05/08/10 17:32 98 7% Recovery: Pyrene-d10 122% 23-150% Benzo (a) pyrene-d12 77.4% 10-125% Matrix Spike Dup (10D0921-MSD1) QC Source: PTD0783-03 Extracted: 04/29/10 15:25 Acenaphthene EPA 8270m 1.10 0.0388 ug/l ND 91.0% (35-120)4.63% (35) 05/08/10 18:01 Acenaphthylene 1.17 0.0388 ND 96.5% (34-116) 5.00% Anthracene 1.29 0.0388 ND 107% (24-119)4.29% Benzo (a) anthracene 1.60 0.0194 ND 132% (22-129)0.0268% " M7 Benzo (a) pyrene 1.21 0.0194 ND 99.7% (10-112)2.49% Benzo (b) fluoranthene 1.28 0.0194 ND 106% (10-136)3.48% Benzo (ghi) perylene 1 33 0.0388 ND 109% (10-126)4 80% Benzo (k) fluoranthene 1.20 0.0194 ND 99.2% (10-145)Chrysene 1.45 0.0194 ND 120% (10-137)0.343% Dibenzo (a,h) anthracene 1 47 0.0194 ND 121% (10-141)4 98% Fluoranthene 1 28 0.0388 ND 106% (30-125)3.07% 1.18 0.0388 ND 97.3% (27-124)6.87% Indeno (1,2,3-cd) pyrene 1.42 0.0194 ND 117% (10-135)5.03%

0.0388

0.0388

0.0388

Limits: 25-125%

23-150%

10-125%

ND

ND

87.8%

106%

(30-126)

(34-126)

(14-168)

4 30%

4.69%

05/08/10 18:01

TestAmerica Portland

Naphthalene

Phenanthrene

Surrogate(s):

Pyrene

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Fluorene-d10

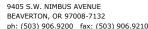
Pyrene-d10

Benzo (a) pyrene-d12

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

Teresa Morrison For Howard Holmes, Project Manager





THE LEADER IN ENVIRONMENTAL TESTING

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City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford06/04/10 17:25

Notes and Definitions

Report Specific Notes:

M7 - The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B.
 *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported

as Estimated Results.

Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution

found on the analytical raw data.

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

percent solids, where applicable.

Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*.

Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory.

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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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.

Teresa Morrison For Howard Holmes, Project Manager

TestAmerica

SAMPLED BY:

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 11922 E. First Ave, Spokane, WA 99206-5302

9405 SW Nimbus Ave, Beaverton, OR 97008-7145

2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

Turnaround Requests less than standard may incur Rush Charges. TA WO ID 425-420-9200 FAX 420-9210 509-924 9200 FAX 924-9290 503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210 7 5 4 3 2 1 <1 TURNAROUND REQUEST DATE: C D. Petroleum Hydrocarbon Analyses DAIE: へ TIME LOCATION/ COMMENTS Organic & Inorganic Analyses in Business Days * OTHER | Specify: Work Order #: # OF CONT. MATRIX (W, S, O) 2 CHAIN OF CUSTODY REPORT RECEIVED BY: PRINT NAME: Charles lythe REQUESTED ANALYSES PRESERVATIVE TIME: - FIRM () by of Porthand of please send to pack THE LEADER IN ENVIRONMENTAL TESTING CLIENT: City of Pertund
REPORTO:
ADDRESS: JUNITY Shacked Ford 4/24/10 1022 PHONE: PROJECT NAME: WESTS JE STRAM WG+ Flor Non SAMPLING DATE/TIME FOIDSHIP CLIENT SAMPLE IDENTIFICATION PROJECT NUMBER:

TAL-1000(0408)

TestAmerica Portland Sample Receiving Checklist

Work Clien		er #: 170835 Pate/Time Received: Leme and Project: City of Portland	1/28/10, 1210 Westside Streams
Time.	Zone: T/ES7	r □CDT/CST □MDT/MST ØPDT/PST □]AK []OTHER
Coc	oler #(: erature	s):	Temperature out of Range: Not enough or No IceIce MeltedW/in 4 Hrs of collectionOther:
N/A	Yes	No	Initials: 1
\square	·	1. If ESI client, were temp blanks received? If no, docu	ment on NOD.
		2. Cooler Seals intact? (N/A if hand delivered) if no, do	ocument on NOD.
,	Ø	☐ 3. Chain of Custody present? If no, document on NOD).
	Ź	☐ 4. Bottles received intact? If no, document on NOD.	
	Ø	☐ 5. Sample is not multiphasic? If no, document on NOI)
	Ø	6. Proper Container and preservatives used? If no, doc	ument on NOD.
$\not\square$		7. pH of all samples checked and meet requirements?	If no, document on NOD.
Ø		8. Cyanide samples checked for sulfides and meet requ	irements? If no, notify PM.
[2]		9. HF Dilution required?	
/	7	 10. Sufficient volume provided for all analysis? If no, PM before proceeding. 11. Did chain of custody agree with samples received? 	
	A	2 12. Is the "Sampled by" section of the COC completed	
17		☐ 13. Were VOA/Oil Syringe samples without headspace	
6		☐ 14 Were VOA vials preserved? ☐HCl ☐Sodium Th	•
~		15. Did samples require preservation with sodium thios	
\square		16. If yes to #15, was the residual chlorine test negative	
		☐ 17. Are dissolved/field filtered metals bottles sediment	
		 18. Is sufficient volume provided for client requested I no, document on NOD and contact PM before proceeding. 19. Are analyses with short holding times received in I 	MS/MSD or matrix duplicates? If ng.
/ -	$\overline{\mathbb{Z}}$	20. Was Standard Turn Around (TAT) requested?	
	Ź	21. Receipt date(s) < 48 hours past the collection date(s)	s)? If no, notify PM.

TestAmerica Portland Sample Receiving Checklist

Work Order #: PTD0835

Logi	n Che	ecks: Initials: <u>fS</u>	
N/A	Yes	No	
	Ø	22. Sufficient volume provided for all analysis? If no, document on NOD & contact	ct PM.
Ø		23. Sufficient volume provided for client requested MS/MSD or matrix duplicates	? If
1		no, document on NOD and contact PM.	
	Ø	24. Did the chain of custody include "received by" and "relinquished by" signature	es,
		dates and times?	
Ø		25. Were special log in instructions read and followed?	
,	otin	26. Were tests logged checked against the COC?	
Ø		27. Were rush notices printed and delivered?	
ot		28. Were short hold notices printed and delivered?	
	Z	29. Were subcontract COCs printed?	-
otan		30. Was HF dilution logged?	
·			
Lab	eling	and Storage Checks: Initials: 15	•
N/A	Yes	No	
	Ø	31. Were the subcontracted samples/containers put in Sx fridge?	
Ø		32. Were sample bottles and COC double checked for dissolved/filtered metals?	
<i>*</i>	\mathbb{Z}	33. Did the sample ID, Date, and Time from label match what was logged?	
otin		34. Were Foreign sample stickers affixed to each container and containers stored	in
/		foreign fridge?	į
		35. Were HF stickers affixed to each container, and containers stored in Sx fridge	?
\mathbf{z}		36. Was an NOD for created for noted discrepancies and placed in folder?	
	iment i (NOD	any problems or discrepancies and the actions taken to resolve them on a Notice of Discr	ерапсу



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

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

ORELAP#: OR100021

June 21, 2010

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

RE: Westside Streams

Enclosed are the results of analyses for samples received by the laboratory on 05/20/10 16:55. The following list is a summary of the Work Orders contained in this report, generated on 06/21/10 15:37.

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

Work Order	Project	ProjectNumber	
PTE0635	Westside Streams	36238	
1120033	Westside Streams	30230	

TestAmerica Portland



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford06/21/10 15:37

	ANALYTICAL REPO	ORT FOR SAM	PLES	
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 105596	PTE0635-01	Water	05/19/10 15:44	05/20/10 16:55

TestAmerica Portland

Darrell Auvil, Project Manager



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

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



City of Portland Water Pollution Laboratory

Project Name: Westside Streams

6543 N. Burlington Ave. Portland, OR 97203

Project Manager: Jennifer Shackelford

36238

Report Created: 06/21/10 15:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM

Project Number:

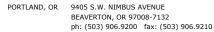
TestAmerica Portland

Analyte		Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes	
PTE0635-01 ((FO 105596)			W	ater		Samp	led: 05/19/	10 15:44			
Bis(2-ethylhexyl)ph	nthalate	EPA 8270m	1.37	0.516	0.980	ug/l	1x	10E0749	05/24/10 16:15	06/02/10 22:20		
Butyl benzyl phthala	ate	"	ND	0.516	0.980	"	"	"	"	"		
Di-n-butyl phthalate	e	"	ND	0.516	0.980	"	"	"	"	"		
Di-n-octyl phthalate	•	"	ND	0.516	0.980	"	"	"	"	"		
Diethyl phthalate		"	ND	0.516	0.980	"	"	"	"	"		
Dimethyl phthalate		"	ND	0.516	0.980	"	"	"		"		
Acenaphthene		"	0.0721	0.0196	0.0196	"	"	"	"	06/02/10 04:16		
Acenaphthylene		"	ND	0.0196	0.0196	"	"	"	"	"		
Anthracene		"	ND	0.0196	0.0196	"	"	"	"	"		
Benzo (a) anthrace	ne	"	0.0146	0.00980	0.00980	"	"	"		"		
Benzo (a) pyrene		"	0.0129	0.00980	0.00980	"	"	"		"		
Benzo (b) fluoranth	hene	"	0.0125	0.00980	0.00980	"	"	"	"			
Benzo (ghi) perylen	e	"	ND	0.0196	0.0196	"	"	"	"	"		
Benzo (k) fluoranthe	ene	"	ND	0.00980	0.00980	"	"	"	"	"		
Chrysene		"	0.0280	0.00980	0.00980	"	"	"	"			
Dibenzo (a,h) anthra	acene	"	ND	0.00980	0.00980	"	"	"	•			
Fluoranthene		"	0.0426	0.0196	0.0196	"	"	"	"			
Fluorene		"	0.0275	0.0196	0.0196	"	"	"	"	"		
Indeno (1,2,3-cd) py	yrene	"	ND	0.00980	0.00980	"	"	"	"	"		
Naphthalene		"	0.0966	0.0196	0.0196	"	"	"	•	"		
Phenanthrene		"	0.0513	0.0196	0.0196	"	"	"	"	"		
Pyrene		"	0.0781	0.0196	0.0196	"	"	"	"	"		
Surrogate(s):	Fluorene-d10				83.4%		25 - 125 %	"			"	_
	Pyrene-d10				106%		23 - 150 %	"			"	
	Benzo (a) pyrene-d.	12			72.7%		10 - 125 %	"			"	

TestAmerica Portland

and W. Amil

Darrell Auvil, Project Manager





City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/21/10 15:37

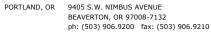
Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10E0749	Water P	reparation	Method: 35	20B Liq-l	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10E0749-BLK1)								Extr	acted:	05/24/10 16	:15			
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x							06/02/10 17:23	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"							"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"						-	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"						-	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"							"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"						-	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"						-	06/01/10 20:13	
Acenaphthylene	"	ND	0.0200	0.0200	"	"						-	"	
Anthracene	"	ND	0.0200	0.0200	"	"							"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"							"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"							"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"							"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"							"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"							"	
Chrysene	"	ND	0.0100	0.0100	"	"							"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"							"	
Fluoranthene	"	ND	0.0200	0.0200	"	"							"	
Fluorene	"	ND	0.0200	0.0200	"	"							"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"							"	
Naphthalene	"	ND	0.0200	0.0200	"	"							"	
Phenanthrene	"	ND	0.0200	0.0200	"	"							"	
Pyrene	"	ND	0.0200	0.0200	"	"							"	
Surrogate(s): Fluorene-d10		Recovery:	105%	Lin	iits: 25-1259	6 "							06/01/10 20:13	!
Pyrene-d10			118%		23-150	% "							"	
Benzo (a) pyrene-d12			94.1%		10-125	% "							"	
LCS (10E0749-BS1)								Extr	acted:	05/24/10 16	:15			
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.99	0.526	1.00	ug/l	1x		4.00	74.7%	(20-150)			06/02/10 17:56	
Butyl benzyl phthalate	"	3.02	0.526	1.00	"	"		"	75.5%	"			"	
Di-n-butyl phthalate	"	3.75	0.526	1.00	"	"		"	93.7%	"			"	
Di-n-octyl phthalate	"	3.27	0.526	1.00	"	"		"	81.7%	"			"	
Diethyl phthalate	"	3.16	0.526	1.00	"	"		"	78.9%	"			"	
Dimethyl phthalate		2.90	0.526	1.00	"	"		"	72.6%	"			"	
Acenaphthene	"	1.05	0.0800	0.0800	"	4x		1.25	83.7%	(35-120)			06/01/10 21:43	
Acenaphthylene	"	1.13	0.0800	0.0800	"	"		"	90.6%	(34-116)			"	
Anthracene	"	1.13	0.0800	0.0800	"	"		"	90.6%	(24-119)			"	
Benzo (a) anthracene		1.15	0.0400	0.0400	"	"		"	91.7%	(36-128)			"	
Benzo (a) pyrene		0.952	0.0400	0.0400	"	"		"	76.2%	(17-128)			"	
Benzo (b) fluoranthene		0.975	0.0400	0.0400	,,				78.0%	(37-131)				

TestAmerica Portland

Darrell Auvil, Project Manager





City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 06/21/10 15:37

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

TestAmerica Portland

QC Bate	h: 10E0749	water F	reparation	Method: 3	520B L1q-1	Liq									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits	s) Analyzed	Note
LCS (10E074	9-BS1)								Ext	racted:	05/24/10 16	5:15			
Benzo (ghi) perylene		EPA 8270m	0.928	0.0800	0.0800	ug/l	4x		1.25	74.2%	(26-126)			06/01/10 21:43	
Benzo (k) fluoranthe	ene	"	0.979	0.0400	0.0400	"	"		"	78.4%	(18-145)			"	
Chrysene		"	1.10	0.0400	0.0400	"	"		"	88.0%	(16-137)			"	
Dibenzo (a,h) anthra	cene	"	1.00	0.0400	0.0400	"	"		"	80.1%	(20-141)			"	
Fluoranthene		"	1.11	0.0800	0.0800	"	"		"	88.9%	(31-125)			"	
Fluorene		"	1.05	0.0800	0.0800	"	"		"	84.1%	(27-124)			"	
Indeno (1,2,3-cd) py	rene	"	0.984	0.0400	0.0400	"	"		"	78.7%	(30-135)			"	
Naphthalene		"	1.02	0.0800	0.0800	"	"		"	81.4%	(30-113)			"	
Phenanthrene		"	1.12	0.0800	0.0800	"	"		"	89.8%	(34-126)			"	
Pyrene		"	1.12	0.0800	0.0800	"	"		"	89.7%	(21-141)			"	
Surrogate(s):	Fluorene-d10		Recovery:	82.8%	Lin	nits: 25-1259	6 "							06/01/10 21:43	
	Pyrene-d10		·	88.5%		23-150	% "							"	
	Benzo (a) pyrene-d12			77.0%		10-125	% "							"	
I CC D (10)	E0740 DCD1)								Eve	raatad:	05/24/10 16	.15			
LCS Dup (101 Bis(2-ethylhexyl)pht		EPA 8270m	3.36	0.526	1.00	ug/l	1x		4.00	84.0%	(20-150)	11.7%	(35)	06/02/10 18:29	
Butyl benzyl phthala		"	3.52	0.526	1.00	"	"		"	88.0%	(20 130)	15.4%		"	
Di-n-butyl phthalate		,,	4.20	0.526	1.00	,,	,,		,,	105%	,,	11.3%		"	
Di-n-octyl phthalate		,,	3.51	0.526	1.00	,,	,,		,,	87.8%		7.21%	,	"	
Diethyl phthalate		,,	3.53	0.526	1.00	"	,,		"	88.3%		11.2%		"	
Dimethyl phthalate		,,	3.26	0.526	1.00	"	,,		"	81.4%		11.4%		"	
Acenaphthene		,,	1.14	0.0800	0.0800	,,	4x		1.25	91.1%	(35-120)	8.48%		06/01/10 22:14	
Acenaphthylene		,,	1.23	0.0800	0.0800	,,	"		"	98.4%	(34-116)	8.22%		"	
Anthracene		,,	1.26	0.0800	0.0800	,,	,,		,,	101%	(24-119)	10.4%		,,	
		,,	1.34	0.0400	0.0400	,,	,,		,,	107%	(36-128)	15.6%		,,	
Benzo (a) anthracen		,,	1.08	0.0400	0.0400	,,	,,		,,	86.8%	(17-128)	13.0%		,,	
Benzo (a) pyrene Benzo (b) fluoranthe		,,	1.08	0.0400	0.0400	,,	,,		,,	88.4%	(37-131)	12.5%		,,	
		,,	1.11	0.0400	0.0400	,,	,,		,,	84.6%	(26-126)	13.0%		,,	
Benzo (ghi) perylene Benzo (k) fluoranthe		,,	1.12	0.0400	0.0400	,,	,,		,,	89.6%	(18-145)	13.4%		,,	
Chrysene	nie	,,	1.12	0.0400	0.0400	,,	,,		,,	101%	(16-143)	13.5%		,,	
-	aana	,,				,,	,,		,,		,		,	,,	
Dibenzo (a,h) anthra	cene		1.15	0.0400	0.0400	,,	,,		,,	92.4%	(20-141)	14.2%		,,	
Fluoranthene		,,	1.30	0.0800	0.0800	,,				104%	(31-125)	15.7%		,	
Fluorene			1.17	0.0800	0.0800				"	93.2%	(27-124)	10.2%			
Indeno (1,2,3-cd) py	rene		1.13	0.0400	0.0400		,,		"	90.2%	(30-135)	13.7%			
Naphthalene			1.07	0.0800	0.0800				"	85.6%	(30-113)	5.06%			
Phenanthrene		"	1.26	0.0800	0.0800	"	"		"	101%	(34-126)	11.7%	,		
Pyrene		"	1.31	0.0800	0.0800	"	**		"	105%	(21-141)	15.7%	. "		

TestAmerica Portland

and W. Smil

Pyrene-d10

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

23-150%

101%



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 06/21/10 15:37

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

TestAmerica Portland

QC Batch: 10E0749 Water Preparation Method: 3520B Liq-Liq

Analyte Method Result MDL* MRL Units Dil Source Spike % (Limits) % (Limits) Analyzed Notes

LCS Dup (10E0749-BSD1) Extracted: 05/24/10 16:15

Surrogate(s): Benzo (a) pyrene-d12 Recovery: 85.6% Limits: 10-125% 4x 06/01/10 22:14

TestAmerica Portland

Darrell Auvil, Project Manager



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



City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/21/10 15:37

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported

as Estimated Results.

Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the

dilution found on the analytical raw data.

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

percent solids, where applicable.

Electronic Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Signature

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

and W. Sail

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244

11922 E. First Ave, Spokane, WA 99206-5302 9405 SW Nimbus Ave, Beaverton, OR 97008-7145

2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210

TA WO ID * Turnaround Requests less than standard may incur Rush Charges <1 Work Order #: PTEOU3S DATTE: \mathcal{O} TURNAROUND REQUEST TIME: LOCATION/ COMMENTS Organic & Inorganic Analyses 7 5 4 3 OTHER | Specify: #OF CONT. MATRIX (W, S, O) \mathbb{Z} CHAIN OF CUSTODY REPORT RECEIVED BY: RECEIVED BY: PRINT NAME: PRINT NAME: Uhacks Lythe REQUESTED ANALYSES PRESERVATIVE PO. NUMBER: 56758 120/ FIRM Lity of Portland Time 5 410 209 Congenera to PACE - tranks 1941 - 60414. PROJECT NUMBER: WESTSIDE STRAIM WR +
PROJECT NUMBER: CLIENT: City of Portland
REPORT TO: Sunifer Shackelford 五五 SAMPLING DATE/TIME 2010 CLIENT SAMPLE IDENTIFICATION ADDITIONAL REMARKS: SAMPLED BY: RELEASED BY: RELEASED BY: PRINT NAME:

TestAmerica Portland

Sample Receiving Checklist

	k Ord nţ Nai	ler #: 1780635 Date/Time Received: 15 me and Project: 17ty of Portland	130/10 1655
1/	(Les	+Srde Stream Wa & Flo	w Moni
	Zone; OT/EST	T CDT/CST MDT/MST PDT/PST AK	OTHER
Cc	oler #(berature	s):	perature out of Range: Not enough or No IceIce MeltedW/in 4 Hrs of collectionOther:
N/A	Yes	No	Initials:
\mathcal{M}		1. If ESI client, were temp blanks received? If no, document	(
$\sqrt{2}$		2. Cooler Seals intact? (N/A if hand delivered) if no, docum	
	X	3. Chain of Custody present? If no, document on NOD.	
	$\sqrt{8}$	4. Bottles received intact? If no, document on NOD.	
	X	5. Sample is not multiphasic? If no, document on NOD.	
		6. Proper Container and preservatives used? If no, documer	nt on NOD.
X	后	7. pH of all samples checked and meet requirements? If no,	
\		8. Cyanide samples checked for sulfides and meet requirement	
4		9. HF Dilution required?	•
)XÍ	 10. Sufficient volume provided for all analysis? If no, docu PM before proceeding. 11. Did chain of custody agree with samples received? If no 	
/		12. Is the "Sampled by" section of the COC completed?	
A		13. Were VOA/Oil Syringe samples without headspace?	
X		☐ 14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulf	fate Ascorbic Acid
		15. Did samples require preservation with sodium thiosulfate	e?
A		16. If yes to #15, was the residual chlorine test negative? If	no, document on NOD.
X		☐ 17. Are dissolved/field filtered metals bottles sediment-free	? If no, document on NOD.
X		 18. Is sufficient volume provided for client requested MS/N no, document on NOD and contact PM before proceeding. 19. Are analyses with short holding times received in hold? 	
	X	20. Was Standard Turn Around (TAT) requested?	
	X	21. Receipt date(s) < 48 hours past the collection date(s)? If	no, notify PM.

TestAmerica Portland Sample Receiving Checklist

Work Order #: PTEOU35

Logi	in Ch	ecks	Initials: <u>P5</u>
N/A	Yes	No	
			22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
			23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If
	,		no, document on NOD and contact PM.
			24. Did the chain of custody include "received by" and "relinquished by" signatures,
	•		dates and times?
Z			25. Were special log in instructions read and followed?
	\blacksquare		26. Were tests logged checked against the COC?
\blacksquare			27. Were rush notices printed and delivered?
Z			28. Were short hold notices printed and delivered?
	\square		29. Were subcontract COCs printed?
Z			30. Was HF dilution logged?
Lab	eling	and	Storage Checks: Initials:
N/A	Yes	No	
	\square		31. Were the subcontracted samples/containers put in Sx fridge?
∞			32. Were sample bottles and COC double checked for dissolved/filtered metals?
<i>/</i>	X		33. Did the sample ID, Date, and Time from label match what was logged?
X			34. Were Foreign sample stickers affixed to each container and containers stored in
/			foreign fridge?
X			35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
X			36. Was an NOD for created for noted discrepancies and placed in folder?
_	ment a		roblems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy



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

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

ORELAP#: OR100021

June 23, 2010

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

RE: Westside Streams

Enclosed are the results of analyses for samples received by the laboratory on 05/26/10 16:30. The following list is a summary of the Work Orders contained in this report, generated on 06/23/10 13:13.

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

Work Order	<u>Project</u>	<u>ProjectNumber</u>
PTE0794	Westside Streams	36238

TestAmerica Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.



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City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford06/23/10 13:13

ANALYTICAL REPORT FOR SAMPLES										
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received						
FO 105620	PTE0794-01	Water	05/25/10 13:58	05/26/10 16:30						

TestAmerica Portland

Darrell Auvil, Project Manager

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



City of Portland Water Pollution Laboratory

Westside Streams Project Name:

6543 N. Burlington Ave. Portland, OR 97203

36238 Project Manager: Jennifer Shackelford

Report Created: 06/23/10 13:13

Polynuclear Aromatic Compounds per EPA 8270M-SIM

Project Number:

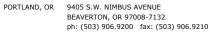
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTE0794-01 (FO 105620)			W	ater		Samp	led: 05/25/	10 13:58		
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.516	0.980	ug/l	1x	10F0013	06/01/10 13:10	06/08/10 16:53	С
Butyl benzyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	C
Di-n-butyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Diethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Acenaphthene	"	0.143	0.0196	0.0196	"	"	"	"	06/08/10 17:01	
Acenaphthylene	"	ND	0.0196	0.0196	"	"	"	"	"	
Anthracene	"	ND	0.0196	0.0196	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00980	0.00980	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00980	0.00980	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00980	0.00980	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0196	0.0196	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00980	0.00980	"	"	"	"	"	
Chrysene	"	ND	0.00980	0.00980	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00980	0.00980	"	"	"	"	"	
Fluoranthene	"	ND	0.0196	0.0196	"	"	"	"	"	
Fluorene	"	0.0533	0.0196	0.0196		"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00980	0.00980		"	"	"	"	
Naphthalene	"	0.510	0.0196	0.0196	"	"	"	"		
Phenanthrene	"	0.0850	0.0196	0.0196	"	"	"	"		
Pyrene	"	ND	0.0196	0.0196	"	"	"	"	"	
Surrogate(s): Fluorene-d10				111%		25 - 125 %	"			"
Pyrene-d10				134%		23 - 150 %	"			"
Benzo (a) pyrei	ne-d12			104%		10 - 125 %	"			"

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Onell W. Sail

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 **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/23/10 13:13

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

TestAmerica Portland

QC Batch: 10F0013	Water P	reparation	Method: 35	320B Liq-l	Liq									
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10F0013-BLK1)								Extra	acted:	06/01/10 13	3:10			
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x							06/08/10 15:15	C
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"							"	C
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"							"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"							"	
Diethyl phthalate	"	ND	0.526	1.00	"	"							"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"							"	
Acenaphthene	"	ND	0.0200	0.0200	"	"							06/08/10 15:48	
Acenaphthylene	"	ND	0.0200	0.0200	"	"							"	
Anthracene	"	ND	0.0200	0.0200	"	"							"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"							"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"								
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"								
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"							"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"							"	
Chrysene	"	ND	0.0100	0.0100	"	"							"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"							"	
Fluoranthene	"	ND	0.0200	0.0200	"	"							"	
Fluorene	"	ND	0.0200	0.0200	"	"							"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"							"	
Naphthalene	,,	ND	0.0200	0.0200	"									
Phenanthrene	,,	ND	0.0200	0.0200	"									
Pyrene	,,	ND	0.0200	0.0200	"	"							"	
Surrogate(s): Fluorene-d10		Recovery:	109%		nits: 25-125%	6 "							06/08/10 15:48	
Pyrene-d10		Recovery.	138%	Liii	23-150								"	
Benzo (a) pyrene-d12			108%		10-125								"	
LCS (10F0013-BS1)								Extr	acted:	06/01/10 13	8:10			
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.76	0.526	1.00	ug/l	1x			93.9%				06/08/10 15:47	C8
Butyl benzyl phthalate	,,	3.76	0.526	1.00	"	"			93.9%	"			"	C8
Di-n-butyl phthalate		4.60	0.526	1.00	"	,,		"	115%	"			"	
Di-n-octyl phthalate	"	3.66	0.526	1.00	"	"		"	91.4%	,,			"	
Diethyl phthalate	"	3.92	0.526	1.00	,,	"		"	98.0%	,,			"	
Dimethyl phthalate	"	3.58	0.526	1.00	,,	"		"	89.4%	,,			"	
Acenaphthene	"	1.01	0.0800	0.0800	,,	4x			81.0%	(35-120)			06/08/10 17:31	
Acenaphthylene	,,	1.12	0.0800	0.0800	,,	"		1.23	89.8%	(34-116)			"	
Anthracene	,,	1.12	0.0800	0.0800	"	,,		"	89.8%	(24-119)			"	
	,,	1.12	0.0400	0.0400	,,	,,		,,	91.7%				"	
Benzo (a) anthracene	,,				,,	,,		,,		(36-128)			,,	
Benzo (a) pyrene		0.963	0.0400	0.0400					77.0%	(17-128)				

TestAmerica Portland

Benzo (b) fluoranthene

Darrell Auvil, Project Manager

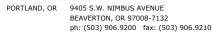
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

78.8% (37-131)

0.0400

0.985

0.0400





THE LEADER IN ENVIRONMENTAL TESTING

City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/23/10 13:13

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

TestAmerica Portland

QC Batch:	10F0013	Water F	Preparation	Method: 35	520B Liq-	Liq									
Analyte		Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	e % REC	(Limits)	% RPD	(Limits) Analyzed	Notes
LCS (10F0013-	BS1)								Ext	racted:	06/01/10 13	:10			
Benzo (ghi) perylene		EPA 8270m	0.950	0.0800	0.0800	ug/l	4x		1.25	76.0%	(26-126)			06/08/10 17:31	
Benzo (k) fluoranthene		"	0.930	0.0400	0.0400	"	"		"	74.4%	(18-145)			"	
Chrysene		"	1.06	0.0400	0.0400	"	"		"	84.4%	(16-137)			"	
Dibenzo (a,h) anthrace	ne	"	1.03	0.0400	0.0400	"	"		"	82.0%	(20-141)			"	
Fluoranthene		"	1.06	0.0800	0.0800	"	"		"	85.1%	(31-125)			"	
Fluorene		"	0.979	0.0800	0.0800	"	"		"	78.3%	(27-124)			"	
Indeno (1,2,3-cd) pyrei	ne	"	1.01	0.0400	0.0400	"	"		"	80.4%	(30-135)			"	
Naphthalene		"	0.997	0.0800	0.0800	"	"		"	79.8%	(30-113)			"	
Phenanthrene		"	1.06	0.0800	0.0800	"	"		"	85.1%	(34-126)			"	
Pyrene		"	1.12	0.0800	0.0800	"	"		"	89.2%	(21-141)			"	
Surrogate(s):	Fluorene-d10		Recovery:	78.8%	Lin	nits: 25-125%	ó "							06/08/10 17:31	
i	Pyrene-d10			91.4%		23-1509	% "							"	
i	Benzo (a) pyrene-d12			77.3%		10-1259	% "							"	
LCS Dup (10F0	013-BSD1)								Ext	racted:	06/01/10 13	:10			
Bis(2-ethylhexyl)phtha	late	EPA 8270m	3.63	0.526	1.00	ug/l	1x		4.00	90.7%	(20-150)	3.42%	(35)	06/08/10 16:20	C8
Butyl benzyl phthalate		"	3.63	0.526	1.00	"	"		"	90.6%	"	3.54%	, "	"	C8
Di-n-butyl phthalate		"	4.37	0.526	1.00	"	"		"	109%	"	5.13%	"	"	
Di-n-octyl phthalate		"	3.51	0.526	1.00	"	"		"	87.7%	"	4.13%	"	"	
Diethyl phthalate		"	3.72	0.526	1.00	"	"		"	93.0%	"	5.33%	"	"	
Dimethyl phthalate		"	3.43	0.526	1.00	"	"		"	85.8%	"	4.14%	"	"	
Acenaphthene		"	0.985	0.0800	0.0800	"	4x		1.25	78.8%	(35-120)	2.78%	· "	06/08/10 18:01	
Acenaphthylene		"	1.08	0.0800	0.0800	"	"		"	86.3%	(34-116)	4.01%	· "	"	
Anthracene		"	1.09	0.0800	0.0800	"	"		"	86.9%	(24-119)	3.24%	"	"	
Benzo (a) anthracene		"	1.11	0.0400	0.0400	"	"		"	88.4%	(36-128)	3.69%	"	"	
Benzo (a) pyrene		"	0.938	0.0400	0.0400	"	"		"	75.0%	(17-128)	2.66%	"	"	
Benzo (b) fluoranthene		"	0.936	0.0400	0.0400	"	"		"	74.9%	(37-131)	5.09%	"	"	
Benzo (ghi) perylene		"	0.930	0.0800	0.0800	"	"		"	74.4%	(26-126)	2.14%	"	"	
Benzo (k) fluoranthene		"	0.885	0.0400	0.0400	"	"		"	70.8%	(18-145)	4.95%	"	"	
Chrysene		"	1.03	0.0400	0.0400	"	"		"	82.4%	(16-137)	2.40%	"	"	
Dibenzo (a,h) anthrace	ne	"	1.00	0.0400	0.0400	"	"		"	80.1%	(20-141)	2.42%	· "	"	
Fluoranthene		"	1.03	0.0800	0.0800	"	"		"	82.2%	(31-125)	3.48%	"	"	
Fluorene		"	0.946	0.0800	0.0800	"	"		"	75.6%	(27-124)	3.50%	"	"	
Indeno (1,2,3-cd) pyrer	ne	"	0.976	0.0400	0.0400	"	"		"	78.1%	(30-135)	2.94%	· "	"	
Naphthalene		"	0.985	0.0800	0.0800	"	"		"	78.8%	(30-113)	1.18%	· "	"	
Phenanthrene		"	1.03	0.0800	0.0800	"	"		"	82.7%	(34-126)	2.87%	· "	"	
i ilelialitili elle															

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Pyrene-d10

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

23-150%

86.6%



PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford06/23/10 13:13

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

TestAmerica Portland

QC Batch: 10F0013 Water Preparation Method: 3520B Liq-Liq

Analyte Method Result MDL* MRL Units Dil Source Spike % (Limits) % (Limits) Analyzed Notes

LCS Dup (10F0013-BSD1) Extracted: 06/01/10 13:10

Surrogate(s): Benzo (a) pyrene-d12 Recovery: 74.8% Limits: 10-125% 4x 06/08/10 18:01

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Darrell Auvil, Project Manager

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City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 06/23/10 13:13

Notes and Definitions

Report Specific Notes:

C 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.

Laboratory Reporting Conventions:

DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported

as Estimated Results.

Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the

dilution found on the analytical raw data.

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

percent solids, where applicable.

Electronic Signature

Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory.

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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Onull W. Amil

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

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THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY REPORT

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 11922 E. First Ave, Spokane, WA 99206-5302

503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210

425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 9405 SW Nimbus Ave, Beaverton, OR 97008-7145

TA WO ID * Turnaround Requests less than standard may incur Rush Charges **~1** TIME: 16:0 Work Order #: PTSD 794 DATE: 5 TURNAROUND REQUEST 7 5 4 3 2 Erroleum Hydrocarbon Analyses LOCATION/ COMMENTS Organic & Inorganic Analyses in Business Days * OTHER Specify: UNDSCRIPTION THE TAP #OF CONT. MATRIX (W, S, O) 5 PRINT NAME: PRINT NAME: Chailes Lythe REQUESTED ANALYSES PRESERVATIVE P.O. NUMBER: 36138 TIME: 1421
DATE: 5/26/10 TIME: 16:30 DATE: 5/26/10 TIME FIRM. City of Portland & sent to PACE that PROJECT NAME: Wests Je Stran, WQ + To Jennifer Shachel Bid 5/25/10 1358 SAMPLING DATE/TIME TIBE MON CLIENT SAMPLE IDENTIFICATION PROJECT NUMBER: ADDITIONAL REMARK RELEASED BY: 🖟 SAMPLED BY: CLIENT: PRINT NAME: PRINT NAME:

TestAmerica Portland Sample Receiving Checklist

	k Ord	
Clie	nt Na	me and Project fry of Portland
<u>[/ </u>	<i>UST</i> Zone:	3701e Stream WQB Flow Mon.
	Zone. TÆS	I □CDT/CST □MDT/MST ♥PDT/PST □AK □OTHER
		g Checks: Temperature out of Range:
	oler #(beratur	· · · · · · · · · · · · · · · · · · ·
10111		gi #1 Digi #2 IR GunW/in 4 Hrs of collection
	L	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
N/A	Yes	No Initials: MA
M		1. If ESI client, were temp blanks received? If no, document on NOD.
X		2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
/	X	3. Chain of Custody present? If no, document on NOD.
		4. Bottles received intact? If no, document on NOD.
	\mathbf{X}	5. Sample is not multiphasic? If no, document on NOD.
	M	6. Proper Container and preservatives used? If no, document on NOD.
X		7. pH of all samples checked and meet requirements? If no, document on NOD.
À		8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
X		9. HF Dilution required?
,	X	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	X	11. Did chain of custody agree with samples received? If no, document on NOD.
,		12. Is the "Sampled by" section of the COC completed?
X		13. Were VOA/Oil Syringe samples without headspace?
X		14. Were VOA vials preserved? HCl Sodium Thiosulfate Ascorbic Acid
		15. Did samples require preservation with sodium thiosulfate?
		☐ 16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
X		17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
N N N		 18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding. 19. Are analyses with short holding times received in hold?
الاسام	Xi	20. Was Standard Turn Around (TAT) requested?
	X	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.
	λ-Á	21. Receipt date(s) 5 to from past the concentrations; if no, noting 1 m.

TestAmerica Portland Sample Receiving Checklist

Work Order #:_	PTE079	4

Logi	in Ch	ecks	Initials: 15	
N/A	Yes	No		
	\mathbb{Z}		22. Sufficient volume provided for all analysis? If no, document on NOD & contact P	M.
Z			23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If	f
			no, document on NOD and contact PM.	
	otag		24. Did the chain of custody include "received by" and "relinquished by" signatures,	
			dates and times?	
			25. Were special log in instructions read and followed?	
•			26. Were tests logged checked against the COC?	
			27. Were rush notices printed and delivered?	
			28. Were short hold notices printed and delivered?	
			29. Were subcontract COCs printed?	
			30. Was HF dilution logged?	
Lab	eling	and	Storage Checks: Initials:	
N/A	Yes	No		
			31. Were the subcontracted samples/containers put in Sx fridge?	
\mathbb{Z}			32. Were sample bottles and COC double checked for dissolved/filtered metals?	
			33. Did the sample ID, Date, and Time from label match what was logged?	
Z			34. Were Foreign sample stickers affixed to each container and containers stored in	
			foreign fridge?	
			35. Were HF stickers affixed to each container, and containers stored in Sx fridge?	
			36. Was an NOD for created for noted discrepancies and placed in folder?	
	iment a		oblems or discrepancies and the actions taken to resolve them on a Notice of Discrepan	асу



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

ORELAP#: OR100021

July 23, 2010

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

RE: Westside Streams

Enclosed are the results of analyses for samples received by the laboratory on 06/22/10 16:45. The following list is a summary of the Work Orders contained in this report, generated on 07/23/10 16:10.

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

Work Order	Project	ProjectNumber
PTF0688	Westside Streams	36238

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Sample ID FO105706 PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford07/23/10 16:10

ANALYTICAL REPO	RT FOR SAMI	PLES											
ANALYTICAL REPORT FOR SAMPLES Laboratory ID Matrix Date Sampled Date Received PTF0688-01 Water 06/21/10 12:41 06/22/10 16:45													
PTF0688-01	Water	06/21/10 12:41	06/22/10 16:45										

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Wandle W. Asmed

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PORTLAND, OR

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



City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 07/23/10 16:10

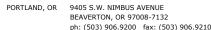
Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTF0688-01 (FO105706)			W	ater		Samp	led: 06/21/	10 12:41		
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.511	0.971	ug/l	1x	10F0869	06/28/10 11:55	07/12/10 15:19	С
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	C
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	0.261	0.0194	0.0194	"	"	"	"	07/08/10 15:08	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	ND	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0206	0.0194	0.0194	"	"	"	"	•	
Fluorene	"	0.0958	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.940	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.128	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0277	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10				89.8%		25 - 125 %	"			"
Pyrene-d10				95.2%		23 - 150 %	"			"
Benzo (a) pyrei	ne-d12			93.7%		10 - 125 %	"			"

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City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 07/23/10 16:10

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

TestAmerica Portland

3520B Liq-Liq QC Batch: 10F0869 Water Preparation Method: Source Spike Analyte Method Result MDL* MRL Units Dil (Limits) Analyzed (Limits) RPD REC Amt Blank (10F0869-BLK1) Extracted: 06/28/10 11:25 EPA 8270m ND 0.526 1.00 07/12/10 13:40 C Bis(2-ethylhexyl)phthalate 1x ug/l Butyl benzyl phthalate ND 0.5261.00 0.526 Di-n-butyl phthalate ND 1.00 ND 0.526 1.00 Di-n-octyl phthalate Diethyl phthalate ND 0.526 1.00 Dimethyl phthalate ND 0.526 1.00 Acenaphthene ND 0.0200 0.0200 07/08/10 13:46 ND 0.0200 0.0200 Acenaphthylene Anthracene ND 0.0200 0.0200 Benzo (a) anthracene ND 0.0100 0.0100 0.0100 0.0100 Benzo (a) pyrene ND Benzo (b) fluoranthene ND 0.0100 0.0100 Benzo (ghi) perylene ND 0.0200 0.0200 Benzo (k) fluoranthene ND 0.0100 0.0100 ND 0.0100 0.0100 Chrysene Dibenzo (a,h) anthracene ND 0.0100 0.0100 ND 0.0200 0.0200 Fluoranthene ND 0.0200 0.0200 Fluorene ND 0.0100 0.0100 Indeno (1,2,3-cd) pyrene Naphthalene ND 0.0200 0.02000.0200 0.0200 Phenanthrene ND 0.0200 0.0200 ND Pvrene 93.5% Limits: 25-125% 07/08/10 13:46 Surrogate(s): Fluorene-d10 Recovery: Pyrene-d10 104% 23-150% Benzo (a) pyrene-d12 105% 10-125% LCS (10F0869-BS1) Extracted: 06/28/10 11:25 Bis(2-ethylhexyl)phthalate EPA 8270m 3.95 0.526 1.00 1x 4.00 98.7% (20-150)07/12/10 14:13 C8 ug/l 0.526 97.5% Butyl benzyl phthalate 3.90 1.00 0.526 115% Di-n-butyl phthalate 4.62 1.00 Di-n-octyl phthalate 0.526 1.00 92.1% 3.68 Diethyl phthalate 3.77 0.526 1.00 94.1% 3.55 0.526 1.00 88.8% Dimethyl phthalate Acenaphthene 1 27 0.0200 0.0200 1.25 102% (35-120)07/08/10 14:13

TestAmerica Portland

Acenaphthylene

Benzo (a) anthracene

Benzo (b) fluoranthene

Benzo (a) pyrene

Anthracene

Onull W. Smil

Darrell Auvil, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

105%

106%

122%

114%

(34-116)

(24-119)

(36-128)

(17-128)

(37-131)

0.0200

0.0200

0.0100

0.0100

0.0100

1.31

1.33

1.52

1 42

1.41

0.0200

0.0200

0.0100

0.0100

0.0100





City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave. Project Number: 36238 Report Created:
Portland, OR 97203 Project Manager: Jennifer Shackelford 07/23/10 16:10

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

TestAmerica Portland

QC Batch: 10F0869	Water I	Preparation	n Method:	3520B Liq-	Liq									
Analyte	Method	Result	MDL:	* MRL	Units	Dil	Source Result	Spike Amt	« REC	(Limits)	% RPD	(Limit	ts) Analyzed	Notes
LCS (10F0869-BS1)								Ext	racted:	06/28/10 11	1:25			
Benzo (ghi) perylene	EPA 8270m	1.54	0.0200	0.0200	ug/l	1x		1.25	123%	(26-126)			07/08/10 14:13	
Benzo (k) fluoranthene	"	1.27	0.0100	0.0100	"	"		"	102%	(18-145)			"	
Chrysene	"	1.45	0.0100	0.0100	"	"		"	116%	(16-137)			"	
Dibenzo (a,h) anthracene	"	1.60	0.0100	0.0100	"	"		"	128%	(20-141)			"	
Fluoranthene	"	1.40	0.0200	0.0200	"	"		"	112%	(31-125)			"	
Fluorene	"	1.34	0.0200	0.0200	"	"		"	107%	(27-124)			"	
Indeno (1,2,3-cd) pyrene	"	1.55	0.0100	0.0100	"	"		"	124%	(30-135)			"	
Naphthalene	"	1.24	0.0200	0.0200	"	"		"	98.9%	(30-113)			"	
Phenanthrene	"	1.29	0.0200	0.0200	"	"		"	103%	(34-126)			"	
Pyrene	"	1.47	0.0200	0.0200	"	"		"	117%	(21-141)			"	
Surrogate(s): Fluorene-d10		Recovery:	93.8%	Lin	nits: 25-1259	6 "							07/08/10 14:13	
Pyrene-d10			101%		23-150								"	
Benzo (a) pyrene-d12			104%		10-125	% "							"	
L CC D (10E00(0 DCD1)								F4	4.4.	06/28/10 11				
LCS Dup (10F0869-BSD1)	EPA 8270m	4.10	0.526	1.00	na/1	1x			103%	(20-150)		(25)	07/12/10 14:46	C
Bis(2-ethylhexyl)phthalate	EPA 82/0m				ug/l	1X		4.00		(20-150)		(35)	0//12/10 14:46	
Butyl benzyl phthalate		4.01	0.526	1.00	,,				100%		2.74%			C8
Di-n-butyl phthalate		4.92	0.526	1.00	,,				123%		6.32%			
Di-n-octyl phthalate		3.68	0.526	1.00					91.9%		0.1429			
Diethyl phthalate		4.03	0.526	1.00		"			101%		6.80%		,	
Dimethyl phthalate		3.79	0.526	1.00		"		"	94.8%	"	6.54%			
Acenaphthene		1.29	0.0200	0.0200				1.25	103%	(35-120)	1.11%		07/08/10 14:40	
Acenaphthylene		1.32	0.0200	0.0200				"	106%	(34-116)	0.8449			
Anthracene	"	1.35	0.0200	0.0200	"	"			108%	(24-119)	1.62%		"	
Benzo (a) anthracene	"	1.54	0.0100	0.0100	"	"		"	123%	(36-128)	1.26%		"	
Benzo (a) pyrene	"	1.46	0.0100	0.0100	"	"		"	117%	(17-128)	2.45%		"	
Benzo (b) fluoranthene	"	1.35	0.0100	0.0100	"	"		"	108%	(37-131)	4.75%		"	
Benzo (ghi) perylene	"	1.54	0.0200	0.0200	"	"		"	123%	(26-126)	0.5489	6 "	"	
Benzo (k) fluoranthene	"	1.37	0.0100	0.0100	"	"		"	110%	(18-145)	7.32%		"	
Chrysene	"	1.46	0.0100	0.0100	"	"		"	117%	(16-137)	0.7279		"	
Dibenzo (a,h) anthracene	"	1.61	0.0100	0.0100	"	"		"	129%	(20-141)	0.6249	6 "	"	
Fluoranthene	"	1.42	0.0200	0.0200	"	"		"	114%	(31-125)	1.25%	ó "	"	
Fluorene	"	1.36	0.0200	0.0200	"	"		"	108%	(27-124)	1.15%	, "	"	
Indeno (1,2,3-cd) pyrene	"	1.56	0.0100	0.0100	"	"		"	125%	(30-135)	0.7519	6 "	"	
Naphthalene	"	1.22	0.0200	0.0200	"	"		"	97.7%	(30-113)	1.22%	, "	"	
Phenanthrene	"	1.30	0.0200	0.0200	"	"		"	104%	(34-126)	0.5989	6 "	"	
Pyrene	"	1.48	0.0200	0.0200	"	"		"	119%	(21-141)	1.19%	, "	"	
Surrogate(s): Fluorene-d10		Recovery:	95.9%	Lin	nits: 25-1259	6 "							07/08/10 14:40	
Pyrene-d10			102%		23-150	% "							"	

TestAmerica Portland

Onell W. Sail

Darrell Auvil, Project Manager

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PORTLAND, OR

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

City of Portland Water Pollution Laboratory Project Name: Westside Streams

6543 N. Burlington Ave.Project Number:36238Report Created:Portland, OR 97203Project Manager:Jennifer Shackelford07/23/10 16:10

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

TestAmerica Portland

QC Batch: 10F0869 Water Preparation Method: 3520B Liq-Liq

Analyte Method Result MDL* MRL Units Dil Source Spike % (Limits) % (Limits) Analyzed Notes Result Amt REC

LCS Dup (10F0869-BSD1) Extracted: 06/28/10 11:25

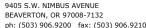
Surrogate(s): Benzo (a) pyrene-d12 Recovery: 106% Limits: 10-125% 1x 07/08/10 14:40

TestAmerica Portland

Darrell Auvil, Project Manager

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City of Portland Water Pollution Laboratory **Westside Streams** Project Name:

6543 N. Burlington Ave. Project Number: 36238 Report Created: Portland, OR 97203 Project Manager: Jennifer Shackelford 07/23/10 16:10

Notes and Definitions

Report Specific Notes:

C 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.

<u>Laboratory Reporting Conventions:</u>

DET Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate). ND

NR/NA Not Reported / Not Available

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

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

on a Wet Weight Basis.

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

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

MDL* METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported

as Estimated Results.

Dil Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution

found on the analytical raw data.

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

percent solids, where applicable.

Electronic Signature

Electronic Signature added in accordance with TestAmerica's Electronic Reporting and Electronic Signatures Policy. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory.

Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Onull W. Amil

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

-estAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244

503-906-9200 FAX 906-9210 907-563-9200 FAX 563-9210 425-420-9200 FAX 420-9210 509-924-9200 FAX 924-9290 11922 E. First Ave, Spokane, WA 99206-5302 9405 SW Nimbus Ave, Beaverton, OR 97008-7145 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

CHAIN OF CUSTODY REPORT

)	CITALI OF COSTOD I MELONI	MAI OWI	Work Order #:		i
CLIENT: (177 of 4017 land		INVOICE TO:		TURNAROI	TURNAROUND REQUEST	
	To et	(harles hi	s Lutte	in Busi	in Business Days *	
ADDRESS:	})			3 2 1 <1	
PHONE: FAX:	5	P.O. NUMBER: 3672		Fetroleum Hydrocarbon Analyses	-]	
PROJECT NAME: WESTSIDE STORAND DOR	21	PRESERVATIVE	IVE	STD. [4] [3]	2 1 <1	
PROJECT NUMBER: 4 FLOS MOL	H S	REOUESTED ANALYSES	ALYSES	OTHER Specify:	Jj	
SAMPLED BY:	1)			* Turnaround Requests less than	* Turnaround Requests less than standard may incur Rush Charges.	
CLIENT SAMPLE SAMPLING DENTIFICATION DATE/TIME	5007 978 1448 1448			MATRIX # OF (W, S, O) CONT.	LOCATION/ TA COMMENTS WO ID	
1/20105706 Walls 1741	X			3		1
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RELEASED BY: WARMANT IF I FIRM:	ity of forthordman	DATE: 6/27/10	RECEIVED BY: () WA'T HE PRINT NAME: () AND ()	T FIRM: 74P	DATE: 6/22/, TIME: /2:4	50
RELEASED BY: SOLY FIRM: PRINT NAME: And A	OF S	DATE: 6/22/10 TIME: /6:4 \$	RECEIVED BY: HANGE CONTROLL PRINTINGNE: CONTROLL CONTROL CONTR	EST FIRM: THE	DATE: $U/2Z/D$	
ADDITIONAL REMARKS. APPLIESE SELL TO	PACE	Inches (IL PA	- PAHJOLHUS per UIC levels	vels)	TEMP: \$\langle \int \text{PAGE} \text{ OF}	
	·				TAL-1000(0408)	8

TestAmerica Portland

Sample Receiving Checklist

Work Order #: 175088 Date/Time Received: 10/27/10 1445
Client Name and Project: City of fort land
Time Zone: EDT/ESTCDT/CSTMDT/MSTPDT/PSTAKOTHER
Unpacking Checks: Cooler #(s): Temperatures: Z Digi #1 Digi #2 IR Gun Digi #1 Digi #2 IR Gun Other:
N/A Yes No Initials: 15
1. If ESI client, were temp blanks received? If no, document on NOD.
2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
3. Chain of Custody present? If no, document on NOD.
4. Bottles received intact? If no, document on NOD.
5. Sample is not multiphasic? If no, document on NOD.
6. Proper Container and preservatives used? If no, document on NOD.
7. pH of all samples checked and meet requirements? If no, document on NOD.
8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
9. HF Dilution required?
10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
11. Did chain of custody agree with samples received? If no, document on NOD.
12. Is the "Sampled by" section of the COC completed?
13. Were VOA/Oil Syringe samples without headspace?
☐ 14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
15. Did samples require preservation with sodium thiosulfate? 16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD
18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? no, document on NOD and contact PM before proceeding. 19. Are analyses with short holding times received in hold?
20. Was Standard Turn Around (TAT) requested?
21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland

Sample Receiving Checklist

Work O	der #: PTFO688
Login C	necks:
N/A Yes	No
X	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM
XI 🗆	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If
′	no, document on NOD and contact PM.
X	24. Did the chain of custody include "received by" and "relinquished by" signatures,
/	dates and times?
X D	25. Were special log in instructions read and followed?
	☐ 26. Were tests logged checked against the COC?
X O	27. Were rush notices printed and delivered?
X \square	28. Were short hold notices printed and delivered?
	29. Were subcontract COCs printed?
\boxtimes \square	30. Was HF dilution logged?
/	
Labelin	g and Storage Checks: Initials: 15
N/A Ye	No
	☐ 31. Were the subcontracted samples/containers put in Sx fridge?
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	33. Did the sample ID, Date, and Time from label match what was logged?
	34. Were Foreign sample stickers affixed to each container and containers stored in
	foreign fridge?
	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
	☐ 36. Was an NOD for created for noted discrepancies and placed in folder?
Documen form (NO	any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy

Attachment 12

Pace Analytical Laboratory Results PCB Analysis



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Howard Holmes Test America-Portland 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10121329

Sample Receipt Date: 01/28/2010

Client Project #: PTA0661

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

February 22, 2010

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

February 18, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The recoveries of the isotopically-labeled PCB internal standards in the sample extracts ranged from 12-94%. With eighteen exceptions, flagged "R" on the results tables, the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1668A. Since the quantification of the native congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the sample preparation procedures did not significantly contribute to the levels determined for the field samples.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 96-121%, with relative percent differences of 0.0-19.0%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Certificate #	Authority	Certificate #
40770	Montana	92
MN00064	Nebraska	
AZ0014	Nevada	MN00064_2000
88-0680	New Jersey (NE	MN002
01155CA	New Mexico	MN00064
MN00064	New York (NEL	11647
PH-0256	North Carolina	27700
WD-15J	North Dakota	R-036
8TMS-Q	Ohio	4150
E87605	Ohio VAP	CL101
959	Oklahoma	D9922
09-019r	Oregon (ELAP)	MN200001-005
SLD	Oregon (OREL	MN200001-005
MN00064	Pennsylvania	68-00563
200012	Saipan	MP0003
	South Carolina	74003001
C-MN-01	Tennesee	2818
368	Tennessee	02818
E-10167	Texas	T104704192-08
90062	Utah (NELAP)	PAM
LA0900016	Virginia	00251
2007029	Washington	C755
322	West Virginia	9952C
9909	Wisconsin	999407970
027-053-137	Wyoming	8TMS-Q
MN00064		
	40770 MN00064 AZ0014 88-0680 01155CA MN00064 PH-0256 WD-15J 8TMS-Q E87605 959 09-019r SLD MN00064 200012 C-MN-01 368 E-10167 90062 LA0900016 2007029 322 9909 027-053-137	40770 Montana MN00064 Nebraska AZ0014 Nevada 88-0680 New Jersey (NE 01155CA New Mexico MN00064 New York (NEL PH-0256 North Carolina WD-15J North Dakota 8TMS-Q Ohio E87605 Ohio VAP 959 Oklahoma 09-019r Oregon (ELAP) SLD Oregon (OREL MN00064 Pennsylvania 200012 Saipan South Carolina C-MN-01 Tennesee E-10167 Texas 90062 Utah (NELAP) LA0900016 Virginia 2007029 Washington 322 West Virginia 9909 Wisconsin 027-053-137 Wyoming

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER **TestAmerica Portland**

1178

PTA0661

1D121329

SENDING LABORATORY:

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008 Phone: (503) 906-9200

Fax: (503) 906-9210

Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone: (612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature: /. 🎉

Ice:

needs Excel EDD

Standard TAT is requested unless specific due date is requested. \Rightarrow Due Date: $\frac{2/16/10}{10}$ Initials: $\frac{2}{10}$

Analysis

Units

Expires

Comments

Sample ID: PTA0661-01 (FO 105156 - Water)

1668 Coplanar PCBs - SUB ug/l

Sampled: 01/26/10 13:31 07/25/10 13:31

209 list of congeners

Containers Supplied:

1L Amber - Unpres. (B)

Received By

Date/TimePage 5 Posfg25 of 1



Sample Condition Upon Recorpt

Client Name:	Ext Amove	-Portland	Project #	10121329
--------------	-----------	-----------	-----------	----------

Courier:		Com	mercia	I Pace	Other	67.00 (1) (4.04) (1.04) (1.05)
Custody Seal on Cooler/Box Present: 🗵 yes		no	Sea	s intact:	lyes 🔲	no Projection in the second
Packing Material: Bubble Wrap Bubble	Bags		None	☐ Other		_ Temp Blank: Yes No
Thermometer Used 80344042 or 179425	Туре	of los	: We	t Blue No	ne 🔲	Samples on ice, cooling process has begun
Cooler Temperature /. J. Temp should be above freezing to 6°C	Biolo	oglcal	Tissu	e is Frozen: Comments:		Date and initials of person examining contents
Chain of Custody Present:	□\ve!	□No		1.		
Chain of Custody Filled Out:	ZYes	□No	DN/	2.		
Chain of Custody Relinquished:	ZYes			3.		
Sampler Name & Signature on COC:	☐Yes	ZKo	DN/	4.		
Samples Arrived within Hold Time:	ZYes	□No	DNA	5.		
Short Hold Time Analysis (<72hr):	☐Yes	□No	ZINA	6.		
Rush Turn Around Time Requested:	□Yes	ZINO	DINA	7.		
Sufficient Volume:	Z/Yes	□No	□N/A	8.		
Correct Containers Used:	Ziyes	□No	□N⁄A	9.		
-Pace Containers Used:	□Yes	J⊒Ko	□N⁄A			
Containers intact:	DY es	□No	□n⁄a	10.		
Filtered volume received for Dissolved tests	□Yes	□No	CIMA	11.		
Sample Labels match COC:	ZYes	□No	□N⁄A	12.		
	গ্ৰ					
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	□Yes	□No	ZNA	13.	EONH	☐ H2SO4 ☐ NaOH ☐ HCI
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes	□No	ZINA	Samp #	·	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water			······	Initial when completed	7	Lot # of added preservative
	□Yes	*******	DINA			
	☐Yes		ZINA			
			ZINA	16.		
	□Yes	□No	ZINA			
Pace Trip Blank Lot # (if purchased):					····	
Cilent Notification/ Resolution:						Field Data Required? Y / N
Person Contacted:			Date/1	Ime:		·
Comments/ Resolution:						
						
					·	
		****			44444	
					 	
	······				~~~	
Project Manager Review:			V			Date: 01/28/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina SEMBLES, inc. F-L213Rev.00, 05Aug2009 1700 Eim Street SE, Suite 200, Minneapolis, MN 55414 Report No.....10121329_1668A Page 6 of 25



Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- See Discussion

Appendix B

Sample Analysis Summary



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID Lab Sample ID 10121329001 Filename P100206B_09

Injected By BAL **Total Amount Extracted**

% Moisture Dry Weight Extracted

ICAL ID

CCal Filename(s) Method Blank ID

PTA0661-01(FO105156)

BLANK-23586

999 mL NA NA P100206B01 P100206B 02

Water Matrix Dilution

Collected 01/26/2010 13:31 Received 01/28/2010 09:50 02/01/2010 14:30 Extracted Analyzed 02/07/2010 14:04

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	8.162	3.55	2.0	0.276	14 R
13C-4-MoCB	3	11.433	2.92	2.0	0.269	13 R
13C-2,2'-DiCB	4	11.768	1.78	2.0	0.246	12 R 16 R 15 R
13C-4,4'-DiCB	15	19.735	1.55	2.0	0.314	16 R
13C-2,2',6-TrCB	19	16.129	1.04	2.0	0.302	15 R
13C-3,4,4'-TrCB	37	27.937	1.03	2.0	0.996	50
13C-2,2',6,6'-TeCB	54	20.039	0.85	2.0	0.334	17 R
13C-3,4,4',5-TeCB	81	35.180	0.81	2.0	1.22	61
13C-3,3',4,4'-TeCB	77	35.767	0.81	2.0	1.25	63
13C-2,2',4,6,6'-PeCB	104	26.545	1.66	2.0	0.768	38
13C-2,3,3',4,4'-PeCB	105	39.355	1.70	2.0	1.47	74
13C-2,3,4,4',5-PeCB	114	38.701	1.51	2.0	1.39	69
13C-2,3',4,4',5-PeCB	118	38.148	1.59	2.0	1.28	64
13C-2,3',4,4',5'-PeCB	123	37.829	1.61	2.0	1.32	66
13C-3,3',4,4',5-PeCB	126	42.507	1.41	2.0	1.45	73
13C-2,2',4,4',6,6'-HxCB	155	32.749	1.22	2.0	1.31	66
13C-HxCB (156/157)	156/157	45.525	1.31	4.0	3.39	85
13C-2,3',4,4',5,5'-HxCB	167	44.368	1.24	2.0	1.68	84
13C-3,3',4,4',5,5'-HxCB	169	48.812	1.25	2.0	1.88	94
13C-2,2',3,4',5,6,6'-HpCB	188	38.684	1.14	2.0	1.24	62
13C-2,3,3',4,4',5,5'-HpCB	189	51.360	1.11	2.0	1.79	90
13C-2,2',3,3',5,5',6,6'-OcCB	202	44.117	0.94	2.0	1.30	65
13C-2,3,3',4,4',5,5',6-OcCB	205	54.075	0.99	2.0	1.66	83
13C-2,2',3,3',4,4',5,5',6-NoCB	206	56.188	0.82	2.0	1.38	69
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.843	0.84	2.0	1.44	72
13CDeCB	209	58.386	0.72	2.0	1.17	58
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.393	1.08	2.0	0.715	36
13C-2,3,3',5,5'-PeCB	111	35.817	1.56	2.0	1.27	64
13C-2,2 ['] ,3,3 ['] ,5,5 ['] ,6-HpCB	178	41.786	1.15	2.0	1.55	77
Recovery Standards						
13C-2,5-DiCB	9	14.596	1.63	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.505	0.77	2.0	NA NA	NA
13C-2,2',4,5,5'-PeCB	101	33.000	1.65	2.0	NA NA	NA NA
13C-2,2',3,4,4',5'-HxCB	138	41.317	1.30	2.0	NA	NA NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.537	0.91	2.0	NA	NA NA
100 2,2 ,0,0 , 1, 1 ,0,0 0000	101	55.557	0.01	2.0	1 1/1	14/1

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

Page 9 of 25

I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTA0661-01(FO105156) 10121329001 P100206B_09

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.250
2				ND		0.250
3				ND		0.250
4				ND		0.250
5				ND		0.250
6				ND		0.250
7				ND		0.250
8				ND		0.250
9				ND		0.250
10				ND		0.250
11				ND		1.50
12	12/13			ND		0.500
13	12/13			ND		0.500
14	12/10			ND		0.250
15				ND		0.250
16				ND		0.250
17				ND		0.250
18	18/30			ND		0.500
19	10/30			ND		0.250
20	20/28			ND		0.500
21	21/33			ND ND		0.500
22	21/33			ND ND		0.300
23				ND ND		0.250
23 24				ND ND		0.250
2 4 25				ND ND		0.250
25 26	26/29			ND ND		0.500
20 27	20/29			ND ND		0.250
27 28	20/28			ND ND		0.500
29	26/29			ND		0.500
30	18/30			ND		0.500
31				ND		0.250
32	04/00			ND		0.250
33	21/33			ND		0.500
34				ND		0.250
35				ND		0.250
36				ND		0.250
37				ND		0.250
38				ND		0.250
39	40/44/=4			ND		0.250
40	40/41/71			ND		1.50
41	40/41/71			ND		1.50
42	40/70			ND		0.500
43	43/73			ND		1.00
44	44/47/65			ND		1.50
45	45/51			ND		1.00
46				ND		0.500
47	44/47/65			ND		1.50
48				ND		0.500

Conc = Concentration

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R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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NC = Not Calculated
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X = Outside QC Limits
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ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTA0661-01(FO105156) 10121329001 P100206B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.00
50	50/53			ND		1.00
51	45/51			ND		1.00
52				ND		0.500
53	50/53			ND		1.00
54				ND		0.500
55				ND		0.500
56				ND		0.500
57				ND		0.500
58				ND		0.500
59	59/62/75			ND		1.50
60				ND		0.500
61	61/70/74/76			ND		2.00
62	59/62/75			ND		1.50
63	30,02,13			ND		0.500
64				ND		0.500
65	44/47/65			ND		1.50
66	11/11/00			ND		0.500
67				ND		0.500
68				ND		0.500
69	49/69			ND ND		1.00
70	61/70/74/76			ND		2.00
70 71						
	40/41/71			ND		1.50
72	10/70			ND		0.500
73	43/73			ND		1.00
74	61/70/74/76			ND		2.00
75	59/62/75			ND		1.50
76	61/70/74/76			ND		2.00
77				ND		0.500
78				ND		0.500
79				ND		0.500
80				ND		0.500
81				ND		0.500
82				ND		0.500
83				ND		0.500
84				ND		0.500
85	85/116/117			ND		1.50
86	86/87/97/108/119/125			ND		3.00
87	86/87/97/108/119/125			ND		3.00
88	88/91			ND		1.00
89	00/31			ND		0.500
90	90/101/113			ND		1.50
91	88/91			ND		1.00
92	00/31			ND		0.500
93	93/98/100/102					
93 94	93/96/100/10Z			ND ND		2.00
				ND ND		0.500
95				ND		0.500
96				ND		0.500

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ND = Not Detected NA = Not Applicable

NC = Not Calculated

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X = Outside QC Limits

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTA0661-01(FO105156) 10121329001 P100206B_09

97 86/87/97/108/119/125 ND	3.00 2.00
98 93/98/100/102 ND	2.00
99 ND	0.500
100 93/98/100/102 ND	2.00
101 90/101/113 ND	1.50
102 93/98/100/102 ND	2.00
ND	0.500
104 ND	0.500
105 ND	0.500
106 ND	0.500
107 107/124 ND	1.00
108 86/87/97/108/119/125 ND	3.00
109 ND	0.500
110 110/115 ND	1.00
111 ND	0.500
112 ND	0.500
113 90/101/113 ND	1.50
114 ND	0.500
115 110/115 ND	1.00
116 85/116/117 ND	1.50
117 85/116/117 ND	1.50
118 ND	0.500
119 86/87/97/108/119/125 ND	3.00
120 ND	0.500
121 ND	0.500
122 ND	0.500
123 ND	0.500
124 107/124 ND	1.00
125 86/87/97/108/119/125 ND	3.00
126 ND	0.500
127 ND	0.500
128 128/166 ND	1.00
129 129/138/163 ND	1.50
130 ND	0.500
131 ND	0.500
132 ND	0.500
133 ND	0.500
134 134/143 ND	1.00
135 135/151 ND	1.00
136 ND	0.500
137 ND	0.500
138 129/138/163 ND	1.50
139 139/140 ND	1.00
139 139/140 ND	1.00
140 139/140 ND	0.500
141 ND 142 ND	0.500
142 ND 143 134/143 ND	1.00
144 ND	0.500

Conc = Concentration

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R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
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I = Interference

ng's = Nanograms

ND = Not Detected

/CIC



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTA0661-01(FO105156) 10121329001 P100206B_09

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
145				ND		0.500
146				ND		0.500
147	147/149			ND		1.00
148				ND		0.500
149	147/149			ND		1.00
150				ND		0.500
151	135/151			ND		1.00
152				ND		0.500
153	153/168			ND		1.00
154				ND		0.500
155				ND		0.500
156	156/157			ND		1.00
157	156/157			ND		1.00
158				ND		0.500
159				ND		0.500
160				ND		0.500
161				ND		0.500
162				ND		0.500
163	129/138/163			ND		1.50
164	120/100/100			ND		0.500
165				ND		0.500
166	128/166			ND		1.00
167	120/100			ND		0.500
168	153/168			ND		1.00
169	133/100			ND		0.500
170				ND		0.500
170	171/173			ND ND		1.00
172	171/173			ND		0.500
173	171/173			ND ND		1.00
173	17 1/173			ND ND		0.500
175				ND ND		0.500
175				ND ND		0.500
177				ND ND		0.500
177				ND ND		0.500
179				ND ND		0.500
180	180/193			ND ND		1.00
181	160/193			ND ND		0.500
182				ND ND		0.500
183	183/185			ND ND		
184	163/165			ND ND		1.00 0.500
185	183/185			ND ND		1.00
	163/165			ND ND		
186 187				ND ND		0.500
				ND ND		0.500
188						0.500
189				ND ND		0.500
190				ND ND		0.500
191				ND ND		0.500
192				ND		0.500

Conc = Concentration

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A = Limit of Detection based on signal to noise

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Nn = Value obtained from additional analyses

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NC = Not Calculated
* = See Discussion
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ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTA0661-01(FO105156) 10121329001 P100206B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.00
194				ND		0.750
195				ND		0.750
196				ND		0.750
197	197/200			ND		1.50
198	198/199			ND		1.50
199	198/199			ND		1.50
200	197/200			ND		1.50
201				ND		0.750
202				ND		0.750
203				ND		0.750
204				ND		0.750
205				ND		0.750
206				ND		0.750
207				ND		0.750
208				ND		0.750
209				ND		0.750

Conc = Concentration

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EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTA0661-01(FO105156) 10121329001 P100206B_09

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

ND = Not Detected

Water

Matrix



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

Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID BLANK-23586 Filename P100205A 09 Injected By BAL **Total Amount Extracted** 1020 mL

Extracted 02/01/2010 14:30 **ICAL ID** P100205A03 Analyzed 02/05/2010 21:44

CCal Filename(s) P100205A 02 Dilution

Coai Filename(s)	F 100203A	_02		Dilution	5	
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes 13C-2-MoCB 13C-4-MoCB 13C-2,2'-DiCB 13C-2,2'-DiCB 13C-2,2',6-TrCB 13C-3,4,4'-TrCB 13C-3,4,4'-TrCB 13C-3,3',4,4'-TeCB 13C-3,3',4,4'-TeCB 13C-2,2',4,6,6'-PeCB 13C-2,3,3',4,4'-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB	1 3 4 15 19 37 54 81 77 104 105 114 118 123 126 155 156/157 167 169 188 189 202 205 206 208 209	8.150 11.409 11.756 19.711 16.093 27.929 20.032 35.139 35.726 26.521 39.330 38.677 38.157 37.805 42.483 32.724 45.484 44.344 48.770 38.660 51.326 44.076 54.041 56.153 50.809	2.83 2.73 1.60 1.58 0.99 1.06 0.78 0.82 0.81 1.61 1.63 1.54 1.44 1.55 1.52 1.25 1.25 1.25 1.24 1.32 1.31 1.12 1.09 0.86 0.90 0.80 0.86	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	0.159 0.157 0.142 0.393 0.239 1.12 0.432 1.33 1.39 0.881 1.53 1.43 1.29 1.36 1.55 1.40 3.57 1.62 1.78 1.37 1.81 1.42 1.64 1.50 1.47 1.19	8 R 8 R 7 R 20 R 12 S 66 69 44 76 72 65 68 78 70 89 81 89 68 91 71 82 75 73 59
13CDeCB Cleanup Standards 13C-2,4,4'-TrCB 13C-2,3,3',5,5'-PeCB 13C-2,2',3,3',5,5',6-HpCB	28 111 178	58.395 23.385 35.793 41.745	1.00 1.62 1.13	2.0 2.0 2.0	0.962 1.31 1.43	48 66 72
Recovery Standards 13C-2,5-DiCB 13C-2,2',5,5'-TeCB 13C-2,2',4,5,5'-PeCB 13C-2,2',3,4,4',5'-HxCB 13C-2,2',3,3',4,4',5,5'-OcCB	9 52 101 138 194	14.571 25.498 32.959 41.292 53.502	1.70 0.86 1.67 1.35 0.90	2.0 2.0 2.0 2.0 2.0	NA NA NA NA	NA NA NA NA

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-23586 P100205A 09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.246
2				ND		0.246
3				ND		0.246
4				ND		0.246
4 5 6 7				ND		0.246
6				ND		0.246
7				ND		0.246
8				ND		0.246
9				ND		0.246
10				ND		0.246
11				ND		1.48
12	12/13			ND		0.492
13	12/13			ND		0.492
14	,.0			ND		0.246
15				ND		0.246
16				ND		0.246
17				ND		0.246
18	18/30			ND		0.492
19	. 0, 00			ND		0.246
20	20/28			ND		0.492
21	21/33			ND		0.492
22	, 00			ND		0.246
23				ND		0.246
24				ND		0.246
25				ND		0.246
26	26/29			ND		0.492
27				ND		0.246
28	20/28			ND		0.492
29	26/29			ND		0.492
30	18/30			ND		0.492
31				ND		0.246
32				ND		0.246
33	21/33			ND		0.492
34				ND		0.246
34 35				ND		0.246
36				ND		0.246
37				ND		0.246
38				ND		0.246
39				ND		0.246
40	40/41/71			ND		1.48
41	40/41/71			ND		1.48
42	÷ •			ND		0.492
43	43/73			ND		0.984
44	44/47/65			ND		1.48
45	45/51			ND		0.984

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion X = Outside QC Limits

RT = Retention Time
I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-23586 P100205A 09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.492
47	44/47/65			ND		1.48
48				ND		0.492
49	49/69			ND		0.984
50	50/53			ND		0.984
51	45/51			ND		0.984
52	16/61			ND		0.492
53	50/53			ND		0.984
54	33,33			ND		0.492
55				ND		0.492
56				ND		0.492
57				ND		0.492
58				ND		0.492
59	59/62/75			ND		1.48
60	33/32/13			ND		0.492
61	61/70/74/76			ND		1.97
62	59/62/75			ND		1.48
63				ND		0.492
64				ND		0.492
65	44/47/65			ND		1.48
66				ND		0.492
67				ND		0.492
68				ND		0.492
69	49/69			ND		0.984
70	61/70/74/76			ND		1.97
71	40/41/71			ND		1.48
72				ND		0.492
73	43/73			ND		0.984
74	61/70/74/76			ND		1.97
75	59/62/75			ND		1.48
76	61/70/74/76			ND		1.97
77				ND		0.492
78				ND		0.492
79				ND		0.492
80				ND		0.492
81				ND		0.492
82				ND		0.492
83				ND		0.492
84				ND		0.492
85	85/116/117			ND		1.48
86	86/87/97/108/119/125			ND		2.95
87	86/87/97/108/119/125			ND		2.95
88	88/91			ND		0.984
89				ND		0.492
90	90/101/113			ND		1.48

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion X = Outside QC Limits

RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-23586 P100205A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		0.984
92				ND		0.492
93	93/98/100/102			ND		1.97
94	00,00,100,102			ND		0.492
95				ND		0.492
96				ND		0.492
97	86/87/97/108/119/125			ND		2.95
98	93/98/100/102			ND		1.97
99	00/00/100/102			ND		0.492
100	93/98/100/102			ND		1.97
101	90/101/113			ND		1.48
102	93/98/100/102			ND		1.97
102	93/90/100/102			ND ND		0.492
103				ND ND		0.492
105				ND ND		0.492
105				ND ND		0.492
100	107/124			ND ND		0.492
108	86/87/97/108/119/125			ND		2.95
109	440/445			ND		0.492
110	110/115			ND		0.984
111				ND		0.492
112	00/404/440			ND		0.492
113	90/101/113			ND		1.48
114				ND		0.492
115	110/115			ND		0.984
116	85/116/117			ND		1.48
117	85/116/117			ND		1.48
118				ND		0.492
119	86/87/97/108/119/125			ND		2.95
120				ND		0.492
121				ND		0.492
122				ND		0.492
123				ND		0.492
124	107/124			ND		0.984
125	86/87/97/108/119/125			ND		2.95
126				ND		0.492
127				ND		0.492
128	128/166			ND		0.984
129	129/138/163			ND		1.48
130				ND		0.492
131				ND		0.492
132				ND		0.492
133				ND		0.492
134	134/143			ND		0.984
135	135/151			ND		0.984

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-23586 P100205A 09

136	IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
137	126						
138 129/138/163							
139		120/129/162					
140							1. 4 0 0.09 <i>4</i>
141 142 143 144 144 144 144 145 146 147/149 147/149 147/149 147/149 150 151 153 153/168 153 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 156/157 157 158 158 159 150 159 150 159 150 150 150 150 150 150 150 150 150 150							0.904
142		139/140					0.904
143							0.492
144		124/142					0.492
145		134/143					
146							
147 147/149							
148		4.47/4.40					0.492
149 147/149		147/149					0.984
150	148	4.47/4.40					0.492
151		147/149					0.984
152		405/454					
153		135/151					
154 ND 0.492 155 ND 0.492 156 156/157 ND 0.984 157 156/157 ND 0.984 158 ND 0.492 159 ND 0.492 160 ND 0.492 161 ND 0.492 162 ND 0.492 163 129/138/163 ND 0.492 163 129/138/163 ND 0.492 165 ND 0.492 166 128/166 ND 0.492 166 128/168 ND 0.984 167 ND 0.984 169 ND 0.984 169 ND 0.984 169 ND 0.984 170 ND 0.984 171 171/173 ND 0.984 172 ND 0.984 173 171/173 ND 0.984 174 ND 0.984 175 ND 0.984 176 ND 0.984 177 ND 0.492 178 ND 0.492 179 ND 0.492	152	450/400					0.492
155	153	153/168					0.984
156 156/157 ND 0.984 157 156/157 ND 0.984 158 ND 0.492 159 ND 0.492 160 ND 0.492 161 ND 0.492 162 ND 0.492 163 129/138/163 ND 0.492 165 ND 0.492 165 ND 0.492 166 128/166 ND 0.984 167 ND 0.492 168 153/168 ND 0.492 170 ND 0.492 171 171/173 ND 0.492 175							0.492
157 156/157 ND 0.984 158 ND 0.492 159 ND 0.492 160 ND 0.492 161 ND 0.492 162 ND 0.492 163 129/138/163 ND 0.492 165 ND 0.492 166 128/166 ND 0.492 168 153/168 ND 0.492 170 ND 0.492 171 171/173 ND 0.492 173 171/173 ND 0.492 175 ND 0.492 176 ND <t< td=""><td></td><td> /</td><td></td><td></td><td></td><td></td><td>0.492</td></t<>		/					0.492
158	156	156/157					0.984
159		156/157					0.984
160 ND 0.492 161 ND 0.492 162 ND 0.492 163 129/138/163 ND 0.492 164 ND 0.492 165 ND 0.492 166 128/166 ND 0.984 167 ND 0.984 169 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.492 175 ND 0.492 176 ND 0.492 178 ND							
161 ND 0.492 162 ND 0.492 163 129/138/163 ND 0.492 164 ND 0.492 165 ND 0.492 166 128/166 ND 0.984 167 ND 0.492 168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 172 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND <td>159</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.492</td>	159						0.492
162							
163 129/138/163 ND 0.492 165 ND 0.492 166 128/166 ND 0.984 167 ND 0.492 168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 172 ND 0.492 173 171/173 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 -							0.492
164 ND 0.492 165 ND 0.492 166 128/166 ND 0.984 167 ND 0.492 168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 172 ND 0.492 173 171/173 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND							0.492
165 ND 0.492 166 128/166 ND 0.984 167 ND 0.492 168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 172 ND 0.492 173 171/173 ND 0.492 175 ND 0.492 176 ND 0.492 178 ND 0.492 179 ND 0.492		129/138/163					
166 128/166 ND 0.984 167 ND 0.492 168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492							
167 ND 0.492 168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.492 173 171/173 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492							0.492
168 153/168 ND 0.984 169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492		128/166					
169 ND 0.492 170 ND 0.492 171 171/173 ND 0.984 172 ND 0.492 173 171/173 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492	167						
170 ND 0.492 171 171/173 ND 0.984 172 ND 0.492 173 171/173 ND 0.984 174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492		153/168					0.984
171 171/173 ND 0.984 172 ND 0.492 173 171/173 ND 0.984 174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492							
172 ND 0.492 173 171/173 ND 0.984 174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492							0.492
173 171/173 ND 0.984 174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492		171/173					
174 ND 0.492 175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492					ND		0.492
175 ND 0.492 176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492	173	171/173					0.984
176 ND 0.492 177 ND 0.492 178 ND 0.492 179 ND 0.492							0.492
177 ND 0.492 178 ND 0.492 179 ND 0.492							0.492
178 ND 0.492 179 ND 0.492	176						0.492
178 ND 0.492 179 ND 0.492	177						0.492
179 ND 0.492	178						0.492
					ND		0.492
	180	180/193			ND		0.984

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-23586 P100205A 09

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
181				ND		0.492
182				ND		0.492
183	183/185			ND		0.984
184				ND		0.492
185	183/185			ND		0.984
186				ND		0.492
187				ND		0.492
188				ND		0.492
189				ND		0.492
190				ND		0.492
191				ND		0.492
192				ND		0.492
193	180/193			ND		0.984
194				ND		0.738
195				ND		0.738
196				ND		0.738
197	197/200			ND		1.48
198	198/199			ND		1.48
199	198/199			ND		1.48
200	197/200			ND		1.48
201				ND		0.738
202				ND		0.738
203				ND		0.738
204				ND		0.738
205				ND		0.738
206				ND		0.738
207				ND		0.738
208				ND		0.738
209				ND		0.738

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion X = Outside QC Limits

RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename

BLANK-23586 P100205A_09

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

ND = Not Detected



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCS-23587 P100205A_04

1020 mL P100205A03 P100205A_02 10120033002-R Matrix Water Dilution 5

Extracted 02/01/2010 14:30 Analyzed 02/05/2010 16:24

Injected By BAL

	ı	Native Analyt	tes	Lal	beled Analyt	es	
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ry
1	1.0	1.12	112	2.0	0.163	8	R
3	1.0	0.957	96	2.0	0.220	11	R
4	1.0	0.872	100 I	2.0	0.184	9	R
15	1.0	1.09	109	2.0	0.510	26	R
19	1.0	1.03	103	2.0	0.263	13	R
37	1.0	1.12	112	2.0	1.17	58	
54	1.0	1.08	108	2.0	0.483	24	R
81	1.0	1.08	108	2.0	1.41	70	
77	1.0	1.02	102	2.0	1.46	73	
104	1.0	1.03	103	2.0	0.992	50	
105	1.0	1.09	109	2.0	1.71	85	
114	1.0	1.14	114	2.0	1.63	81	
118	1.0	1.11	111	2.0	1.59	79	
123	1.0	1.12	112	2.0	1.60	80	
126	1.0	1.09	109	2.0	1.69	84	
155	1.0	1.09	109	2.0	1.32	66	
156/157	2.0	2.25	112	4.0	3.57	89	
167	1.0	1.16	116	2.0	1.67	84	
169	1.0	1.04	104	2.0	1.94	97	
188	1.0	1.04	104	2.0	1.32	66	
189	1.0	1.07	107	2.0	1.82	91	
202	1.0	1.04	104	2.0	1.39	69	
205	1.0	1.09	109	2.0	1.65	83	
206	1.0	1.04	104	2.0	1.51	75	
208	1.0	1.03	103	2.0	1.48	74	
209	1.0	1.21	121	2.0	1.27	64	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

^{* =} See Discussion

ng = Nanograms I = Interference



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCSD-23588 P100205A_05 1020 mL

P100205A03 P100205A_02 10120033002-R Matrix Water Dilution 5

Extracted 02/01/2010 14:30 Analyzed 02/05/2010 17:24

Injected By BAL

	N	Native Analy	tes	Lal	beled Analyt	es
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.10	110	2.0	1.07	53
3	1.0	1.15	115	2.0	1.06	53
4	1.0	1.21	121	2.0	0.930	46
15	1.0	1.15	115	2.0	1.08	54
19	1.0	0.965	96	2.0	1.08	54
37	1.0	1.00	100	2.0	1.68	84
54	1.0	0.977	98	2.0	1.30	65
81	1.0	1.10	110	2.0	1.47	73
77	1.0	1.08	108	2.0	1.45	72
104	1.0	0.973	97	2.0	1.34	67
105	1.0	1.12	112	2.0	1.64	82
114	1.0	1.14	114	2.0	1.55	78
118	1.0	1.07	107	2.0	1.54	77
123	1.0	1.08	108	2.0	1.56	78
126	1.0	0.974	97	2.0	1.64	82
155	1.0	0.976	98	2.0	1.58	79
156/157	2.0	2.20	110	4.0	3.48	87
167	1.0	1.09	109	2.0	1.71	85
169	1.0	1.06	106	2.0	1.80	90
188	1.0	1.05	105	2.0	1.42	71
189	1.0	1.11	111	2.0	1.73	86
202	1.0	1.05	105	2.0	1.37	69
205	1.0	1.03	103	2.0	1.64	82
206	1.0	1.04	104	2.0	1.49	74
208	1.0	0.974	97	2.0	1.47	73
209	1.0	1.13	113	2.0	1.21	61

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

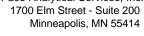
ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference





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

Client Test America-Portland

Spike 1 ID LCS-23587 Spike 2 ID LCSD-23588 Spike 1 Filename Spike 2 Filename P100205A_04 P100205A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	112	110	1.8	
4-MoCB	3	96	115	18.0	
2,2'-DiCB	4	100	121	19.0	
4,4'-DiCB	15	109	115	5.4	
2,2',6-TrCB	19	103	96	7.0	
3,4,4'-TrCB	37	112	100	11.3	
2,2',6,6'-TeCB	54	108	98	9.7	
3,3',4,4'-TeCB	77	102	108	5.7	
3,4,4',5-TeCB	81	108	110	1.8	
2,2',4,6,6'-PeCB	104	103	97	6.0	
2,3,3',4,4'-PeCB	105	109	112	2.7	
2,3,4,4',5-PeCB	114	114	114	0.0	
2,3',4,4',5-PeCB	118	111	107	3.7	
2,3',4,4',5'-PeCB	123	112	108	3.6	
3,3',4,4',5-PeCB	126	109	97	11.7	
2,2',4,4',6,6'-HxCB	155	109	98	10.6	
(156/157)	156/157	112	110	1.8	
2,3',4,4',5,5'-HxCB	167	116	109	6.2	
3,3',4,4',5,5'-HxCB	169	104	106	1.9	
2,2',3,4',5,6,6'-HpCB	188	104	105	1.0	
2,3,3',4,4',5,5'-HpCB	189	107	111	3.7	
2,2',3,3',5,5',6,6'-OcCB	202	104	105	1.0	
2,3,3',4,4',5,5',6-OcCB	205	109	103	5.7	
2,2',3,3',4,4',5,5',6-NoCB	206	104	104	0.0	
2,2',3,3',4,5,5',6,6'-NoCB	208	103	97	6.0	
Decachlorobiphenyl	209	121	113	6.8	

%REC = Percent Recovered

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



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Howard Holmes Test America-Portland 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10123473

Sample Receipt Date: 03/03/2010

Client Project #: PTB0814

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

March 30, 2010

Nate Habte, Project Manager

(612) 607-6407

(612) 607-6444 (fax)

natnael.habte@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

March 29, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The recoveries of the isotopically-labeled PCB internal standards in the sample extracts ranged from 47-109%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1668A. Since the quantification of the native congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected PCB congeners. The sample contained similar levels of congeners #2 and #3 and was flagged "B" on the results table. In general, levels less than ten times the background are not considered statistically different from the background.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 79-116%, with relative percent differences of 0.0-11.1%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Certificate #	Authority	Certificate #
40770	Montana	92
MN00064	Nebraska	
AZ0014	Nevada	MN00064_2000
88-0680	New Jersey (NE	MN002
01155CA	New Mexico	MN00064
MN00064	New York (NEL	11647
PH-0256	North Carolina	27700
WD-15J	North Dakota	R-036
8TMS-Q	Ohio	4150
E87605	Ohio VAP	CL101
959	Oklahoma	D9922
09-019r	Oregon (ELAP)	MN200001-005
SLD	Oregon (OREL	MN200001-005
MN00064	Pennsylvania	68-00563
200012	Saipan	MP0003
	South Carolina	74003001
C-MN-01	Tennesee	2818
368	Tennessee	02818
E-10167	Texas	T104704192-08
90062	Utah (NELAP)	PAM
LA0900016	Virginia	00251
2007029	Washington	C755
322	West Virginia	9952C
9909	Wisconsin	999407970
027-053-137	Wyoming	8TMS-Q
MN00064		
	40770 MN00064 AZ0014 88-0680 01155CA MN00064 PH-0256 WD-15J 8TMS-Q E87605 959 09-019r SLD MN00064 200012 C-MN-01 368 E-10167 90062 LA0900016 2007029 322 9909 027-053-137	40770 Montana MN00064 Nebraska AZ0014 Nevada 88-0680 New Jersey (NE 01155CA New Mexico MN00064 New York (NEL PH-0256 North Carolina WD-15J North Dakota 8TMS-Q Ohio E87605 Ohio VAP 959 Oklahoma 09-019r Oregon (ELAP) SLD Oregon (OREL MN00064 Pennsylvania 200012 Saipan South Carolina C-MN-01 Tennesee E-10167 Texas 90062 Utah (NELAP) LA0900016 Virginia 2007029 Washington 027-053-137 Wyoming

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER TestAmerica Portland

PTB0814

D123477

SENDING LABORATORY:

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008

Phone: (503) 906-9200 Fax: (503) 906-9210

Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone: (612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature:

Ice:

Y / N

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: 4ukds Initials: HZ

Analysis

Units

Expires

Comments

Sample ID: PTB0814-01 (FO105260 - Water)

Sampled: 02/23/10 12:42

001

1668 Coplanar PCBs - SUB ug/l

08/22/10 12:42

Containers Supplied:

1L Amber - Unpres. (C)

Please run 209 Congener list please

A / Pace 3/

Received By

Date/Time age 5 of 25

Sample Condition Upon Receipt Client Name: Courier: Fed Ex UPS USPS Client Commercial Pace Other Custody Seal on Cooler/Box Present: yes no ☐ ves ☐ no Seals intact: Packing Material: Bubble Wrap Bubble Bage None Other Temp Blank: Yes Type of Ice: Wet (Blue Samples on ice, cooling process has begun None 80344042 or 179425 Thermometer Used Date and initials of person examining Biological Tissue is Frozen: Yes No **Cooler Temperature** contents:__ Comments: Temp should be above freezing to 6°C ZYes DNo DNA 1. Chain of Custody Present: ØYes □No □NA Chain of Custody Filled Out: ZYes DNo DNA 3. Chain of Custody Relinquished: ∐Yes ⊠No **IIN/A** Sampler Name & Signature on COC: PIYAR DNO UNA 5 Samples Arrived within Hold Time: ☐Yes ☐No □N/A Short Hold Time Analysis (<72hr): TYME ZING TINA Rush Turn Around Time Requested: ©Yes □No □N⁄A Sufficient Volume: EYes DNo □NA 9. Correct Containers Used: □Yes ☑No □N/A -Pace Containers Used: ☑Yes □No Containers intact: □Yes □No □NA Filtered volume received for Dissolved tests 11. ZIYes DNo DNA Sample Labels match COC: -includes date/time/ID/Analysis H2SO4 EONH [] All containers needing acid/base preservation have been ☐Yes ☐No **□N/A** 13 checked. Noncompliance are noted in 13. Samp# All containers needing preservation are found to be in □Yes □No □NA compliance with EPA recommendation. Lot # of added Initial when Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water DYes DNo completed preservative

Cilent Notification/ Resolution:

Person Contacted:

Comments/ Resolution:

Project Manager Review:

Field Data Required?

Y / N

Date:

14.

□Yes □No □NA

TYPE THE THE

□Yes □No □N/A

□Yes □No □N/A

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the **Reach Coahdinal Stimbles**, Inc. F-L213Rev.00, 05Aug2009 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

Samples checked for dechlorination:

Headepace in VOA Vials (>6mm):

Trip Blank Custody Seals Present Pace Trip Blank Lot # (if purchased):_

Trip Blank Present:



Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- See Discussion

Appendix B

Sample Analysis Summary



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID Lab Sample ID Filename

10123473001 P100324A_10

Injected By

CVS 995 mL

Total Amount Extracted % Moisture

Method Blank ID

NA NA P100324403

PTB0814-01 (FO105260-Water)

Matrix Water Dilution NA

Dry Weight Extracted ICAL ID CCal Filename(s)

NA P100324A03 P100324A_02 BLANK-24353 Collected 02/23/2010 12:42
Received 03/03/2010 10:04
Extracted 03/18/2010 19:00
Analyzed 03/24/2010 18:30

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.995	2.98	2.0	0.935	47
13C-4-MoCB	3	11.254	2.92	2.0	1.14	57
13C-2,2'-DiCB	4	11.589	1.61	2.0	1.46	73
13C-4,4'-DiCB	15	19.570	1.55	2.0	1.23	62
13C-2,2',6-TrCB	19	15.939	1.01	2.0	1.78	89
13C-3,4,4'-TrCB	37	27.811	1.04	2.0	1.10	55
13C-2,2',6,6'-TeCB	54	19.895	0.79	2.0	1.30	65
13C-3,4,4',5-TeCB	81	35.056	0.76	2.0	1.29	64
13C-3,3',4,4'-TeCB	77	35.643	0.80	2.0	1.37	68
13C-2,2',4,6,6'-PeCB	104	26.419	1.61	2.0	1.40	70
13C-2,3,3',4,4'-PeCB	105	39.233	1.54	2.0	1.19	59
13C-2,3,4,4',5-PeCB	114	38.562	1.59	2.0	1.13	57
13C-2,3',4,4',5-PeCB	118	38.042	1.57	2.0	1.09	54
13C-2,3',4,4',5'-PeCB	123	37.706	1.54	2.0	1.11	56
13C-3,3',4,4',5-PeCB	126	42.386	1.61	2.0	1.25	63
13C-2,2',4,4',6,6'-HxCB	155	32.625	1.28	2.0	1.56	78
13C-HxCB (156/157)	156/157	45.421	1.26	4.0	2.32	58
13C-2,3',4,4',5,5'-HxCB	167	44.264	1.26	2.0	1.14	57
13C-3,3',4,4',5,5'-HxCB	169	48.709	1.22	2.0	1.20	60
13C-2,2',3,4',5,6,6'-HpCB	188	38.562	1.05	2.0	2.05	103
13C-2,3,3',4,4',5,5'-HpCB	189	51.279	1.06	2.0	1.34	67
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.996	0.92	2.0	2.19	109
13C-2,3,3',4,4',5,5',6-OcCB	205	53.974	0.87	2.0	1.69	84
13C-2,2',3,3',4,4',5,5',6-NoCB	206	56.065	0.79	2.0	1.94	97
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.762	0.77	2.0	2.03	102
13CDeCB	209	58.307	0.72	2.0	1.61	81
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.250	1.03	2.0	1.13	56
13C-2,3,3',5,5'-PeCB	111	35.694	1.55	2.0	1.68	84
13C-2,2',3,3',5,5',6-HpCB	178	41.681	1.04	2.0	1.89	94
Recovery Standards						
13C-2,5-DiCB	9	14.429	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.379	0.76	2.0	ŇA	NA
13C-2,2',4,5,5'-PeCB	101	32.876	1.60	2.0	NA	ŇA
13C-2,2',3,4,4',5'-HxCB	138	41.212	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.435	0.88	2.0	NA	NA
,-,-,-,-,-,-				—: -		

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTB0814-01 (FO105260-Water) 10123473001 P100324A_10

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.251
2		11.026	2.67	0.698 B		0.251
3		11.266	3.07	0.278 B		0.251
4				ND		0.251
5				ND		0.251
6				ND		0.251
7				ND		0.251
8				ND		0.251
9				ND		0.251
10				ND ND		0.251
11				ND ND		1.51
	10/10					
12	12/13			ND		0.502
13	12/13			ND		0.502
14				ND		0.251
15				ND		0.251
16				ND		0.251
17				ND		0.251
18	18/30			ND		0.502
19				ND		0.251
20	20/28			ND		0.502
21	21/33			ND		0.502
22				ND		0.251
23				ND		0.251
24				ND		0.251
25				ND		0.251
26	26/29			ND		0.502
27				ND		0.251
28	20/28			ND		0.502
29	26/29			ND		0.502
30	18/30			ND		0.502
31	10/30	22.931	0.95	0.318		0.251
32		22.931	0.93	ND		0.251
33	21/33			ND ND		0.502
33 34	21/33			ND ND		0.302
34						0.251
35				ND		0.251
36				ND		0.251
37				ND		0.251
38				ND		0.251
39				ND		0.251
40	40/41/71			ND		1.51
41	40/41/71			ND		1.51
42				ND		0.502
43	43/73			ND		1.00
44	44/47/65			ND		1.51
45	45/51			ND		1.00
46				ND		0.502
47	44/47/65			ND		1.51
48				ND		0.502
						J.JUL

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
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ng's = Nanograms

Page 10 of 25



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTB0814-01 (FO105260-Water) 10123473001 P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.00
50	50/53			ND		1.00
51	45/51			ND		1.00
52		25.396	0.76	0.779		0.502
53	50/53			ND		1.00
54				ND		0.502
55				ND		0.502
56				ND		0.502
57				ND		0.502
58				ND		0.502
59	59/62/75			ND		1.51
60				ND		0.502
61	61/70/74/76			ND		2.01
62	59/62/75			ND		1.51
63				ND		0.502
64				ND		0.502
65	44/47/65			ND		1.51
66				ND		0.502
67				ND		0.502
68				ND		0.502
69	49/69			ND		1.00
70	61/70/74/76			ND		2.01
71	40/41/71			ND		1.51
72				ND		0.502
73	43/73			ND		1.00
74	61/70/74/76			ND		2.01
75	59/62/75			ND		1.51
76	61/70/74/76			ND		2.01
77				ND		0.502
78				ND		0.502
79				ND		0.502
80				ND		0.502
81				ND		0.502
82				ND		0.502
83				ND		0.502
84				ND		0.502
85	85/116/117			ND		1.51
86	86/87/97/108/119/125			ND		3.01
87	86/87/97/108/119/125			ND		3.01
88	88/91			ND		1.00
89				ND		0.502
90	90/101/113			ND		1.51
91	88/91			ND		1.00
92				ND		0.502
93	93/98/100/102			ND		2.01
94				ND		0.502
95		29.723	1.62	0.851		0.502
96				ND		0.502

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTB0814-01 (FO105260-Water)

10123473001 P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.01
98	93/98/100/102			ND		2.01
99				ND		0.502
100	93/98/100/102			ND		2.01
101	90/101/113			ND		1.51
102	93/98/100/102			ND		2.01
103				ND		0.502
104				ND		0.502
105				ND		0.502
106				ND		0.502
107	107/124			ND		1.00
108	86/87/97/108/119/125			ND		3.01
109				ND		0.502
110	110/115	34.956	1.58	1.24		1.00
111				ND		0.502
112				ND		0.502
113	90/101/113			ND		1.51
114				ND		0.502
115	110/115	34.956	1.58	(1.24)		1.00
116	85/116/117			ND		1.51
117	85/116/117			ND		1.51
118		38.075	1.51	1.02		0.502
119	86/87/97/108/119/125			ND		3.01
120				ND		0.502
121				ND		0.502
122				ND		0.502
123				ND		0.502
124	107/124			ND		1.00
125	86/87/97/108/119/125			ND		3.01
126				ND		0.502
127				ND		0.502
128	128/166			ND		1.00
129	129/138/163			ND		1.51
130				ND		0.502
131				ND		0.502
132				ND		0.502
133				ND		0.502
134	134/143			ND		1.00
135	135/151			ND		1.00
136				ND		0.502
137				ND		0.502
138	129/138/163			ND		1.51
139	139/140			ND		1.00
140	139/140			ND		1.00
141				ND		0.502
142				ND		0.502
143	134/143			ND		1.00
144				ND		0.502

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTB0814-01 (FO105260-Water) 10123473001 P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.502
146				ND		0.502
147	147/149			ND		1.00
148	1477143			ND		0.502
149	147/149			ND		1.00
150	1477143			ND		0.502
151	135/151			ND		1.00
152	133/131			ND		0.502
153	153/168			ND		1.00
154	133/100			ND		0.502
155				ND		0.502
156	156/157			ND		1.00
157	156/157			ND		1.00
158	130/137			ND		0.502
159				ND		0.502
160				ND		0.502
161				ND		0.502
162				ND		0.502
163	129/138/163			ND		1.51
164	129/130/103			ND		0.502
165				ND		0.502
166	128/166			ND		1.00
167	120/100			ND		0.502
168	153/168			ND		1.00
169	155/166			ND ND		0.502
170				ND ND		0.502
170	171/173			ND ND		1.00
172	17 1/173			ND ND		0.502
173	171/173			ND ND		1.00
173	17 1/173			ND ND		0.502
175				ND ND		0.502
176				ND ND		0.502
177				ND		0.502
178				ND		0.502
179				ND		0.502
180	180/193			ND		1.00
181	100/193			ND		0.502
182				ND		0.502
183	183/185			ND		1.00
184	103/103			ND		0.502
185	183/185			ND		1.00
186	100/100			ND		0.502
187				ND		0.502
188				ND		0.502
189				ND		0.502
190				ND		0.502
191				ND		0.502
192				ND		0.502
102				IND		0.002

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I = Interference

ng's = Nanograms

ND = Not Detected



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTB0814-01 (FO105260-Water) 10123473001 P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.00
194				ND		0.754
195				ND		0.754
196				ND		0.754
197	197/200			ND		1.51
198	198/199			ND		1.51
199	198/199			ND		1.51
200	197/200			ND		1.51
201				ND		0.754
202				ND		0.754
203				ND		0.754
204				ND		0.754
205				ND		0.754
206				ND		0.754
207				ND		0.754
208				ND		0.754
209				ND		0.754

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B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTB0814-01 (FO105260-Water) 10123473001 P100324A_10

Congener Group	Concentration ng/L	
Total Monochloro Biphenyls	0.976	
Total Dichloro Biphenyls	ND	
Total Trichloro Biphenyls	0.318	
Total Tetrachloro Biphenyls	0.779	
Total Pentachloro Biphenyls	3.11	
Total Hexachloro Biphenyls	ND	
Total Heptachloro Biphenyls	ND	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	5.18	

ND = Not Detected

Water

Matrix



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

Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID BLANK-24353
Filename P100324A_05
Injected By CVS

 Total Amount Extracted
 923 mL
 Extracted
 03/18/2010 19:00

 ICAL ID
 P100324A03
 Analyzed
 03/24/2010 13:08

CCal Filename(s) P100324A_02 Dilution NA

CCal Filename(s)	P100324A	_02		Dilution	NA	
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	8.019	3.45	2.0	0.794	40
13C-4-MoCB	3	11.266	2.93	2.0	0.958	48
13C-2,2'-DiCB	4	11.601	1.70	2.0	1.16	58
13C-4,4'-DiCB	15	19.582	1.53	2.0	1.12	56
13C-2,2',6-TrCB	19	15.951	1.05	2.0	1.39	69
13C-3,4,4'-TrCB	37	27.811	1.03	2.0	0.918	46
13C-2,2',6,6'-TeCB	54	19.912	0.78	2.0	1.04	52
13C-3,4,4',5-TeCB	81	35.055	0.77	2.0	1.23	61
13C-3,3',4,4'-TeCB	77	35.626	0.77	2.0	1.29	64
13C-2,2',4,6,6'-PeCB	104	26.419	1.61	2.0	1.22	61
13C-2,3,3',4,4'-PeCB	105	39.231	1.55	2.0	1.15	57
13C-2,3,4,4',5-PeCB	114	38.561	1.56	2.0	1.11	55
13C-2,3',4,4',5-PeCB	118	38.041	1.57	2.0	1.09	55
13C-2,3',4,4',5'-PeCB	123	37.705	1.57	2.0	1.10	55
13C-3,3',4,4',5-PeCB	126	42.384	1.57	2.0	1.21	60
13C-2,2',4,4',6,6'-HxCB	155	32.624	1.31	2.0	1.57	79
13C-HxCB (156/157)	156/157	45.437	1.25	4.0	2.36	59
13C-2,3',4,4',5,5'-HxĆB	167	44.263	1.24	2.0	1.16	58
13C-3,3',4,4',5,5'-HxCB	169	48.707	1.23	2.0	1.23	61
13C-2,2',3,4',5,6,6'-HpCB	188	38.561	1.06	2.0	2.04	102
13C-2,3,3',4,4',5,5'-HpCB	189	51.272	1.04	2.0	1.35	67
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.994	0.92	2.0	2.21	111
13C-2,3,3',4,4',5,5',6-OcCB	205	53.967	0.89 0.78	2.0	1.69 2.00	84 100
13C-2,2',3,3',4,4',5,5',6-NoCB	206	56.057		2.0		
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.733	0.80	2.0	2.03	102 83
13CDeCB	209	58.278	0.68	2.0	1.66	03
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.266	1.03	2.0	0.927	46
13C-2,3,3',5,5'-PeCB	111	35.709	1.59	2.0	1.63	81
13C-2,2',3,3',5,5',6-HpCB	178	41.663	1.05	2.0	1.81	91
Recovery Standards						
13C-2,5-DiCB	9	14.453	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.379	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	32.875	1.58	2.0	NA	ŇA
13C-2,2',3,4,4',5'-HxCB	138	41.210	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.449	0.92	2.0	NA	NA
,- ,- ,- ,- ,- ,- ,- ,- ,-						

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24353 P100324A 05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.271
2		11.038	2.71	0.757		0.271
3		11.302	2.94	0.305		0.271
4				ND		0.271
4 5 6 7				ND		0.271
6				ND		0.271
7				ND		0.271
8				ND		0.271
9				ND		0.271
10				ND		0.271
11				ND		1.63
12	12/13			ND		0.542
13	12/13			ND		0.542
14	12/10			ND		0.271
15				ND		0.271
16				ND		0.271
17				ND		0.271
18	18/30			ND		0.542
19	10/00			ND		0.271
20	20/28			ND		0.542
21	21/33			ND		0.542
22	21/00			ND		0.271
23				ND		0.271
24				ND		0.271
25				ND		0.271
26	26/29			ND		0.542
27	_0/_0			ND		0.271
28	20/28			ND		0.542
29	26/29			ND		0.542
30	18/30			ND		0.542
31	. 3, 33			ND		0.271
32				ND		0.271
33	21/33			ND		0.542
34	_,,,,,			ND		0.271
35				ND		0.271
36				ND		0.271
37				ND		0.271
38				ND		0.271
39				ND		0.271
40	40/41/71			ND		1.63
41	40/41/71			ND		1.63
42				ND		0.542
43	43/73			ND		1.08
44	44/47/65			ND		1.63
45	45/51			ND		1.08

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24353 P100324A 05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.542
47	44/47/65			ND		1.63
48				ND		0.542
49	49/69			ND		1.08
50	50/53			ND		1.08
51	45/51			ND		1.08
52	16/61			ND		0.542
53	50/53			ND		1.08
54	00/00			ND		0.542
55				ND		0.542
56				ND		0.542
57				ND		0.542
58				ND		0.542
59	59/62/75			ND		1.63
60	00/02/10			ND		0.542
61	61/70/74/76			ND		2.17
62	59/62/75			ND		1.63
63	33/02/13			ND		0.542
64				ND		0.542
65	44/47/65			ND ND		1.63
66	44/47/03			ND ND		0.542
67				ND ND		0.542
68				ND ND		0.542
69	49/69			ND ND		1.08
70	49/09 61/70/74/76			ND ND		2.17
70 71	40/41/71			ND ND		1.63
71 72	40/41/71			ND ND		0.542
	40/70					
73	43/73			ND ND		1.08
74 75	61/70/74/76			ND		2.17
75 70	59/62/75			ND		1.63
<u>76</u>	61/70/74/76			ND		2.17
77				ND		0.542
78				ND		0.542
79				ND		0.542
80				ND		0.542
81				ND		0.542
82				ND		0.542
83				ND		0.542
84				ND		0.542
85	85/116/117			ND		1.63
86	86/87/97/108/119/125			ND		3.25
87	86/87/97/108/119/125			ND		3.25
88	88/91			ND		1.08
89				ND		0.542
90	90/101/113			ND		1.63

Conc = Concentration

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EMPC = Estimated Maximum Possible Concentration

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R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

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RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24353 P100324A 05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		1.08
92				ND		0.542
93	93/98/100/102			ND		2.17
94	00,00,100,102			ND		0.542
95				ND		0.542
96				ND		0.542
97	86/87/97/108/119/125			ND		3.25
98	93/98/100/102			ND		2.17
99	33,33,133,132			ND		0.542
100	93/98/100/102			ND		2.17
101	90/101/113			ND		1.63
102	93/98/100/102			ND		2.17
103	00/00/100/102			ND		0.542
104				ND		0.542
105				ND		0.542
106				ND		0.542
107	107/124			ND		1.08
108	86/87/97/108/119/125			ND		3.25
109	00/01/31/100/113/123			ND		0.542
110	110/115			ND		1.08
111	110/119			ND ND		0.542
112				ND		0.542
113	90/101/113			ND		1.63
114	90/101/113			ND		0.542
115	110/115			ND ND		1.08
116	85/116/117			ND ND		1.63
117	85/116/117			ND ND		1.63
118	03/110/117			ND ND		0.542
119	86/87/97/108/119/125			ND ND		3.25
120	80/87/97/108/119/123			ND ND		0.542
120				ND ND		0.542
122				ND ND		0.542
123				ND ND		0.542
123	107/124			ND ND		1.08
125	86/87/97/108/119/125			ND ND		3.25
125	80/87/97/108/119/123			ND ND		0.542
120				ND ND		0.542
127	128/166			ND ND		1.08
120	129/138/163			ND ND		1.63
130	123/130/103			ND ND		0.542
130				ND ND		0.542 0.542
131				ND ND		0.542 0.542
132				ND ND		0.542 0.542
133	134/143			ND ND		0.542 1.08
134				ND ND		
133	135/151			ND		1.08

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24353 P100324A 05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136				ND		0.542
137				ND		0.542
138	129/138/163			ND		1.63
139	139/140			ND		1.08
140	139/140			ND		1.08
141	100/110			ND		0.542
142				ND		0.542
143	134/143			ND		1.08
144				ND		0.542
145				ND		0.542
146				ND		0.542
147	147/149			ND		1.08
148	,			ND		0.542
149	147/149			ND		1.08
150	,			ND		0.542
151	135/151			ND		1.08
152				ND		0.542
153	153/168			ND		1.08
154				ND		0.542
155				ND		0.542
156	156/157			ND		1.08
157	156/157			ND		1.08
158				ND		0.542
159				ND		0.542
160				ND		0.542
161				ND		0.542
162				ND		0.542
163	129/138/163			ND		1.63
164				ND		0.542
165				ND		0.542
166	128/166			ND		1.08
167				ND		0.542
168	153/168			ND		1.08
169				ND		0.542
170				ND		0.542
171	171/173			ND		1.08
172				ND		0.542
173	171/173			ND		1.08
174				ND		0.542
175				ND		0.542
176				ND		0.542
177				ND		0.542
178				ND		0.542
179				ND		0.542
180	180/193			ND		1.08

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24353 P100324A 05

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
181				ND		0.542
182				ND		0.542
183	183/185			ND		1.08
184				ND		0.542
185	183/185			ND		1.08
186				ND		0.542
187				ND		0.542
188				ND		0.542
189				ND		0.542
190				ND		0.542
191				ND		0.542
192				ND		0.542
193	180/193			ND		1.08
194				ND		0.813
195				ND		0.813
196				ND		0.813
197	197/200			ND		1.63
198	198/199			ND		1.63
199	198/199			ND		1.63
200	197/200			ND		1.63
201				ND		0.813
202				ND		0.813
203				ND		0.813
204				ND		0.813
205				ND		0.813
206				ND		0.813
207				ND		0.813
208				ND		0.813
209				ND		0.813

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKHM BLANK-24353 P100324A_05

Congener Group	Concentration ng/L	
Total Monochloro Biphenyls	1.06	
Total Dichloro Biphenyls	ND	
Total Trichloro Biphenyls	ND	
Total Tetrachloro Biphenyls	ND	
Total Pentachloro Biphenyls	ND	
Total Hexachloro Biphenyls	ND	
Total Heptachloro Biphenyls	ND	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	1.06	

ND = Not Detected



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

Total Amount Extracted ICAL ID

CCal Filename(s)
Method Blank ID

LCS-24354 P100324A_13 912 mL

P100324A03 P100324A_02 BLANK-24353 Matrix Water Dilution NA

Extracted 03/18/2010 19:00 Analyzed 03/24/2010 21:45

Injected By CVS

	N	Native Analytes			Labeled Analytes		
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	0.835	83	2.0	0.755	38	
3	1.0	1.14	114	2.0	0.862	43	
4	1.0	1.06	106	2.0	1.14	57	
15	1.0	0.869	87	2.0	0.930	47	
19	1.0	0.935	94	2.0	1.34	67	
37	1.0	0.868	87	2.0	0.895	45	
54	1.0	0.837	84	2.0	0.992	50	
81	1.0	0.845	84	2.0	1.12	56	
77	1.0	0.793	79	2.0	1.22	61	
104	1.0	1.03	103	2.0	1.25	63	
105	1.0	0.926	93	2.0	1.13	56	
114	1.0	0.925	93	2.0	1.06	53	
118	1.0	0.948	95	2.0	1.02	51	
123	1.0	0.904	90	2.0	1.05	52	
126	1.0	0.849	85	2.0	1.19	60	
155	1.0	1.03	103	2.0	1.52	76	
156/157	2.0	1.92	96	4.0	2.16	54	
167	1.0	0.955	96	2.0	1.06	53	
169	1.0	0.858	86	2.0	1.12	56	
188	1.0	1.04	104	2.0	2.05	102	
189	1.0	0.963	96	2.0	1.34	67	
202	1.0	0.964	96	2.0	2.40	120	
205	1.0	0.918	92	2.0	1.76	88	
206	1.0	0.960	96	2.0	1.96	98	
208	1.0	0.958	96	2.0	2.13	107	
209	1.0	1.16	116	2.0	1.65	83	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

^{* =} See Discussion

ng = Nanograms I = Interference



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID CCal Filename(s)

Method Blank ID

LCSD-24355 P100325A_05

935 mL P100325A01 P100325A_02 BLANK-24353 Matrix Dilution Extracted Water NA

Extracted 03/18/2010 19:00 Analyzed 03/25/2010 05:19

Injected By CVS

	1	Native Analytes			Labeled Analytes		
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	0.859	86	2.0	0.926	46	
3	1.0	1.02	102	2.0	1.07	54	
4	1.0	1.04	104	2.0	1.43	71	
15	1.0	0.789	79	2.0	1.14	57	
19	1.0	0.863	86	2.0	1.70	85	
37	1.0	0.880	88	2.0	0.897	45	
54	1.0	0.850	85	2.0	1.10	55	
81	1.0	0.859	86	2.0	1.11	56	
77	1.0	0.813	81	2.0	1.17	58	
104	1.0	1.01	101	2.0	1.25	63	
105	1.0	0.893	89	2.0	1.08	54	
114	1.0	0.921	92	2.0	0.997	50	
118	1.0	0.954	95	2.0	0.997	50	
123	1.0	0.906	91	2.0	1.01	50	
126	1.0	0.830	83	2.0	1.09	54	
155	1.0	1.02	102	2.0	1.49	75	
156/157	2.0	1.84	92	4.0	2.08	52	
167	1.0	0.939	94	2.0	1.00	50	
169	1.0	0.882	88	2.0	1.04	52	
188	1.0	1.03	103	2.0	2.08	104	
189	1.0	0.923	92	2.0	1.29	65	
202	1.0	0.947	95	2.0	2.39	120	
205	1.0	0.892	89	2.0	1.74	87	
206	1.0	0.902	90	2.0	2.10	105	
208	1.0	0.936	94	2.0	2.12	106	
209	1.0	1.15	115	2.0	1.67	83	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference



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

Client Test America-Portland

 Spike 1 ID
 LCS-24354
 Spike 2 ID
 LCSD-24355

 Spike 1 Filename
 P100324A_13
 Spike 2 Filename
 P100325A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	83	86	3.6	
4-MoCB	3	114	102	11.1	
2,2'-DiCB	4	106	104	1.9	
4,4'-DiCB	15	87	79	9.6	
2,2',6-TrCB	19	94	86	8.9	
3,4,4'-TrCB	37	87	88	1.1	
2,2',6,6'-TeCB	54	84	85	1.2	
3,3',4,4'-TeCB	77	79	81	2.5	
3,4,4',5-TeCB	81	84	86	2.4	
2,2',4,6,6'-PeCB	104	103	101	2.0	
2,3,3',4,4'-PeCB	105	93	89	4.4	
2,3,4,4',5-PeCB	114	93	92	1.1	
2,3',4,4',5-PeCB	118	95	95	0.0	
2,3',4,4',5'-PeCB	123	90	91	1.1	
3,3',4,4',5-PeCB	126	85	83	2.4	
2,2',4,4',6,6'-HxCB	155	103	102	1.0	
(156/157)	156/157	96	92	4.3	
2,3',4,4',5,5'-HxCB	167	96	94	2.1	
3,3',4,4',5,5'-HxCB	169	86	88	2.3	
2,2',3,4',5,6,6'-HpCB	188	104	103	1.0	
2,3,3',4,4',5,5'-HpCB	189	96	92	4.3	
2,2',3,3',5,5',6,6'-OcCB	202	96	95	1.0	
2,3,3',4,4',5,5',6-OcCB	205	92	89	3.3	
2,2',3,3',4,4',5,5',6-NoCB	206	96	90	6.5	
2,2',3,3',4,5,5',6,6'-NoCB	208	96	94	2.1	
Decachlorobiphenyl	209	116	115	0.9	

%REC = Percent Recovered

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



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Howard Holmes Test America-Portland 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10125534

Sample Receipt Date: 04/01/2010

Client Project #: PTC0967

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

April 29, 2010

Nate Habte, Project Manager

(612) 607-6407

(612) 607-6444 (fax)

natnael.habte@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

April 29, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The recoveries of the isotopically-labeled PCB internal standards in the sample extract ranged from 44-73%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1668A. Since the quantification of the native congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits, demonstrating that the levels measured in the sample extract were not affected by laboratory background.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 84-115%, with relative percent differences of 0.0-11.3%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Certificate #	Authority	Certificate #
40770	Montana	92
MN00064	Nebraska	
AZ0014	Nevada	MN00064_2000
88-0680	New Jersey (NE	MN002
01155CA	New Mexico	MN00064
MN00064	New York (NEL	11647
PH-0256	North Carolina	27700
WD-15J	North Dakota	R-036
8TMS-Q	Ohio	4150
E87605	Ohio VAP	CL101
959	Oklahoma	D9922
09-019r	Oregon (ELAP)	MN200001-005
SLD	Oregon (OREL	MN200001-005
MN00064	Pennsylvania	68-00563
200012	Saipan	MP0003
	South Carolina	74003001
C-MN-01	Tennesee	2818
368	Tennessee	02818
E-10167	Texas	T104704192-08
90062	Utah (NELAP)	PAM
LA0900016	Virginia	00251
2007029	Washington	C755
322	West Virginia	9952C
9909	Wisconsin	999407970
027-053-137	Wyoming	8TMS-Q
MN00064		
	40770 MN00064 AZ0014 88-0680 01155CA MN00064 PH-0256 WD-15J 8TMS-Q E87605 959 09-019r SLD MN00064 200012 C-MN-01 368 E-10167 90062 LA0900016 2007029 322 9909 027-053-137	40770 Montana MN00064 Nebraska AZ0014 Nevada 88-0680 New Jersey (NE 01155CA New Mexico MN00064 New York (NEL PH-0256 North Carolina WD-15J North Dakota 8TMS-Q Ohio E87605 Ohio VAP 959 Oklahoma 09-019r Oregon (ELAP) SLD Oregon (OREL MN00064 Pennsylvania 200012 Saipan South Carolina C-MN-01 Tennessee Texas 90062 Utah (NELAP) LA0900016 Virginia 2007029 Washington 322 West Virginia 9009 Wisconsin 027-053-137 Wyoming

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

SUBCONTRACT ORDER **TestAmerica Portland**

PTC0967

101255

SENDING LABORATORY:

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008 Phone: (503) 906-9200

Fax: (503) 906-9210

Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone :(612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature:

Ice: Y / N

Standard TAT is requested unless specific due date is requested. => Due Date:

Analysis

Units

Expires

Comments

11 Initials:

Sample ID: PTC0967-01 (FO105367 - Water)

Sampled: 03/29/10 13:05

1668 Coplanar PCBs - SUB ug/l

09/25/10 13:05

**209 Congeners

Containers Supplied:

1L Amber - Unpres. (B)

3 of week TAT

ReleaseReport No.....10125534_1668Aime

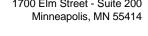
Received By

Sample Condition Upon Receipt ice Analvticai` Client Name: Project # Courier: Fed Ex UPS USPS Client Commercial Pace Other Custody Seal on Cooler/Box Present: yes no Seals Intact: ☐ yes ☐ no ☐ Bubble Bage ☐ None ☐ Other Packing Material: Bubble Wrap Temp Blank: Yes No Type of Ice: Well Blue Samples on ice, cooling process has begun 80344042 or 179425 **Thermometer Used** Date and initials of person examining contents: Biological Fissue is Frozen: Yes No **Cooler Temperature** contente: Comments: Temp should be above freezing to 6°C ☑Yes □No □N⁄A Chain of Custody Present: □Yes □No **□N/A** Chain of Custody Filled Out: ZYes DNo □N⁄A Chain of Custody Relinquished: 13. □Yes ☑No □N/A Sampler Name & Signature on COC: ∐Yes □No DINA Samples Arrived within Hold Time: ☐Yes ☑No AVIII. Short Hold Time Analysis (<72hr): □Yes ☑No **□N/A** Rush Turn Around Time Requested: ☐Yes ☐No □N/A Sufficient Volume: Zives DNo DINA 19. Correct Containers Used: □Yes □No -Pace Containers Used: Containers intact: ☐Yes ☐No DNA 40. EBNA Filtered volume received for Dissolved tests ☐Yes ☐No 11. DYes DNg DNA 12. Sample Labels match COC: -Includes date/time/ID/Analysis EONH All containers needing acid/base preservation have been H2SO4 NaOH □Yes □No EIN/A 13. checked. Noncompliance are noted in 13. Samp # All containers needing preservation are found to be in □Yes □No □N/A compliance with EPA recommendation. Lot # of added Initial when □Yes ☑No Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water) completed preservative ☐Yes ☐No EINA 14. Samples checked for dechlorination: ☐Yes ☐No CZŃVA Headspace in VOA Vials (>6mm): 15 []K/A Trip Blank Present: □Yes □No □Yes □No Trip Blank Custody Seals Present Pace Trip Blank Lot # (if purchased):

Client Notification/ Resolut Person Contacted:	\	Accil Date/Ti	ma: Ulalin	Field Data Required?	Y / N
Comments/ Resolution:	Dary	Date/TI			
	ZIAN	الم و الآل	e 4129	17 tine	

Project Manager Review:		VAY		Date:	8/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the **Result-Poalphinal Self-Miles**, Inc. F-L213Rev.00, 05Aug2009 1700 Eim Street SE, Suite 200, Minneapolis, MN 55414





Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- See Discussion

Appendix B

Sample Analysis Summary

Water



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

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Matrix

Client's Sample ID PTC0967-01 Lab Sample ID 10125534001 Filename P100426A_14

Injected By BAL Total Amount Extracted 939 mL

% Moisture NA Dilution NA Os/29/2010 13:05

 ICAL ID
 P100426A04
 Received
 04/01/2010
 13:35

 CCal Filename(s)
 P100426A_05
 Extracted
 04/22/2010
 19:15

 Method Blank ID
 BLANK-24697
 Analyzed
 04/27/2010
 03:58

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.479	2.77	2.0	0.887	44
13C-4-MoCB	3	9.259	2.84	2.0	0.900	45
13C-2,2'-DiCB	4	9.595	1.52	2.0	0.995	50
13C-4,4'-DiCB	15	17.251	1.56	2.0	0.928	46
13C-2,2',6-TrCB	19	13.728	1.09	2.0	1.01	51
13C-3,4,4'-TrCB	37	25.351	1.17	2.0	1.26	63
13C-2,2',6,6'-TeCB	54	17.570	0.84	2.0	0.949	47
13C-3,4,4',5-TeCB	81	32.545	0.79	2.0	1.29	65
13C-3,3',4,4'-TeCB	77	33.132	0.77	2.0	1.37	68
13C-2,2',4,6,6'-PeCB	104	23.992	1.62	2.0	1.23	61
13C-2,3,3',4,4'-PeCB	105	36.720	1.57	2.0	1.26	63
13C-2,3,4,4',5-PeCB	114	36.066	1.56	2.0	1.26	63
13C-2,3',4,4',5-PeCB	118	35.546	1.54	2.0	1.24	62
13C-2,3',4,4',5'-PeCB	123	35.211	1.65	2.0	1.26	63
13C-3,3',4,4',5-PeCB	126	39.839	1.55	2.0	1.29	64
13C-2,2',4,4',6,6'-HxCB	155	30.164	1.26	2.0	1.42	71
13C-HxCB (156/157)	156/157	42.875	1.29	4.0	2.48	62
13C-2,3',4,4 ['] ,5,5'-HxCB	167	41.734	1.22	2.0	1.24	62
13C-3,3',4,4',5,5'-HxCB	169	46.111	1.31	2.0	1.29	65
13C-2,2',3,4',5,6,6'-HpCB	188	36.083	1.01	2.0	1.44	72
13C-2,3,3',4,4',5,5'-HpCB	189	48.631	0.98	2.0	1.35	68
13C-2,2',3,3',5,5',6,6'-OcCB	202	41.466	0.85	2.0	1.39	69
13C-2,3,3',4,4',5,5',6-OcCB	205	51.239	0.88	2.0	1.42	71
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.006	0.73	2.0	1.45	73
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.157	0.77	2.0	1.45	73
13CDeCB	209	54.774	0.67	2.0	1.30	65
Cleanup Standards						
13C-2,4,4'-TrCB	28	20.890	0.99	2.0	1.63	81
13C-2,3,3',5,5'-PeCB	111	33.249	1.58	2.0	1.83	92
13C-2,2 ['] ,3,3 ['] ,5,5 ['] ,6-HpCB	178	39.152	1.03	2.0	1.85	92
Recovery Standards						
13C-2,5-DiCB	9	12.291	1.51	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	22.986	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.432	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	38.682	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	50.743	0.90	2.0	NA	NA
, ,-,-, , ,-,-	-			-		

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

Page 9 of 25

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTC0967-01 10125534001 P100426A_14

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.266
2				ND		0.266
3				ND		0.266
4				ND		0.266
5				ND		0.266
6				ND ND		0.266
7				ND ND		0.266
8				ND ND		0.266
9				ND ND		0.266
10				ND ND		0.266
11	40/40			ND		1.60
12	12/13			ND		0.532
13	12/13			ND		0.532
14				ND		0.266
15				ND		0.266
16				ND		0.266
17				ND		0.266
18	18/30			ND		0.532
19				ND		0.266
20	20/28			ND		0.532
21	21/33			ND		0.532
22				ND		0.266
23				ND		0.266
24				ND		0.266
25				ND		0.266
26	26/29			ND		0.532
27				ND		0.266
28	20/28			ND		0.532
29	26/29			ND		0.532
30	18/30			ND		0.532
31	. 5, 5 5			ND		0.266
32				ND		0.266
33	21/33			ND		0.532
34	21/00			ND		0.266
35				ND		0.266
36				ND		0.266
37				ND		0.266
38				ND		0.266
39				ND ND		0.266
40	40/41/71			ND ND		1.60
40 41	40/41/71			ND ND		1.60
42	40/41/71			ND ND		0.532
	40/70					0.532
43	43/73			ND		1.06
44	44/47/65			ND ND		1.60
45	45/51			ND		1.06
46	4.4.4.7.10.5			ND		0.532
47	44/47/65			ND		1.60
48				ND		0.532

Conc = Concentration

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R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTC0967-01 10125534001 P100426A_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.06
50	50/53			ND		1.06
51	45/51			ND		1.06
52				ND		0.532
53	50/53			ND		1.06
54				ND		0.532
55				ND		0.532
56				ND		0.532
57				ND		0.532
58				ND		0.532
59	59/62/75			ND		1.60
60	00,02,10			ND		0.532
61	61/70/74/76			ND		2.13
62	59/62/75			ND		1.60
63	00/02/10			ND		0.532
64				ND		0.532
65	44/47/65			ND		1.60
66	44/47/00			ND		0.532
67				ND		0.532
68				ND		0.532
69	49/69			ND ND		1.06
70	61/70/74/76			ND ND		2.13
70 71	40/41/71			ND ND		1.60
7 1 72	40/41/71			ND ND		0.532
72 73	40/70					
	43/73			ND ND		1.06
74 75	61/70/74/76			ND ND		2.13
75 70	59/62/75			ND		1.60
76	61/70/74/76			ND		2.13
77 70				ND		0.532
78				ND		0.532
79				ND		0.532
80				ND		0.532
81				ND		0.532
82				ND		0.532
83				ND		0.532
84				ND		0.532
85	85/116/117			ND		1.60
86	86/87/97/108/119/125			ND		3.19
87	86/87/97/108/119/125			ND		3.19
88	88/91			ND		1.06
89				ND		0.532
90	90/101/113			ND		1.60
91	88/91			ND		1.06
92				ND		0.532
93	93/98/100/102			ND		2.13
94				ND		0.532
95		27.279	1.56	1.11		0.532
96				ND		0.532

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R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

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RT = Retention Time I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTC0967-01 Lab Sample ID 10125534001 Filename P100426A_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.19
98	93/98/100/102			ND		2.13
99				ND		0.532
100	93/98/100/102			ND		2.13
101	90/101/113			ND		1.60
102	93/98/100/102			ND		2.13
103				ND		0.532
104				ND		0.532
105				ND		0.532
106				ND		0.532
107	107/124			ND		1.06
108	86/87/97/108/119/125			ND		3.19
109	00/01/01/100/110/120			ND		0.532
110	110/115			ND		1.06
111	110/110			ND		0.532
112				ND		0.532
113	90/101/113			ND		1.60
114	30/101/113			ND		0.532
115	110/115			ND		1.06
116	85/116/117			ND		1.60
117	85/116/117			ND ND		1.60
117	63/116/117			ND ND		0.532
119	86/87/97/108/119/125			ND ND		3.19
120	00/07/97/100/119/125			ND ND		0.532
120				ND ND		0.532
121						0.532
122				ND ND		0.532
123	107/124					
				ND		1.06
125	86/87/97/108/119/125			ND ND		3.19
126				ND		0.532
127	400/400			ND		0.532
128	128/166			ND		1.06
129	129/138/163	38.733	1.21	1.65		1.60
130				ND		0.532
131				ND 0.700		0.532
132		35.647	1.19	0.709		0.532
133	10.1/1.10			ND		0.532
134	134/143			ND		1.06
135	135/151			ND		1.06
136				ND		0.532
137				ND		0.532
138	129/138/163	38.733	1.21	(1.65)		1.60
139	139/140			ND		1.06
140	139/140			ND		1.06
141				ND		0.532
142				ND		0.532
143	134/143			ND		1.06
144				ND		0.532

Conc = Concentration

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EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTC0967-01 10125534001 P100426A_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.532
146				ND		0.532
147	147/149	34.373	1.22	1.82		1.06
148	1177110			ND		0.532
149	147/149	34.373	1.22	(1.82)		1.06
150	1177110			ND		0.532
151	135/151			ND		1.06
152	100,101			ND		0.532
153	153/168	37.492	1.23	1.14		1.06
154	100/100			ND		0.532
155				ND		0.532
156	156/157			ND		1.06
157	156/157			ND		1.06
158	100,101			ND		0.532
159				ND		0.532
160				ND		0.532
161				ND		0.532
162				ND		0.532
163	129/138/163	38.733	1.21	(1.65)		1.60
164				ND		0.532
165				ND		0.532
166	128/166			ND		1.06
167				ND		0.532
168	153/168	37.492	1.23	(1.14)		1.06
169				` NĎ		0.532
170		45.490	1.00	0.595		0.532
171	171/173			ND		1.06
172				ND		0.532
173	171/173			ND		1.06
174		40.929	0.98	0.747		0.532
175				ND		0.532
176				ND		0.532
177				ND		0.532
178				ND		0.532
179				ND		0.532
180	180/193	44.300	1.01	1.45		1.06
181				ND		0.532
182				ND		0.532
183	183/185			ND		1.06
184				ND		0.532
185	183/185			ND		1.06
186				ND		0.532
187		40.108	1.09	0.913		0.532
188				ND		0.532
189				ND		0.532
190				ND		0.532
191				ND		0.532
192				ND		0.532

Conc = Concentration

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EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses

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

ND = Not Detected

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTC0967-01 Lab Sample ID 10125534001 Filename P100426A_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	44.300	1.01	(1.45)		1.06
194				ND		0.799
195				ND		0.799
196				ND		0.799
197	197/200			ND		1.60
198	198/199			ND		1.60
199	198/199			ND		1.60
200	197/200			ND		1.60
201				ND		0.799
202				ND		0.799
203				ND		0.799
204				ND		0.799
205				ND		0.799
206				ND		0.799
207				ND		0.799
208				ND		0.799
209				ND		0.799

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTC0967-01 10125534001 P100426A_14

Congener Group	Concentration ng/L	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	ND	
Total Trichloro Biphenyls	ND	
Total Tetrachloro Biphenyls	ND	
Total Pentachloro Biphenyls	1.11	
Total Hexachloro Biphenyls	5.31	
Total Heptachloro Biphenyls	3.71	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	10.1	

ND = Not Detected



Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID **BLANK-24697** Filename P100424A_08 Injected By BAL

Matrix Water Total Amount Extracted 977 mL Extracted 04/22/2010 19:15 P100424A04 04/24/2010 20:36

ICAL ID Analyzed

CCal Filename(s)	P100424A	_03		Dilution	NA	
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.803	2.50	2.0	1.03	55 I
13C-4-MoCB	3	9.738	2.86	2.0	1.09	55
13C-2,2'-DiCB	4	10.049	1.50	2.0	1.17	59
13C-4,4'-DiCB	15	17.825	1.63	2.0	1.12	56
13C-2,2',6-TrCB	19	14.243	1.10	2.0	1.24	62
13C-3,4,4'-TrCB	37	25.977	1.09	2.0	1.31	65
13C-2,2',6,6'-TeCB	54	18.112	0.81	2.0	1.06	53
13C-3,4,4',5-TeCB	81	33.171	0.76	2.0	1.26	63
13C-3,3',4,4'-TeCB	77	33.758	0.79	2.0	1.32	66
13C-2,2',4,6,6'-PeCB	104	24.568	1.60	2.0	1.20	60
13C-2,3,3',4,4'-PeCB	105	37.313	1.45	2.0	1.25	63
13C-2,3,4,4',5-PeCB	114	36.659	1.52	2.0	1.25	63
13C-2,3',4,4',5-PeCB	118	36.156	1.58	2.0	1.23	61
13C-2,3',4,4',5'-PeCB	123	35.820	1.53	2.0	1.23	62
13C-3,3',4,4',5-PeCB	126	40.482	1.61	2.0	1.33	66
13C-2,2',4,4',6,6'-HxCB	155	30.756	1.24	2.0	1.43	71
13C-HxCB (156/157)	156/157	43.484	1.23	4.0	2.64	66
13C-2,3',4,4',5,5'-HxĆB	167	42.377	1.29	2.0	1.31	66
13C-3,3',4,4',5,5'-HxCB	169	46.753	1.22	2.0	1.39	<u>69</u>
13C-2,2',3,4',5,6,6'-HpCB	188	36.659	1.04	2.0	1.54	77
13C-2,3,3',4,4',5,5'-HpCB	189	49.283	1.02	2.0	1.46	73
13C-2,2',3,3',5,5',6,6'-OcCB	202	42.075	0.87	2.0	1.58	79
13C-2,3,3',4,4',5,5',6-OcCB	205	51.869	0.92	2.0	1.44	72
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.658	0.80	2.0	1.58	79
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.744	0.80	2.0	1.56	78
13CDeCB	209	55.555	0.70	2.0	1.42	71
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.466	1.11	2.0	1.56	78
13C-2,3,3',5,5'-PeCB	111	33.841	1.48	2.0	1.63	81
13C-2,2',3,3',5,5',6-HpCB	178	39.761	1.02	2.0	1.79	89
Recovery Standards						
13C-2,5-DiCB	9	12.817	1.50	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.545	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.007	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.308	1.24	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.395	0.92	2.0	NA	NA

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24697 P100424A 08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.256
2				ND		0.256
3				ND		0.256
4				ND		0.256
5				ND		0.256
6				ND		0.256
4 5 6 7				ND		0.256
8				ND		0.256
9				ND		0.256
10				ND		0.256
11				ND		1.53
12	12/13			ND		0.512
13	12/13			ND		0.512
14	12/10			ND		0.256
15				ND		0.256
16				ND		0.256
17				ND		0.256
18	18/30			ND		0.512
19	10/30			ND		0.256
20	20/28			ND		0.512
21	21/33			ND		0.512
22	21/33			ND		0.256
23				ND		0.256
24				ND		0.256
25				ND		0.256
26	26/29			ND		0.512
20 27	20/29			ND ND		0.256
28	20/28			ND ND		0.512
29	26/29			ND ND		0.512
30	18/30			ND ND		0.512
30 31	10/30			ND ND		0.312
32				ND ND		0.256
33	21/33			ND ND		0.512
33 24	21/33			ND ND		0.256
34 35				ND ND		0.256
36				ND ND		0.256
36 37				ND ND		0.256
37 38				ND ND		0.256
30 39				ND ND		0.256
39 40	40/41/71					0.256
4U 44	40/41/71 40/41/71			ND ND		1.53
41	40/41/71			ND ND		1.53
42	40/70			ND ND		0.512
43	43/73			ND ND		1.02
44	44/47/65			ND		1.53
45	45/51			ND		1.02

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ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24697 P100424A 08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.512
47	44/47/65			ND		1.53
48				ND		0.512
49	49/69			ND		1.02
50	50/53			ND		1.02
51	45/51			ND		1.02
52	16/61			ND		0.512
53	50/53			ND		1.02
54	33,33			ND		0.512
55				ND		0.512
56				ND		0.512
57				ND		0.512
58				ND		0.512
59	59/62/75			ND		1.53
60	00/02/10			ND		0.512
61	61/70/74/76			ND		2.05
62	59/62/75			ND		1.53
63	33/02/13			ND		0.512
64				ND		0.512
65	44/47/65			ND ND		1.53
66	44/47/03			ND ND		0.512
67				ND ND		0.512
68				ND ND		0.512
69	49/69			ND ND		1.02
70	49/09 61/70/74/76			ND ND		2.05
70 71	40/41/71			ND ND		1.53
71 72	40/41/71			ND ND		0.512
	40/70					
73	43/73			ND ND		1.02
74 75	61/70/74/76			ND		2.05
75 70	59/62/75			ND		1.53
76	61/70/74/76			ND		2.05
77				ND		0.512
78				ND		0.512
79				ND		0.512
80				ND		0.512
81				ND		0.512
82				ND		0.512
83				ND		0.512
84				ND		0.512
85	85/116/117			ND		1.53
86	86/87/97/108/119/125			ND		3.07
87	86/87/97/108/119/125			ND		3.07
88	88/91			ND		1.02
89				ND		0.512
90	90/101/113			ND		1.53

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24697 P100424A 08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		1.02
92				ND		0.512
93	93/98/100/102			ND		2.05
94	30,30,100,100			ND		0.512
95				ND		0.512
96				ND		0.512
97	86/87/97/108/119/125			ND		3.07
98	93/98/100/102			ND		2.05
99				ND		0.512
100	93/98/100/102			ND		2.05
101	90/101/113			ND		1.53
102	93/98/100/102			ND		2.05
103				ND		0.512
104				ND		0.512
105				ND		0.512
106				ND		0.512
107	107/124			ND		1.02
108	86/87/97/108/119/125			ND		3.07
109				ND		0.512
110	110/115			ND		1.02
111				ND		0.512
112				ND		0.512
113	90/101/113			ND		1.53
114				ND		0.512
115	110/115			ND		1.02
116	85/116/117			ND		1.53
117	85/116/117			ND		1.53
118				ND		0.512
119	86/87/97/108/119/125			ND		3.07
120				ND		0.512
121				ND		0.512
122				ND		0.512
123				ND		0.512
124	107/124			ND		1.02
125	86/87/97/108/119/125			ND		3.07
126				ND		0.512
127				ND		0.512
128	128/166			ND		1.02
129	129/138/163			ND		1.53
130				ND		0.512
131				ND		0.512
132				ND		0.512
133				ND		0.512
134	134/143			ND		1.02
135	135/151			ND		1.02

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B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

X = Outside QC Limits RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24697 P100424A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136				ND		0.512
137				ND		0.512
138	129/138/163			ND		1.53
139	139/140			ND		1.02
140	139/140			ND		1.02
141	100/110			ND		0.512
142				ND		0.512
143	134/143			ND		1.02
144				ND		0.512
145				ND		0.512
146				ND		0.512
147	147/149			ND		1.02
148	,			ND		0.512
149	147/149			ND		1.02
150	,			ND		0.512
151	135/151			ND		1.02
152				ND		0.512
153	153/168			ND		1.02
154	. 00, . 00			ND		0.512
155				ND		0.512
156	156/157			ND		1.02
157	156/157			ND		1.02
158				ND		0.512
159				ND		0.512
160				ND		0.512
161				ND		0.512
162				ND		0.512
163	129/138/163			ND		1.53
164	1=0, 100, 100			ND		0.512
165				ND		0.512
166	128/166			ND		1.02
167				ND		0.512
168	153/168			ND		1.02
169				ND		0.512
170				ND		0.512
171	171/173			ND		1.02
172	,			ND		0.512
173	171/173			ND		1.02
174	· · · · · · ·			ND		0.512
175				ND		0.512
176				ND		0.512
177				ND		0.512
178				ND		0.512
179				ND		0.512
180	180/193			ND		1.02

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24697 P100424A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
101						
181				ND ND		0.512
182	400/405			ND		0.512
183	183/185			ND		1.02
184	400/405			ND		0.512
185	183/185			ND		1.02
186				ND		0.512
187				ND		0.512
188				ND		0.512
189				ND		0.512
190				ND		0.512
191				ND		0.512
192				ND		0.512
193	180/193			ND		1.02
194				ND		0.767
195				ND		0.767
196				ND		0.767
197	197/200			ND		1.53
198	198/199			ND		1.53
199	198/199			ND		1.53
200	197/200			ND		1.53
201				ND		0.767
202				ND		0.767
203				ND		0.767
204				ND		0.767
205				ND		0.767
206				ND		0.767
207				ND		0.767
208				ND		0.767
209				ND		0.767

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKMF BLANK-24697 P100424A_08

Congener Group	Concentration ng/L	
Total Managhlara Binhanyla	ND	
Total Monochloro Biphenyls		
Total Dichloro Biphenyls	ND	
Total Trichloro Biphenyls	ND	
Total Tetrachloro Biphenyls	ND	
Total Pentachloro Biphenyls	ND	
Total Hexachloro Biphenyls	ND	
Total Heptachloro Biphenyls	ND	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	ND	

ND = Not Detected



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID CCal Filename(s) Method Blank ID LCS-24698 P100424A_05 999 mL

P100424A04 P100424A_03 BLANK-24697 Matrix Water Dilution NA

Extracted 04/22/2010 19:15 Analyzed 04/24/2010 17:34

Injected By BAL

	r	Native Analy	tes	Labeled Analytes			
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	0.836	84	2.0	1.30	65	
3	1.0	0.975	98	2.0	1.22	61	
4	1.0	0.962	96	2.0	1.40	70	
15	1.0	0.973	97	2.0	1.25	62	
19	1.0	0.920	92	2.0	1.44	72	
37	1.0	0.924	92	2.0	1.46	73	
54	1.0	0.991	99	2.0	1.22	61	
81	1.0	0.976	98	2.0	1.45	72	
77	1.0	1.01	101	2.0	1.47	73	
104	1.0	1.00	100	2.0	1.45	72	
105	1.0	1.02	102	2.0	1.45	73	
114	1.0	1.03	103	2.0	1.44	72	
118	1.0	1.08	108	2.0	1.37	69	
123	1.0	1.07	107	2.0	1.40	70	
126	1.0	0.893	89	2.0	1.56	78	
155	1.0	0.983	98	2.0	1.53	77	
156/157	2.0	2.12	106	4.0	2.69	67	
167	1.0	1.09	109	2.0	1.34	67	
169	1.0	0.989	99	2.0	1.50	75	
188	1.0	1.04	104	2.0	1.57	78	
189	1.0	1.07	107	2.0	1.43	71	
202	1.0	1.01	101	2.0	1.60	80	
205	1.0	1.04	104	2.0	1.57	78	
206	1.0	1.03	103	2.0	1.69	85	
208	1.0	1.02	102	2.0	1.58	79	
209	1.0	1.15	115	2.0	1.53	76	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

Total Amount Extracted ICAL ID

CCal Filename(s)
Method Blank ID

LCSD-24699 P100424A_06

975 mL P100424A04 P100424A_03 BLANK-24697 Matrix Water Dilution NA

Extracted 04/22/2010 19:15 Analyzed 04/24/2010 18:34

Injected By BAL

	N	Native Analy	tes	Lal	peled Analyt	es
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.871	87	2.0	1.17	58
3	1.0	0.940	94	2.0	1.18	59
4	1.0	1.02	102	2.0	1.32	66
15	1.0	1.09	109	2.0	1.16	58
19	1.0	1.02	102	2.0	1.27	63
37	1.0	1.03	103	2.0	1.33	67
54	1.0	1.02	102	2.0	1.15	58
81	1.0	0.974	97	2.0	1.44	72
77	1.0	0.982	98	2.0	1.47	73
104	1.0	0.999	100	2.0	1.42	71
105	1.0	1.00	100	2.0	1.37	69
114	1.0	1.04	104	2.0	1.38	69
118	1.0	1.04	104	2.0	1.33	67
123	1.0	0.993	99	2.0	1.32	66
126	1.0	0.970	97	2.0	1.43	71
155	1.0	0.993	99	2.0	1.62	81
156/157	2.0	2.09	104	4.0	2.65	66
167	1.0	1.05	105	2.0	1.39	70
169	1.0	1.00	100	2.0	1.44	72
188	1.0	1.02	102	2.0	1.66	83
189	1.0	1.10	110	2.0	1.47	74
202	1.0	1.01	101	2.0	1.67	84
205	1.0	0.981	98	2.0	1.59	80
206	1.0	1.01	101	2.0	1.67	84
208	1.0	1.01	101	2.0	1.58	79
209	1.0	1.14	114	2.0	1.51	76

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

^{* =} See Discussion ng = Nanograms

I = Interference



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

Client Test America-Portland

 Spike 1 ID
 LCS-24698
 Spike 2 ID
 LCSD-24699

 Spike 1 Filename
 P100424A_05
 Spike 2 Filename
 P100424A_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	84	87	3.5	
4-MoCB	3	98	94	4.2	
2,2'-DiCB	4	96	102	6.1	
4,4'-DiCB	15	97	109	11.7	
2,2',6-TrCB	19	92	102	10.3	
3,4,4'-TrCB	37	92	103	11.3	
2,2',6,6'-TeCB	54	99	102	3.0	
3,3',4,4'-TeCB	77	101	98	3.0	
3,4,4',5-TeCB	81	98	97	1.0	
2,2',4,6,6'-PeCB	104	100	100	0.0	
2,3,3',4,4'-PeCB	105	102	100	2.0	
2,3,4,4',5-PeCB	114	103	104	1.0	
2,3',4,4',5-PeCB	118	108	104	3.8	
2,3',4,4',5'-PeCB	123	107	99	7.8	
3,3',4,4',5-PeCB	126	89	97	8.6	
2,2',4,4',6,6'-HxCB	155	98	99	1.0	
(156/157)	156/157	106	104	1.9	
2,3',4,4',5,5'-HxCB	167	109	105	3.7	
3,3',4,4',5,5'-HxCB	169	99	100	1.0	
2,2',3,4',5,6,6'-HpCB	188	104	102	1.9	
2,3,3',4,4',5,5'-HpCB	189	107	110	2.8	
2,2',3,3',5,5',6,6'-OcCB	202	101	101	0.0	
2,3,3',4,4',5,5',6-OcCB	205	104	98	5.9	
2,2',3,3',4,4',5,5',6-NoCB	206	103	101	2.0	
2,2',3,3',4,5,5',6,6'-NoCB	208	102	101	1.0	
Decachlorobiphenyl	209	115	114	0.9	

%REC = Percent Recovered

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



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Howard Holmes Test America-Portland 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10127619

Sample Receipt Date: 04/29/2010

Client Project #: PTD0835

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

June 02, 2010

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

June 2, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The recoveries of the isotopically-labeled PCB internal standards in the sample extract ranged from 8-118%. With eleven exceptions, all of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1668A. Since the quantification of the native congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits, demonstrating that levels measured in the sample extract would not be affected by laboratory background.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 91-121%, with relative percent differences of 0.0-5.5%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Certificate #	Authority	Certificate #
40770	Montana	92
MN00064	Nebraska	
AZ0014	Nevada	MN00064_2000
88-0680	New Jersey (NE	MN002
01155CA	New Mexico	MN00064
MN00064	New York (NEL	11647
PH-0256	North Carolina	27700
WD-15J	North Dakota	R-036
8TMS-Q	Ohio	4150
E87605	Ohio VAP	CL101
959	Oklahoma	D9922
09-019r	Oregon (ELAP)	MN200001-005
SLD	Oregon (OREL	MN200001-005
MN00064	Pennsylvania	68-00563
200012	Saipan	MP0003
	South Carolina	74003001
C-MN-01	Tennesee	2818
368	Tennessee	02818
E-10167	Texas	T104704192-08
90062	Utah (NELAP)	PAM
LA0900016	Virginia	00251
2007029	Washington	C755
322	West Virginia	9952C
9909	Wisconsin	999407970
027-053-137	Wyoming	8TMS-Q
MN00064		
	40770 MN00064 AZ0014 88-0680 01155CA MN00064 PH-0256 WD-15J 8TMS-Q E87605 959 09-019r SLD MN00064 200012 C-MN-01 368 E-10167 90062 LA0900016 2007029 322 9909 027-053-137	40770 Montana MN00064 Nebraska AZ0014 Nevada 88-0680 New Jersey (NE 01155CA New Mexico MN00064 New York (NEL PH-0256 North Carolina WD-15J North Dakota 8TMS-Q Ohio E87605 Ohio VAP 959 Oklahoma 09-019r Oregon (ELAP) SLD Oregon (OREL MN00064 Pennsylvania 200012 Saipan South Carolina C-MN-01 Tennessee Texas 90062 Utah (NELAP) LA0900016 Virginia 2007029 Washington 322 West Virginia 9009 Wisconsin 027-053-137 Wyoming

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER TestAmerica Portland

PTD0835

1131

10127619

SENDING LABORATORY:

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008

Phone: (503) 906-9200 Fax: (503) 906-9210

Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone :(612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature:

Ice: Y / N

Standard TAT is requested unless specific due date is requested. => Due Date: 5/25/10 Initials:

Analysis

Units

Expires

Comments

Sample ID: PTD0835-01 (FO 105476 - Water)

Sampled: 04/27/10 10:22

(1)i

1668 Coplanar PCBs - SUB ug/l

10/24/10 10:22

209 Congeners to Pace

Containers Supplied:

1L Amber - Unpres. (B)

Julia 4/28/10
pleased By Date/Time

Received By

Date/Time_

901

Date/Time age 1 of

42910 0958

Received By

Release Report No....10127619_1668 Ame

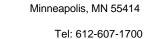


Client Name: Testamping Portland Project # 10127619

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Clie Tracking #: 4\707525358>	nt 🛮 Con	nmercia	Pace Other	
Custody Seal on Cooler/Box Present: yes	☐ no	Seal	s intact:	□ no
Packing Material: Bubble Wrap Bubble	Bage 🔲	None	Other	Temp Blank: Yes No
Thermometer Used 80944042 or 19425	Type of lo	e; We	Blue None	Samples on ice, cooling process has begun
Cooler Temperature Temp should be above freezing to 6°C	Biologica	il Tissu	e is Frozen: Yes No Comments:	Date and initials of person examining contents:
Chain of Custody Present:	ZYes DN	o □N/	1.	
Chain of Custody Filled Out:	EYes ON	o DNA	2.	
Chain of Custody Relinquished:	□Yes □N	2 []N/	3.	
Sampler Name & Signature on COC:	☐Yes ☐N	0 []N/A	4.	
Samples Arrived within Hold Time:	ZIYes DN	o 🗆 N/A	5.	
Short Hold Time Analysis (<72hr):	□Yes ☑N	DNA	6.	
Rush Turn Around Time Requested:	UYes EN	□ □N/A	7.	
Sufficient Volume:	ZOYes □No	DIN/A	8.	
Correct Containers Used:	QY9S QNO	DN/A	9.	
-Pace Containers Used:	LIYES LINE	N/A		
Containers Intact:	ØYes □No	□N/A	10.	
Filtered volume received for Dissolved tests	□Yes □No	ZINA	11.	
Sample Labels match COC:	ØYes □No		1	
-includes date/time/ID/Analysis Matrix:	WT			
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	□Yes □No	DINA	13. □ Hh Samp#	103 H2SO4 NaOH HCI
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes □No	EINA		
Exceptions: VOA,Coliform, TOC, Oil and Grease, Wi-DRO (water	□Yes ☑No		Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	□Yes □No	ZINA	14.	
Headspace in VOA Vials (>6mm):	☐Yes ☐No	DINA	15.	
Trip Blank Present:	□Yes □No	[ZN/A	16.	
Trip Blank Custody Seals Present	□Yes □No	DIMA		
Pace Trip Blank Lot # (if purchased):	<u></u>			
Client Notification/ Resolution: Person Contacted: Tules N	10((130)	^ Deta/i	imo: SKIX	Field Data Required? Y / N
Comments/ Resolution:	W(1)3	_ Dates		<u> </u>
705-82	-5	' مد	TAT	
	<i>J</i> - /			
		······································		
Project Manager Review:	(`	WH	1	Date: 5/5//

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the Real Abelytical SEMMS, Inc. F-L213Rev.00, 05Aug2009

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414



Fax: 612-607-6444



Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

Appendix B

Sample Analysis Summary



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID Lab Sample ID Filename PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

Injected By

Total Amount Extracted % Moisture

Dry Weight Extracted ICAL ID

CCal Filename(s)
Method Blank ID

SMT
946 mL Matrix Water
NA Dilution NA

NA Collected 04/27/2010 10:22 P100519B02 Received 04/29/2010 09:58 P100519B_01 Extracted 05/17/2010 14:00 BLANK-24961 Analyzed 05/20/2010 00:27

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.455	2.83	2.0	0.163	8 R
13C-4-MoCB	3	9.187	3.04	2.0	0.351	18 R
13C-2,2'-DiCB	4	9.498	1.58	2.0	0.579	29
13C-4,4'-DiCB	15	17.094	1.59	2.0	0.897	45
13C-2,2',6-TrCB	19	13.583	1.03	2.0	0.864	43
13C-3,4,4'-TrCB	37	25.150	1.09	2.0	1.13	57
13C-2,2',6,6'-TeCB	54	17.403	0.80	2.0	0.817	41
13C-3,4,4',5-TeCB	81	32.310	0.80	2.0	1.34	67
13C-3,3',4,4'-TeCB	77	32.880	0.78	2.0	1.45	73
13C-2,2',4,6,6'-PeCB	104	23.792	1.61	2.0	1.30	65
13C-2,3,3',4,4'-PeCB	105	36.452	1.58	2.0	1.30	65
13C-2,3,4,4',5-PeCB	114	35.815	1.57	2.0	1.24	62
13C-2,3',4,4',5-PeCB	118	35.295	1.57	2.0	1.30	65
13C-2,3',4,4',5'-PeCB	123	34.960	1.60	2.0	1.33	67
13C-3,3',4,4',5-PeCB	126	39.588	1.59	2.0	1.29	65
13C-2,2',4,4',6,6'-HxCB	155	29.946	1.26	2.0	1.52	76
13C-HxCB (156/157)	156/157	42.590	1.28	4.0	2.42	61
13C-2,3',4,4',5,5'-HxĆB	167	41.466	1.29	2.0	1.27	64
13C-3,3',4,4',5,5'-HxCB	169	45.826	1.26	2.0	1.08	54
13C-2,2',3,4',5,6,6'-HpCB	188	35.815	1.06	2.0	2.33	117
13C-2,3,3',4,4',5,5'-HpCB	189	48.336	1.05	2.0	1.58	79
13C-2,2',3,3',5,5',6,6'-OcCB	202	41.198	0.91	2.0	2.36	118
13C-2,3,3',4,4',5,5',6-OcCB	205	50.923	0.89	2.0	1.51	76
13C-2,2',3,3',4,4',5,5',6-NoCB	206	52.669	0.77	2.0	1.77	88
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	47.841	0.81	2.0	1.86	93
13CDeCB	209	54.415	0.71	2.0	1.73	87
Cleanup Standards						
13C-2,4,4'-TrCB	28	20.689	1.06	2.0	1.27	64
13C-2,3,3',5,5'-PeCB	111	32.998	1.59	2.0	1.99	99
13C-2,2',3,3',5,5',6-HpCB	178	38.900	1.05	2.0	2.17	108
Recovery Standards						
13C-2,5-DiCB	9	12.182	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	22.785	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.197	1.61	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	38.431	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	50.449	0.91	2.0	NA	NA

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

		_				
IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.264
2				ND		0.264
3				ND		0.264
4				ND		0.264
5				ND		0.264
5 6				ND		0.264
7				ND		0.264
8				ND		0.264
9				ND		0.264
10				ND		0.264
11				ND		1.59
12	12/13			ND		0.529
13	12/13			ND		0.529
14	12/13			ND		0.264
15				ND		0.264
16				ND		0.264
17				ND		0.264
18	18/30			ND ND		0.529
19	16/30			ND ND		0.264
20	20/28			ND ND		0.529
20 21				ND ND		0.529
21	21/33					0.529
22				ND		0.264
23				ND		0.264
24				ND		0.264
25	00/00			ND		0.264
26	26/29			ND		0.529
27				ND		0.264
28	20/28			ND		0.529
29	26/29			ND		0.529
30	18/30			ND		0.529
31				ND		0.264
32				ND		0.264
33	21/33			ND		0.529
34				ND		0.264
35				ND		0.264
36				ND		0.264
37				ND		0.264
38				ND		0.264
39				ND		0.264
40	40/41/71			ND		1.59
41	40/41/71			ND		1.59
42				ND		0.529
43	43/73			ND		1.06
44	44/47/65			ND		1.59
45	45/51			ND		1.06
46				ND		0.529
47	44/47/65			ND		1.59
48				ND		0.529

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.06
50	50/53			ND		1.06
51	45/51			ND		1.06
52	10/01			ND		0.529
53	50/53			ND		1.06
54	00/00			ND		0.529
55				ND		0.529
56				ND		0.529
57				ND		0.529
58				ND		0.529
59	59/62/75			ND ND		1.59
	59/62/75					
60	04/70/74/70			ND		0.529
61	61/70/74/76			ND		2.11
62	59/62/75			ND		1.59
63				ND		0.529
64				ND		0.529
65	44/47/65			ND		1.59
66				ND		0.529
67				ND		0.529
68				ND		0.529
69	49/69			ND		1.06
70	61/70/74/76			ND		2.11
71	40/41/71			ND		1.59
72				ND		0.529
73	43/73			ND		1.06
74	61/70/74/76			ND		2.11
75	59/62/75			ND		1.59
76	61/70/74/76			ND		2.11
77	01/10/11/10			ND		0.529
78				ND		0.529
79				ND		0.529
80				ND		0.529
81				ND		0.529
82				ND ND		0.529
83				ND ND		0.529
						0.529
84	05/446/447			ND		
85	85/116/117			ND		1.59
86	86/87/97/108/119/125			ND		3.17
87	86/87/97/108/119/125			ND		3.17
88	88/91			ND		1.06
89	00/404/440			ND		0.529
90	90/101/113			ND		1.59
91	88/91			ND		1.06
92				ND		0.529
93	93/98/100/102			ND		2.11
94				ND		0.529
95				ND		0.529
96				ND		0.529

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

$$\begin{split} X &= \text{Outside QC Limits} \\ RT &= \text{Retention Time} \\ I &= \text{Interference} \end{split}$$

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.17
98	93/98/100/102			ND		2.11
99				ND		0.529
100	93/98/100/102			ND		2.11
101	90/101/113			ND		1.59
102	93/98/100/102			ND		2.11
103				ND		0.529
104				ND		0.529
105				ND		0.529
106				ND		0.529
107	107/124			ND		1.06
108	86/87/97/108/119/125			ND		3.17
109				ND		0.529
110	110/115			ND		1.06
111				ND		0.529
112				ND		0.529
113	90/101/113			ND		1.59
114				ND		0.529
115	110/115			ND		1.06
116	85/116/117			ND		1.59
117	85/116/117			ND		1.59
118				ND		0.529
119	86/87/97/108/119/125			ND		3.17
120				ND		0.529
121				ND		0.529
122				ND		0.529
123				ND		0.529
124	107/124			ND		1.06
125	86/87/97/108/119/125			ND		3.17
126				ND		0.529
127				ND		0.529
128	128/166			ND		1.06
129	129/138/163			ND		1.59
130				ND		0.529
131				ND		0.529
132				ND		0.529
133				ND		0.529
134	134/143			ND		1.06
135	135/151			ND		1.06
136				ND		0.529
137				ND		0.529
138	129/138/163			ND		1.59
139	139/140			ND		1.06
140	139/140			ND		1.06
141				ND		0.529
142				ND		0.529
143	134/143			ND		1.06
144				ND		0.529

Conc = Concentration

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

B = Less than 10 times higher than method blank level R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl **Sample Analysis Results**

Client Sample ID Lab Sample ID Filename

PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.529
146				ND		0.529
147	147/149			ND		1.06
148	1177110			ND		0.529
149	147/149			ND		1.06
150	1177110			ND		0.529
151	135/151			ND		1.06
152	100, 101			ND		0.529
153	153/168			ND		1.06
154	100/100			ND		0.529
155				ND		0.529
156	156/157			ND		1.06
157	156/157			ND		1.06
158	190/197			ND		0.529
159				ND		0.529
160				ND		0.529
161				ND		0.529
162				ND		0.529
163	129/138/163			ND		1.59
164	129/130/103			ND		0.529
165				ND		0.529
166	128/166			ND		1.06
167	120/100			ND		0.529
168	153/168			ND		1.06
169	155/166			ND ND		0.529
170				ND ND		0.529
170	171/173			ND ND		1.06
172	17 1/173			ND ND		0.529
172	171/173			ND ND		1.06
173	17 1/173			ND ND		0.529
175				ND ND		0.529
175				ND ND		0.529
176				ND ND		0.529
177				ND ND		0.529
178				ND ND		0.529
180	180/193			ND ND		1.06
181	160/193			ND ND		0.529
182				ND ND		0.529
183	102/105			ND ND		1.06
184	183/185			ND ND		0.529
	183/185			ND ND		
185 186	103/103			ND ND		1.06 0.529
				ND ND		0.529
187				ND		0.529
188				ND ND		0.529
189				ND ND		0.529
190				ND ND		0.529
191				ND ND		0.529
192				ND		0.529

Conc = Concentration

EML =Method Specified Reporting Limit (1668A) EMPC = Estimated Maximum Possible Concentration A = Limit of Detection based on signal to noise B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses

RT = Retention Time I = Interference ng's = Nanograms

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.06
194				ND		0.793
195				ND		0.793
196				ND		0.793
197	197/200			ND		1.59
198	198/199			ND		1.59
199	198/199			ND		1.59
200	197/200			ND		1.59
201				ND		0.793
202				ND		0.793
203				ND		0.793
204				ND		0.793
205				ND		0.793
206				ND		0.793
207				ND		0.793
208				ND		0.793
209				ND		0.793

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTD0835-01 (FO 105476-Water) 10127619001 P100519B_09

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

ND = Not Detected

Water

Matrix



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

Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID BLANK-24961 Filename P100518B_07 Injected By SMT

Total Amount Extracted 976 mL Extracted 05/17/2010 14:00 **ICAL ID** P100518B03 Analyzed 05/18/2010 22:35

CCal Filename(s) P100518B 02 Dilution NA

CCai Filename(s)	P100518B	_02		Dilution	NA	
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes 13C-2-MoCB 13C-4-MoCB 13C-4,4'-DiCB 13C-2,2'-DiCB 13C-2,2',6-TrCB 13C-2,2',6,6'-TeCB 13C-2,2',6,6'-TeCB 13C-3,3',4,4'-TeCB 13C-2,2',4,6,6'-PeCB 13C-2,3',4,4'-TeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HxCB 13C-2,2',3,4',5,6,6'-HpCB 13C-2,2',3,3',4,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB	1 3 4 15 19 37 54 81 77 104 105 114 118 123 126 155 156/157 167 169 188 189 202 205 206 208 209	6.419 9.163 9.463 17.059 13.560 25.104 17.358 32.280 32.850 23.763 36.405 35.768 35.768 35.265 34.929 39.540 29.916 42.541 41.435 45.777 35.784 48.294 41.167 50.881 52.626 47.799 54.372	2.68 3.39 1.61 1.61 1.04 1.08 0.78 0.80 0.80 1.61 1.57 1.55 1.58 1.57 1.56 1.30 1.29 1.28 1.25 1.07 1.04 0.91 0.90 0.78	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	0.179 0.363 0.618 1.09 0.989 1.27 0.988 1.49 1.56 1.46 1.38 1.31 1.37 1.40 1.35 1.67 2.67 1.39 1.25 2.29 1.69 2.24 1.60 1.78 1.90 1.72	9 R 18 R 31 55 49 63 49 74 78 73 69 66 69 70 67 84 67 70 62 115 85 112 80 89 95 86
Cleanup Standards 13C-2,4,4'-TrCB 13C-2,3,3',5,5'-PeCB 13C-2,2',3,3',5,5',6-HpCB	28 111 178	20.661 32.968 38.870	1.07 1.60 1.04	2.0 2.0 2.0	1.41 1.85 2.11	71 93 106
Recovery Standards 13C-2,5-DiCB 13C-2,2',5,5'-TeCB 13C-2,2',4,5,5'-PeCB 13C-2,2',3,4,4',5'-HxCB 13C-2,2',3,3',4,4',5,5'-OcCB	9 52 101 138 194	12.147 22.757 30.151 38.383 50.406	1.60 0.78 1.60 1.28 0.91	2.0 2.0 2.0 2.0 2.0	NA NA NA NA	NA NA NA NA NA

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24961 P100518B 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.256
2				ND		0.256
3				ND		0.256
4				ND ND		0.256
4 5 6 7				ND		0.256
6				ND		0.256
7				ND ND		0.256
8				ND ND		0.256
9				ND		0.256
10				ND		0.256
11				ND		1.54
12	12/13			ND ND		0.512
13	12/13			ND ND		0.512
14	12/13			ND ND		0.256
15				ND ND		0.256
16				ND ND		0.256
17						0.256
	40/00			ND		
18	18/30			ND		0.512
19	00/00			ND		0.256
20	20/28			ND		0.512
21	21/33			ND ND		0.512
22				ND		0.256
23				ND		0.256
24				ND		0.256
25	00/00			ND		0.256
26	26/29			ND		0.512
27				ND		0.256
28	20/28			ND		0.512
29	26/29			ND		0.512
30	18/30			ND		0.512
31				ND		0.256
32				ND		0.256
33	21/33			ND		0.512
34 35				ND		0.256
35				ND		0.256
36				ND		0.256
37				ND		0.256
38				ND		0.256
39				ND		0.256
40	40/41/71			ND		1.54
41	40/41/71			ND		1.54
42				ND		0.512
43	43/73			ND		1.02
44	44/47/65			ND		1.54
45	45/51			ND		1.02

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ng/L = Nanograms per liter

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24961 P100518B 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.512
47	44/47/65			ND		1.54
48	,, 66			ND		0.512
49	49/69			ND		1.02
50	50/53			ND		1.02
51	45/51			ND		1.02
52	16,61			ND		0.512
53	50/53			ND		1.02
54	00/00			ND		0.512
55				ND		0.512
56				ND		0.512
57				ND		0.512
58				ND		0.512
59	59/62/75			ND		1.54
60	00/02/10			ND		0.512
61	61/70/74/76			ND		2.05
62	59/62/75			ND		1.54
63	33/02/13			ND		0.512
64				ND		0.512
65	44/47/65			ND		1.54
66	44/47/03			ND ND		0.512
67				ND ND		0.512
68				ND ND		0.512
69	49/69			ND ND		1.02
70	61/70/74/76			ND ND		2.05
70 71	40/41/71			ND ND		2.05 1.54
72	40/41/71			ND ND		0.512
72 73	43/73			ND ND		1.02
73 74	43/73 61/70/74/76			ND ND		2.05
75 76	59/62/75 64/70/74/76			ND		1.54
76 77	61/70/74/76			ND ND		2.05
77 78				ND ND		0.512 0.512
79 90				ND ND		0.512
80				ND		0.512
81				ND		0.512
82				ND		0.512
83				ND		0.512
84	05/446/447			ND ND		0.512
85	85/116/117			ND		1.54
86	86/87/97/108/119/125			ND		3.07
87	86/87/97/108/119/125			ND		3.07
88	88/91			ND		1.02
89	00/101/110			ND		0.512
90	90/101/113			ND		1.54

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24961 P100518B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		1.02
92				ND		0.512
93	93/98/100/102			ND		2.05
94	00,00,100,100			ND		0.512
95				ND		0.512
96				ND		0.512
97	86/87/97/108/119/125			ND		3.07
98	93/98/100/102			ND		2.05
99	00,00,100,100			ND		0.512
100	93/98/100/102			ND		2.05
101	90/101/113			ND		1.54
102	93/98/100/102			ND		2.05
103	00,00,100,102			ND		0.512
104				ND		0.512
105				ND		0.512
106				ND		0.512
107	107/124			ND		1.02
108	86/87/97/108/119/125			ND		3.07
109	00/01/31/100/113/123			ND ND		0.512
110	110/115			ND ND		1.02
111	110/113			ND ND		0.512
112				ND ND		0.512
113	90/101/113			ND ND		1.54
114	90/101/113			ND ND		0.512
115	110/115			ND ND		1.02
116	85/116/117			ND ND		1.54
117	85/116/117			ND ND		1.54
118	05/110/117			ND ND		0.512
119	86/87/97/108/119/125			ND ND		3.07
	00/07/97/100/119/123					0.512
120 121				ND ND		0.512 0.512
121				ND ND		0.512
122				ND ND		0.512
123	107/124			ND ND		1.02
124	86/87/97/108/119/125			ND ND		3.07
125	00/07/97/100/119/125			ND ND		3.07 0.512
				ND ND		
127	400/400					0.512
128	128/166			ND		1.02
129	129/138/163			ND		1.54
130				ND		0.512
131				ND		0.512
132				ND		0.512
133	404/440			ND		0.512
134	134/143			ND		1.02
135	135/151			ND		1.02

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ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion X = Outside QC Limits

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Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID Filename

BLANK-24961 P100518B 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136				ND		0.512
137				ND		0.512
138	129/138/163			ND		1.54
139	139/140			ND		1.02
140	139/140			ND		1.02
141				ND		0.512
142				ND		0.512
143	134/143			ND		1.02
144				ND		0.512
145				ND		0.512
146				ND		0.512
147	147/149			ND		1.02
148				ND		0.512
149	147/149			ND		1.02
150				ND		0.512
151	135/151			ND		1.02
152				ND		0.512
153	153/168			ND		1.02
154				ND		0.512
155				ND		0.512
156	156/157			ND		1.02
157	156/157			ND		1.02
158				ND		0.512
159				ND		0.512
160				ND		0.512
161				ND		0.512
162				ND		0.512
163	129/138/163			ND		1.54
164				ND		0.512
165				ND		0.512
166	128/166			ND		1.02
167				ND		0.512
168	153/168			ND		1.02
169				ND		0.512
170				ND		0.512
171	171/173			ND		1.02
172				ND		0.512
173	171/173			ND		1.02
174				ND		0.512
175				ND		0.512
176				ND		0.512
177				ND		0.512
178				ND		0.512
179				ND		0.512
180	180/193			ND		1.02

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-24961 P100518B_07

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
181				ND		0.512
182				ND		0.512
183	183/185			ND		1.02
184				ND		0.512
185	183/185			ND		1.02
186				ND		0.512
187				ND		0.512
188				ND		0.512
189				ND		0.512
190				ND		0.512
191				ND		0.512
192				ND		0.512
193	180/193			ND		1.02
194				ND		0.769
195				ND		0.769
196				ND		0.769
197	197/200			ND		1.54
198	198/199			ND		1.54
199	198/199			ND		1.54
200	197/200			ND		1.54
201				ND		0.769
202				ND		0.769
203				ND		0.769
204				ND		0.769
205				ND		0.769
206				ND		0.769
207				ND		0.769
208				ND		0.769
209				ND		0.769

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKQE BLANK-24961 P100518B_07

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

ND = Not Detected



Method 1668A Polychlorobiphenyls **Laboratory Control Spike Analysis Results**

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID

LCS-24962 P100518B_04

952 mL P100518B03 P100518B_02 BLANK-24961 Matrix Water Dilution NA

Extracted 05/17/2010 14:00 Analyzed 05/18/2010 19:32

Injected By SMT

	1	Native Analy	tes	Lal	peled Analyt	es	
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ry
1	1.0	0.922	92	2.0	0.186	9	R
3	1.0	0.960	96	2.0	0.360	18	R
4	1.0	0.932	93	2.0	0.570	29	R
15	1.0	1.02	102	2.0	0.988	49	
19	1.0	0.949	95	2.0	0.864	43	
37	1.0	1.03	103	2.0	1.20	60	
54	1.0	0.948	95	2.0	0.836	42	
81	1.0	1.03	103	2.0	1.46	73	
77	1.0	1.02	102	2.0	1.55	77	
104	1.0	0.933	93	2.0	1.40	70	
105	1.0	1.06	106	2.0	1.44	72	
114	1.0	1.12	112	2.0	1.37	68	
118	1.0	1.13	113	2.0	1.41	70	
123	1.0	1.06	106	2.0	1.44	72	
126	1.0	1.01	101	2.0	1.45	73	
155	1.0	0.958	96	2.0	1.62	81	
156/157	2.0	2.41	121	4.0	2.77	69	
167	1.0	1.15	115	2.0	1.42	71	
169	1.0	1.13	113	2.0	1.35	68	
188	1.0	0.963	96	2.0	2.15	107	
189	1.0	1.02	102	2.0	1.73	86	
202	1.0	0.959	96	2.0	2.10	105	
205	1.0	0.986	99	2.0	1.60	80	
206	1.0	0.934	93	2.0	1.79	90	
208	1.0	0.979	98	2.0	1.84	92	
209	1.0	1.10	110	2.0	1.71	85	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference





Method 1668A Polychlorobiphenyls **Laboratory Control Spike Analysis Results**

Lab Sample ID Filename

Total Amount Extracted

ICAL ID CCal Filename(s)

Method Blank ID

LCSD-24963 P100518B_05

954 mL

P100518B03 P100518B_02 BLANK-24961 Matrix Water Dilution NA

Extracted 05/17/2010 14:00 Analyzed 05/18/2010 20:33

Injected By SMT

	1	Native Analy	tes	La	Labeled Analytes			
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ery	
1	1.0	0.938	94	2.0	0.0525	3	 R	
3	1.0	0.920	92	2.0	0.183	9	R	
4	1.0	0.928	93	2.0	0.332	17	R	
15	1.0	1.04	104	2.0	0.824	41		
19	1.0	0.911	91	2.0	0.701	35		
37	1.0	1.02	102	2.0	1.12	56		
54	1.0	0.936	94	2.0	0.723	36		
81	1.0	1.05	105	2.0	1.44	72		
77	1.0	1.01	101	2.0	1.52	76		
104	1.0	0.945	94	2.0	1.31	65		
105	1.0	1.04	104	2.0	1.42	71		
114	1.0	1.06	106	2.0	1.36	68		
118	1.0	1.09	109	2.0	1.39	70		
123	1.0	1.03	103	2.0	1.42	71		
126	1.0	1.02	102	2.0	1.44	72		
155	1.0	0.952	95	2.0	1.59	79		
156/157	2.0	2.36	118	4.0	2.76	69		
167	1.0	1.20	120	2.0	1.41	70		
169	1.0	1.07	107	2.0	1.34	67		
188	1.0	0.972	97	2.0	2.13	107		
189	1.0	1.02	102	2.0	1.68	84		
202	1.0	0.958	96	2.0	2.11	105		
205	1.0	0.963	96	2.0	1.60	80		
206	1.0	0.943	94	2.0	1.74	87		
208	1.0	0.995	99	2.0	1.84	92		
209	1.0	1.08	108	2.0	1.69	84		

R = Recovery outside of method 1668A control limits

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ND = Not Detected

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NC = Not Calculated

^{* =} See Discussion

ng = Nanograms I = Interference



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

Client Test America-Portland

 Spike 1 ID
 LCS-24962
 Spike 2 ID
 LCSD-24963

 Spike 1 Filename
 P100518B_04
 Spike 2 Filename
 P100518B_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	92	94	2.2	
4-MoCB	3	96	92	4.3	
2,2'-DiCB	4	93	93	0.0	
4,4'-DiCB	15	102	104	1.9	
2,2',6-TrCB	19	95	91	4.3	
3,4,4'-TrCB	37	103	102	1.0	
2,2',6,6'-TeCB	54	95	94	1.1	
3,3',4,4'-TeCB	77	102	101	1.0	
3,4,4',5-TeCB	81	103	105	1.9	
2,2',4,6,6'-PeCB	104	93	94	1.1	
2,3,3',4,4'-PeCB	105	106	104	1.9	
2,3,4,4',5-PeCB	114	112	106	5.5	
2,3',4,4',5-PeCB	118	113	109	3.6	
2,3',4,4',5'-PeCB	123	106	103	2.9	
3,3',4,4',5-PeCB	126	101	102	1.0	
2,2',4,4',6,6'-HxCB	155	96	95	1.0	
(156/157)	156/157	121	118	2.5	
2,3',4,4',5,5'-HxCB	167	115	120	4.3	
3,3',4,4',5,5'-HxCB	169	113	107	5.5	
2,2',3,4',5,6,6'-HpCB	188	96	97	1.0	
2,3,3',4,4',5,5'-HpCB	189	102	102	0.0	
2,2',3,3',5,5',6,6'-OcCB	202	96	96	0.0	
2,3,3',4,4',5,5',6-OcCB	205	99	96	3.1	
2,2',3,3',4,4',5,5',6-NoCB	206	93	94	1.1	
2,2',3,3',4,5,5',6,6'-NoCB	208	98	99	1.0	
Decachlorobiphenyl	209	110	108	1.8	

%REC = Percent Recovered

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



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Darrell Auvil Test America 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10129734

Sample Receipt Date: 05/25/2010

Client Project #: PTE0635

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

June 11, 2010

Nate Habte, Project Manager (612) 607-6407

(612) 607-6444 (fax)

natnael.habte@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

June 11, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America - Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts per trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 12-90%. With eighteen exceptions, flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the sample preparation steps did not significantly impact the measurement of the native congeners in the field samples.

Laboratory spike samples were also prepared with the sample batch using a reference matrix that had been fortified with native standards. The results show that the spiked native compounds were recovered at 94-113% with relative percent differences of 0-7.4%. These results indicate high levels of accuracy and precision for these analyses. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

ertificate #	Authority	Certificate #
770	Montana	92
N00064	Nebraska	
20014	Nevada	MN000642010A
3-0680	New Jersey (NE	MN002
155CA	New Mexico	MN00064
N00064	New York (NEL	11647
H-0256	North Carolina	27700
D-15J	North Dakota	R-036
MS-Q	Ohio	4150
37605	Ohio VAP	CL101
9	Oklahoma	D9922
-019r	Oregon (ELAP)	MN200001-005
_D	Oregon (OREL	MN200001-005
N00064	Pennsylvania	68-00563
00012	Saipan	MP0003
	South Carolina	74003001
MN-01	Tennesee	2818
8	Tennessee	02818
10167	Texas	T104704192-08
062	Utah (NELAP)	PAM
0900016	Virginia	00251
07029	Washington	C755
2	West Virginia	9952C
009	Wisconsin	999407970
7-053-137	Wyoming	8TMS-Q
N00064		
	770 N00064 70014 -0680 155CA N00064 R-0256 D-15J MS-Q 7605 9 -019r D N00064 0012 MN-01 8 10167 062 0900016 07029 2 09 7-053-137	Montana No0064 Nebraska Nevada New Jersey (NE New Mexico No0064 New York (NEL North Carolina North Dakota MS-Q Ohio Ohio Ohio VAP Oegon (ELAP) D Oregon (OREL No0064 Pennsylvania Saipan South Carolina MN-01 Tennesee Tennessee Tennessee Tennessee Utah (NELAP) Opo0016 Virginia West Virginia Opo0019 Virginia West Virginia Opo0010 Virginia Wisconsin Wyoming

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER **TestAmerica Portland**

PTE0635

10129734

c		ID	INL	\sim 1		DC	'n	ΛТ	ORY	
	F 41	uı,	111		-		3 FC	4		

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008

Phone: (503) 906-9200 Fax: (503) 906-9210

Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone: (612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature:

Ice: Y / N

Standard TAT is requested	d unless specific due da	ate is requested. =	=> Due Date: 실	NUKS Initials	: M
				_	V

Analysis

Units

Expires

Comments

°C

Sample ID: PTE0635-01 (FO 105596 - Water)

Sampled: 05/19/10 15:44 11/15/10 15:44

209 Congeners to Pace

100 A

Containers Supplied:

1L Amber - Unpres. (B)

1668 Coplanar PCBs - SUB ug/l

audon Paa MN 5-25-10 09:53 d By Date/Time Received By

Released Report No.....10129734_1668 Ame

Released By

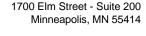
Date/Time

Received By 27" Date/TimePage 5 Routg25 of 1

Pace Analytical Client Name: Test America Project # [612 4734

•				
Courler: A Fed Ex UPS USPS Clie Tracking #: 410 7525 5224	nt D	Comr	nercia	Pace Other
Custody Seal on Cooler/Box Present: yes		no	Seal	s intact: 🗵 yes 🔲 no
Packing Material: Bubble Wrap Bubble	Bags		None	Other Temp Blank: Yes No
Thermometer Used 80344042 on 79425	_	of ice	: We	
Cooler Temperature 3.2°	Biolo	gical	Tissu	Date and Initials of person examining contents 4 3 25 (C)
Temp should be above freezing to 6°C	Transphijskeholen (m			Comments:
Chain of Custody Present:	∠ZVes	□N ₀	□N⁄A	1.
Chain of Custody Filled Out:	√∐Yes	□No	DINA	2.
Chain of Custody Relinquished:	□Yes	-ENO	□N/A	3.
Sampler Name & Signature on COC:	□Yes	J⊒No	□NA	4.
Samples Arrived within Hold Time:	/Z/Yes	□No	□n/A	5.
Short Hold Time Analysis (<72hr):	□Yes	₽Ko	□n/a	6.
Rush Turn Around Time Requested:	□Yes	⊒ 166	□N/A	7.
Sufficient Volume:	_ZYes	□No	□n⁄a	8.
Correct Containers Used:	⊉ Yes	□No	□N⁄A	9.
-Pace Containers Used:	□Yes	PINO	□N⁄A	
Containers Intact:	Yes	□No	□N⁄A	10.
Filtered volume received for Dissolved tests	□Yes	□No	ZÍNA	11.
Sample Labels match COC:	₽√es	□No	□n⁄a	12.
-Includes date/time/ID/Analysis Matrix:	u	11		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	□Yes	□No -	-EJN/A	1
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes	□No	ENVA	Samp #
Exceptions: VOA,Coliform, TOC, Oil and Grease, Wi-DRO (water	□Yes,	ØNo	-	Initial when Lot # of added completed preservative
Samples checked for dechlorination:	□Yes	□No,	ETNA	14.
Headspace in VOA Vials (>6mm):	□Yes	□No	EINA	15.
Trip Blank Present:	□Yes_	ENO	□N⁄A	16.
Trip Blank Custody Seals Present	□Yes	□No ·	ÆN/A	
Pace Trip Blank Lot # (if purchased):		_		
Client Notification/ Resolution:	^.			, j Field Data Required? Y / N
Person Contacted: Dar All An			Date/1	ime: 5/26/10@B:10
Comments/ Resolution:				
- 1668-20	9			^
Stan H	We		JA	TIFINE
		A1240-1247-1251	' '	
		-	7.	
Project Manager Review:		Λ	MT	Date: 5 26 16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the Received Setheries, Inc. F-L213Rev.00, 05Aug2009 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414



Tel: 612-607-1700

Fax: 612-607-6444

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interference present
- J = Estimated value

<u> ace Analytical</u>

- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- = See Discussion

Appendix B

Sample Analysis Summary



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID Filename

10129734001 P100609B_14 **SMT**

Injected By

Water Total Amount Extracted 958 mL Matrix NA Dilution NA % Moisture

PTE0635-01 (FO 105596-Water)

Dry Weight Extracted **ICAL ID** CCal Filename(s)

Method Blank ID

NA P100609B07 P100609B 06 BLANK-25249 Collected 05/19/2010 15:44

Received 05/25/2010 09:53 Extracted 06/04/2010 16:40 Analyzed 06/09/2010 23:44

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.587	3.56	2.0	0.232	12 R
13C-4-MoCB	3 4	7.996	3.43	2.0	0.349	17 R
13C-2,2'-DiCB	4	8.283	1.58	2.0	0.335	17 R
13C-4,4'-DiCB	15	15.723	1.61	2.0	0.741	37
13C-2,2',6-TrCB	19	12.261	1.13	2.0	0.526	26
13C-3,4,4'-TrCB	37	23.736	1.18	2.0	1.44	72
13C-2,2 ['] ,6,6'-TeCB	54	16.006	0.76	2.0	0.722	36
13C-3,4,4',5-TeCB	81	30.896	0.80	2.0	1.37	69
13C-3,3',4,4'-TeCB	77	31.466	0.81	2.0	1.51	75
13C-2,2',4,6,6'-PeCB	104	22.395	1.64	2.0	1.16	58
13C-2,3,3',4,4'-PeCB	105	35.038	1.60	2.0	1.32	66
13C-2,3,4,4',5-PeCB	114	34.384	1.61	2.0	1.33	67
13C-2,3',4,4',5-PeCB	118	33.898	1.61	2.0	1.33	66
13C-2,3',4,4',5'-PeCB	123	33.546	1.57	2.0	1.36	68
13C-3,3',4,4',5-PeCB	126	38.174	1.57	2.0	1.37	69
13C-2,2',4,4',6,6'-HxCB	155	28.532	1.32	2.0	1.47	74
13C-HxCB (156/157)	156/157	41.175	1.26	4.0	2.72	68
13C-2,3',4,4',5,5'-HxCB	167	40.085	1.24	2.0	1.34	67
13C-3,3',4,4',5,5'-HxCB	169	44.412	1.29	2.0	1.31	65
13C-2,2',3,4',5,6,6'-HpCB	188	34.418	1.04	2.0	1.79	90
13C-2,3,3',4,4',5,5'-HpCB	189	46.924	1.03	2.0	1.49	75
13C-2,2',3,3',5,5',6,6'-OcCB	202	39.784	0.91	2.0	1.79	90
13C-2,3,3',4,4',5,5',6-OcCB	205	49.511	0.92	2.0	1.45	73
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.235	0.78	2.0	1.47	74
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	46.428	0.80	2.0	1.60	80
13CDeCB	209	52.830	0.71	2.0	1.37	69
	_00	02.000				
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.309	1.09	2.0	1.34	67
13C-2,3,3',5,5'-PeCB	111	31.600	1.61	2.0	1.75	88
13C-2,2',3,3',5,5',6-HpCB	178	37.503	1.05	2.0	1.85	93
Recovery Standards						
13C-2,5-DiCB	9	10.871	1.63	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.389	0.81	2.0	ŇA	NA
13C-2,2',4,5,5'-PeCB	101	28.783	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.017	1.29	2.0	NA	NA NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	49.015	0.92	2.0	NA	NA NA
100 2,2,0,0,4,4,0,0 0000	104	40.010	0.02	2.0	1 1/1	14/1

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0635-01 (FO 105596-Water) 10129734001 P100609B_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.261
2				ND		0.261
3				ND		0.261
4				ND		0.261
				ND		0.261
5 6				ND		0.261
7				ND		0.261
8				ND		0.261
9				ND		0.261
10				ND ND		0.261
				ND ND		1.201
11	40/40					1.57
12	12/13			ND		0.522
13	12/13			ND		0.522
14				ND		0.261
15				ND		0.261
16				ND		0.261
17				ND		0.261
18	18/30			ND		0.522
19				ND		0.261
20	20/28			ND		0.522
21	21/33			ND		0.522
22				ND		0.261
23				ND		0.261
24				ND		0.261
25				ND		0.261
26	26/29			ND		0.522
27				ND		0.261
28	20/28			ND		0.522
29	26/29			ND		0.522
30	18/30			ND		0.522
31				ND		0.261
32				ND		0.261
33	21/33			ND		0.522
34	2.700			ND		0.261
35				ND		0.261
36				ND		0.261
37				ND		0.261
38				ND		0.261
39				ND		0.261
40	40/41/71			ND ND		1.57
40 41	40/41/71 40/41/71			ND ND		1.57
41 42	4 0/41/71			ND ND		0.522
	42/72					0.022
43	43/73			ND ND		1.04
44	44/47/65			ND ND		1.57
45	45/51			ND		1.04
46	4.4/47/05			ND		0.522
47	44/47/65			ND		1.57
48				ND		0.522

Conc = Concentration

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EMPC = Estimated Maximum Possible Concentration
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ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0635-01 (FO 105596-Water) 10129734001 P100609B_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.04
50	50/53			ND		1.04
51	45/51			ND		1.04
52				ND		0.522
53	50/53			ND		1.04
54				ND		0.522
55				ND		0.522
56				ND		0.522
57				ND		0.522
58				ND		0.522
59	59/62/75			ND		1.57
60	33/32//3			ND		0.522
61	61/70/74/76			ND		2.09
62	59/62/75			ND		1.57
63	00/02//0			ND		0.522
64				ND		0.522
65	44/47/65			ND		1.57
66	, .,,,,,			ND		0.522
67				ND		0.522
68				ND		0.522
69	49/69			ND		1.04
70	61/70/74/76			ND		2.09
71	40/41/71			ND		1.57
72	40/41/71			ND		0.522
73	43/73			ND		1.04
73 74	61/70/74/76			ND		2.09
7 5	59/62/75			ND		1.57
76	61/70/74/76			ND		2.09
77	01/10/14/10			ND		0.522
78				ND		0.522
79				ND		0.522
80				ND ND		0.522
81				ND ND		0.522
82				ND		0.522
83				ND		0.522
84				ND ND		0.522
85	85/116/117			ND ND		1.57
86	86/87/97/108/119/125			ND ND		3.13
87	86/87/97/108/119/125			ND ND		3.13
88	88/91			ND ND		1.04
89	00/91			ND ND		0.522
90	90/101/113			ND ND		1.57
91	88/91			ND ND		1.04
91 92	00/31			ND ND		0.522
92 93	93/98/100/102			ND ND		2.09
93 94	33/30/100/102			ND ND		
94 95						0.522 0.522
95 96				ND ND		0.522 0.522
90				ND		0.522

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0635-01 (FO 105596-Water) 10129734001 P100609B_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.13
98	93/98/100/102			ND		2.09
99	39/30/100/102			ND		0.522
100	93/98/100/102			ND		2.09
101	90/101/113			ND		1.57
102	93/98/100/102			ND ND		2.09
102	93/96/100/102			ND ND		0.522
103				ND ND		0.522
104				ND ND		0.522
105				ND ND		
100	407/404					0.522
107	107/124			ND		1.04
108	86/87/97/108/119/125			ND		3.13
109	440/445			ND		0.522
110	110/115			ND		1.04
111				ND		0.522
112				ND		0.522
113	90/101/113			ND		1.57
114				ND		0.522
115	110/115			ND		1.04
116	85/116/117			ND		1.57
117	85/116/117			ND		1.57
118		33.914	1.57	0.532		0.522
119	86/87/97/108/119/125			ND		3.13
120				ND		0.522
121				ND		0.522
122				ND		0.522
123				ND		0.522
124	107/124			ND		1.04
125	86/87/97/108/119/125			ND		3.13
126				ND		0.522
127				ND		0.522
128	128/166			ND		1.04
129	129/138/163			ND		1.57
130	120/100/100			ND		0.522
131				ND		0.522
132				ND		0.522
133				ND		0.522
134	134/143			ND		1.04
135	135/151			ND		1.04
136	133/131			ND ND		0.522
137				ND ND		0.522
137	129/138/163					1.57
				ND		
139	139/140			ND ND		1.04
140	139/140			ND ND		1.04
141				ND		0.522
142	10.1/1.10			ND		0.522
143	134/143			ND		1.04
144				ND		0.522

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B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0635-01 (FO 105596-Water) 10129734001 P100609B_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.522
146				ND		0.522
147	147/149			ND		1.04
148	1477145			ND		0.522
149	147/149			ND		1.04
150	147/149			ND ND		0.522
150	405/454					
	135/151			ND		1.04
152	450/400			ND		0.522
153	153/168			ND		1.04
154				ND		0.522
155				ND		0.522
156	156/157			ND		1.04
157	156/157			ND		1.04
158				ND		0.522
159				ND		0.522
160				ND		0.522
161				ND		0.522
162				ND		0.522
163	129/138/163			ND		1.57
164	120/100/100			ND		0.522
165				ND		0.522
166	128/166			ND		1.04
167	120/100			ND		0.522
168	450/400			ND ND		0.522
100	153/168					1.04
169				ND		0.522
170	474/470			ND		0.522
171	171/173			ND		1.04
172				ND		0.522
173	171/173			ND		1.04
174				ND		0.522
175				ND		0.522
176				ND		0.522
177				ND		0.522
178				ND		0.522
179				ND		0.522
180	180/193			ND		1.04
181				ND		0.522
182				ND		0.522
183	183/185			ND		1.04
184	100/100			ND ND		0.522
185	183/185			ND ND		1.04
186	103/103			ND ND		0.522
100						0.022
187				ND ND		0.522
188				ND		0.522
189				ND		0.522
190				ND		0.522
191				ND		0.522
192				ND		0.522

Conc = Concentration

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R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses NA = Not Applicable NC = Not Calculated * = See Discussion X = Outside QC Limits RT = Retention Time

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0635-01 (FO 105596-Water) 10129734001 P100609B_14

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.04
194				ND		0.783
195				ND		0.783
196				ND		0.783
197	197/200			ND		1.57
198	198/199			ND		1.57
199	198/199			ND		1.57
200	197/200			ND		1.57
201				ND		0.783
202				ND		0.783
203				ND		0.783
204				ND		0.783
205				ND		0.783
206				ND		0.783
207				ND		0.783
208				ND		0.783
209				ND		0.783

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0635-01 (FO 105596-Water) 10129734001 P100609B_14

Congener Group	Concentration ng/L	
Total Monochloro Biphenyls	ND	
Total Dichloro Biphenyls	ND	
Total Trichloro Biphenyls	ND	
Total Tetrachloro Biphenyls	ND	
Total Pentachloro Biphenyls	0.532	
Total Hexachloro Biphenyls	ND	
Total Heptachloro Biphenyls	ND	
Total Octachloro Biphenyls	ND	
Total Nonachloro Biphenyls	ND	
Decachloro Biphenyls	ND	
Total PCBs	0.532	

ND = Not Detected

Water

Matrix



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

Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID BLANK-25249
Filename P100607A_08
Injected By SMT
Total Amount Futneted 1020 ml

Total Amount Extracted 1020 mL Extracted 06/04/2010 16:40 ICAL ID P100607A04 Analyzed 06/08/2010 00:55

CCal Filename(s) P100607A_03 Dilution NA

CCai Filename(s)	P100607A	_03		Dilution	NA		
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	_
Labeled Analytes 13C-2-MoCB 13C-4-MoCB 13C-4-MoCB 13C-2,2'-DiCB 13C-4,4'-DiCB 13C-2,2',6-TrCB 13C-3,4,4'-TrCB 13C-3,4,4',5-TeCB 13C-3,3',4,4'-TeCB 13C-2,2',4,6,6'-PeCB 13C-2,3,3',4,4'-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB	1 3 4 15 19 37 54 81 77 104 105 114 118 123 126 155 156/157 167 169 188 189 202 205 206 208 209	5.812 8.316 8.615 16.115 12.641 24.151 16.422 31.294 31.864 22.793 35.418 34.781 34.278 33.943 38.554 28.947 41.555 40.448 44.774 34.798 47.299 40.163 49.863 51.587 46.781 53.204	3.26 3.56 1.62 1.63 1.07 1.18 0.81 0.80 0.80 1.61 1.61 1.58 1.61 1.60 1.61 1.30 1.27 1.26 1.27 1.06 0.91 0.90 0.79 0.79	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	0.215 0.324 0.368 0.614 0.512 0.844 0.438 0.986 1.03 0.744 1.03 0.971 1.02 1.04 0.981 1.05 1.99 1.10 0.926 1.60 1.28 1.56 1.13 1.17 1.27 0.992	11 F 16 F 18 S 31 26 42 22 49 52 37 52 49 552 49 552 49 552 55 46 80 64 78 57 59 64 50	3
Cleanup Standards 13C-2,4,4'-TrCB 13C-2,3,3',5,5'-PeCB 13C-2,2',3,3',5,5',6-HpCB	28 111 178	19.708 31.998 37.883	1.08 1.59 1.03	2.0 2.0 2.0	0.838 1.19 1.39	42 59 69	
Recovery Standards 13C-2,5-DiCB 13C-2,2',5,5'-TeCB 13C-2,2',4,5,5'-PeCB 13C-2,2',3,4,4',5'-HxCB 13C-2,2',3,3',4,4',5,5'-OcCB	9 52 101 138 194	11.251 21.787 29.181 37.397 49.389	1.61 0.80 1.62 1.29 0.91	2.0 2.0 2.0 2.0 2.0	NA NA NA NA	NA NA NA NA	

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC	EML ng/L
IUFAC	CO-elulions	N I	Natio	ng/L	ng/L	iig/L
1				ND		0.250
2				ND		0.250
2 3 4				ND		0.250
4				ND		0.250
5 6				ND		0.250
6				ND		0.250
7				ND		0.250
8				ND		0.250
9				ND		0.250
10				ND		0.250
11				ND		1.50
12	12/13			ND		0.500
13	12/13			ND		0.500
14				ND		0.250
15				ND		0.250
16				ND		0.250
17				ND		0.250
18	18/30			ND		0.500
19				ND		0.250
20	20/28			ND		0.500
21	21/33			ND		0.500
22				ND		0.250
23				ND		0.250
24				ND		0.250
25				ND		0.250
26	26/29			ND		0.500
27				ND		0.250
28	20/28			ND		0.500
29	26/29			ND		0.500
30	18/30			ND		0.500
31				ND		0.250
32				ND		0.250
33	21/33			ND		0.500
34				ND		0.250
35				ND		0.250
36				ND		0.250
37				ND		0.250
38				ND		0.250
39				ND		0.250
40	40/41/71			ND		1.50
41	40/41/71			ND		1.50
42				ND		0.500
43	43/73			ND		1.00
44	44/47/65			ND		1.50
45	45/51			ND		1.00

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.500
47	44/47/65			ND		1.50
48				ND		0.500
49	49/69			ND		1.00
50	50/53			ND		1.00
51	45/51			ND		1.00
52	.5/5 :			ND		0.500
53	50/53			ND		1.00
54	33/33			ND		0.500
55				ND		0.500
56				ND		0.500
57				ND		0.500
58				ND		0.500
59	59/62/75			ND		1.50
60	33/32/13			ND		0.500
61	61/70/74/76			ND		2.00
62	59/62/75			ND		1.50
63	00/02/10			ND		0.500
64				ND		0.500
65	44/47/65			ND		1.50
66	11/1/00			ND		0.500
67				ND		0.500
68				ND		0.500
69	49/69			ND		1.00
70	61/70/74/76			ND		2.00
71	40/41/71			ND		1.50
72	10/ 11/7 1			ND		0.500
73	43/73			ND		1.00
74	61/70/74/76			ND		2.00
75	59/62/75			ND		1.50
76	61/70/74/76			ND		2.00
77	01/10/11/10			ND		0.500
78				ND		0.500
79				ND		0.500
80				ND		0.500
81				ND		0.500
82				ND		0.500
83				ND		0.500
84				ND		0.500
85	85/116/117			ND		1.50
86	86/87/97/108/119/125			ND		3.00
87	86/87/97/108/119/125			ND		3.00
88	88/91			ND		1.00
89	33,31			ND		0.500
90	90/101/113			ND		1.50

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

* = See Discussion
X = Outside QC Limits
RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		1.00
92				ND		0.500
93	93/98/100/102			ND		2.00
94				ND		0.500
95				ND		0.500
96				ND		0.500
97	86/87/97/108/119/125			ND		3.00
98	93/98/100/102			ND		2.00
99	33,33,133,132			ND		0.500
100	93/98/100/102			ND		2.00
101	90/101/113			ND		1.50
102	93/98/100/102			ND		2.00
103	30/30/100/102			ND		0.500
104				ND		0.500
105				ND		0.500
106				ND		0.500
107	107/124			ND ND		1.00
108	86/87/97/108/119/125			ND		3.00
109	00/07/97/100/119/123			ND ND		0.500
110	110/115			ND ND		1.00
110	110/115			ND ND		0.500
112				ND ND		0.500
112	90/101/113			ND ND		1.50
113	90/101/113			ND ND		0.500
	440/44E					
115	110/115			ND ND		1.00
116	85/116/117					1.50
117	85/116/117			ND		1.50
118	00/07/07/400/440/405			ND		0.500
119	86/87/97/108/119/125			ND		3.00
120				ND		0.500
121				ND		0.500
122				ND		0.500
123	10=/101			ND		0.500
124	107/124			ND		1.00
125	86/87/97/108/119/125			ND		3.00
126				ND		0.500
127				ND		0.500
128	128/166			ND		1.00
129	129/138/163			ND		1.50
130				ND		0.500
131				ND		0.500
132				ND		0.500
133				ND		0.500
134	134/143			ND		1.00
135	135/151			ND		1.00

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136				ND		0.500
137				ND		0.500
138	129/138/163			ND		1.50
139	139/140			ND		1.00
140	139/140			ND		1.00
141	100/110			ND		0.500
142				ND		0.500
143	134/143			ND		1.00
144	10 1/1 10			ND		0.500
145				ND		0.500
146				ND		0.500
147	147/149			ND		1.00
148	1177110			ND		0.500
149	147/149			ND		1.00
150	1177110			ND		0.500
151	135/151			ND		1.00
152	100/101			ND		0.500
153	153/168			ND		1.00
154	133/100			ND		0.500
155				ND		0.500
156	156/157			ND ND		1.00
157	156/157			ND ND		1.00
158	130/137			ND ND		0.500
159				ND ND		0.500
160				ND ND		0.500
161				ND ND		0.500
162				ND ND		0.500
163	100/100/160					
	129/138/163			ND ND		1.50
164				ND ND		0.500
165	100/166			ND		0.500
166	128/166			ND ND		1.00
167 168	450/400			ND ND		0.500 1.00
	153/168					
169				ND		0.500
170	474/470			ND		0.500
171	171/173			ND		1.00
172	474/470			ND		0.500
173	171/173			ND		1.00
174				ND		0.500
175				ND		0.500
176				ND		0.500
177				ND		0.500
178				ND		0.500
179				ND		0.500
180	180/193			ND		1.00

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

* = See Discussion X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
181				ND		0.500
182				ND		0.500
183	183/185			ND		1.00
184				ND		0.500
185	183/185			ND		1.00
186				ND		0.500
187				ND		0.500
188				ND		0.500
189				ND		0.500
190				ND		0.500
191				ND		0.500
192				ND		0.500
193	180/193			ND		1.00
194				ND		0.750
195				ND		0.750
196				ND		0.750
197	197/200			ND		1.50
198	198/199			ND		1.50
199	198/199			ND		1.50
200	197/200			ND		1.50
201				ND		0.750
202				ND		0.750
203				ND		0.750
204				ND		0.750
205				ND		0.750
206				ND		0.750
207				ND		0.750
208				ND		0.750
209				ND		0.750

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference

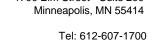


Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKWB BLANK-25249 P100607A_08

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

ND = Not Detected



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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCS-25250 P100607A_05

1000 mL P100607A04 P100607A_03 BLANK-25249 Matrix Dilution Water NA

Extracted 06/04/2010 16:40 Analyzed 06/07/2010 21:54

Injected By SMT

2.0

	N	Native Analy	tes	Labeled Analytes			
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ery
1	1.0	1.03	103	2.0	0.231	12	 R
3	1.0	1.03	103	2.0	0.334	17	R
4	1.0	0.992	99	2.0	0.379	19	R
15	1.0	1.10	110	2.0	0.510	26	R
19	1.0	1.00	100	2.0	0.482	24	R
37	1.0	0.995	100	2.0	0.631	32	
54	1.0	1.04	104	2.0	0.392	20	R
81	1.0	1.04	104	2.0	0.759	38	
77	1.0	0.999	100	2.0	0.773	39	
104	1.0	0.974	97	2.0	0.608	30	
105	1.0	1.07	107	2.0	0.791	40	
114	1.0	1.07	107	2.0	0.746	37	
118	1.0	1.12	112	2.0	0.766	38	
123	1.0	1.05	105	2.0	0.787	39	
126	1.0	0.994	99	2.0	0.720	36	
155	1.0	0.976	98	2.0	0.951	48	
156/157	2.0	2.15	108	4.0	1.53	38	
167	1.0	1.09	109	2.0	0.858	43	
169	1.0	1.06	106	2.0	0.656	33	
188	1.0	1.01	101	2.0	1.61	81	
189	1.0	1.03	103	2.0	1.05	52	
202	1.0	0.965	96	2.0	1.50	75	
205	1.0	0.974	97	2.0	0.901	45	
206	1.0	0.945	94	2.0	0.925	46	
208	1.0	1.01	101	2.0	1.09	55	

R = Recovery outside of method 1668A control limits

1.0

1.12

Nn = Result obtained from alternate analysis

ND = Not Detected

209

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference

REPORT OF LABORATORY ANALYSIS

112

38

0.767



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

ICAL ID CCal Filename(s)

Method Blank ID

LCSD-25251 P100607A_06 1010 mL P100607A04

P100607A04 P100607A_03 BLANK-25249 Matrix Water Dilution NA

Extracted 06/04/2010 16:40 Analyzed 06/07/2010 22:53

Injected By SMT

	N	Native Analy	tes	Labeled Analytes				
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ry	
1	1.0	1.05	105	2.0	0.277	14	R	
3	1.0	1.01	101	2.0	0.383	19	R	
4	1.0	1.02	102	2.0	0.437	22	R	
15	1.0	1.10	110	2.0	0.631	32		
19	1.0	1.02	102	2.0	0.569	28	R	
37	1.0	1.00	100	2.0	0.749	37		
54	1.0	1.12	112	2.0	0.469	23	R	
81	1.0	1.03	103	2.0	0.856	43		
77	1.0	0.990	99	2.0	0.860	43		
104	1.0	0.969	97	2.0	0.726	36		
105	1.0	1.10	110	2.0	0.864	43		
114	1.0	1.10	110	2.0	0.814	41		
118	1.0	1.13	113	2.0	0.849	42		
123	1.0	1.04	104	2.0	0.866	43		
126	1.0	0.984	98	2.0	0.810	40		
155	1.0	0.996	100	2.0	1.05	52		
156/157	2.0	2.18	109	4.0	1.74	44		
167	1.0	1.09	109	2.0	0.982	49		
169	1.0	1.04	104	2.0	0.789	39		
188	1.0	0.986	99	2.0	1.44	72		
189	1.0	0.998	100	2.0	1.10	55		
202	1.0	0.975	97	2.0	1.35	67		
205	1.0	0.989	99	2.0	0.992	50		
206	1.0	0.971	97	2.0	1.02	51		
208	1.0	1.02	102	2.0	1.11	55		
209	1.0	1.12	112	2.0	0.881	44		

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference



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

Client Test America

 Spike 1 ID
 LCS-25250
 Spike 2 ID
 LCSD-25251

 Spike 1 Filename
 P100607A_05
 Spike 2 Filename
 P100607A_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	103	105	1.9	
4-MoCB	3	103	101	2.0	
2,2'-DiCB	4	99	102	3.0	
4,4'-DiCB	15	110	110	0.0	
2,2',6-TrCB	19	100	102	2.0	
3,4,4'-TrCB	37	100	100	0.0	
2,2',6,6'-TeCB	54	104	112	7.4	
3,3',4,4'-TeCB	77	100	99	1.0	
3,4,4',5-TeCB	81	104	103	1.0	
2,2',4,6,6'-PeCB	104	97	97	0.0	
2,3,3',4,4'-PeCB	105	107	110	2.8	
2,3,4,4',5-PeCB	114	107	110	2.8	
2,3',4,4',5-PeCB	118	112	113	0.9	
2,3',4,4',5'-PeCB	123	105	104	1.0	
3,3',4,4',5-PeCB	126	99	98	1.0	
2,2',4,4',6,6'-HxCB	155	98	100	2.0	
(156/157)	156/157	108	109	0.9	
2,3',4,4',5,5'-HxCB	167	109	109	0.0	
3,3',4,4',5,5'-HxCB	169	106	104	1.9	
2,2',3,4',5,6,6'-HpCB	188	101	99	2.0	
2,3,3',4,4',5,5'-HpCB	189	103	100	3.0	
2,2',3,3',5,5',6,6'-OcCB	202	96	97	1.0	
2,3,3',4,4',5,5',6-OcCB	205	97	99	2.0	
2,2',3,3',4,4',5,5',6-NoCB	206	94	97	3.1	
2,2',3,3',4,5,5',6,6'-NoCB	208	101	102	1.0	
Decachlorobiphenyl	209	112	112	0.0	

%REC = Percent Recovered

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



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Darrell Auvil **Test America** 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY **ANALYSIS FOR PCBs**

Report Information:

Pace Project #: 10130139

Sample Receipt Date: 05/28/2010

Client Project #: PTE0794

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

June 11, 2010

Nate Habte, Project Manager (612) 607-6407

(612) 607-6444 (fax)

natnael.habte@pacelabs.com



This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

June 11, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America - Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts per trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 3-77%. With twenty-one exceptions, flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the sample preparation steps did not significantly impact the measurement of the native congeners in the field samples.

Laboratory spike samples were also prepared with the sample batch using a reference matrix that had been fortified with native standards. The results show that the spiked native compounds were recovered at 94-113% with relative percent differences of 0-7.4%. These results indicate high levels of accuracy and precision for these analyses. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.



Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

1128

SUBCONTRACT ORDER **TestAmerica Portland**

PTE0794

10130139

SENDING LABORATORY:

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008

Phone: (503) 906-9200 Fax: (503) 906-9210

Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone:(612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature: 0,8°

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: <u>3well</u>

Analysis

Units

Expires

Comments

Sample ID: PTE0794-01 (FO 105620 - Water)

Sampled: 05/25/10 13:58

209 Congeners to Pace

1668 Coplanar PCBs - SUB ug/l

11/21/10 13:58

Containers Supplied:

1L Amber - Unpres. (B)

Received By

- 0.80

Date/TimePage 5 Page 25

Released Report No.....10130139 4568 Ane

Sample Condition Upon Receipt



Pace Analytical Client Name	: Test f	mer	ica	Project # 10/30/39
Courier: Fed Ex UPS USPS Clie Tracking #: 4170 7525 5 36	nt 🛘 Com	mercial	Pace Other	Optional ProjeDue Date:
Custody Seal on Cooler/Box Present: See	☐ no	Seal	s intact: 121 yes	no Proj Name:
Packing Material: Bubble Wrap Bubble		None	_Other	Temp Blank: Yes No
Thermometer Used 80344042 of 179425	Type of Ice	: Wei	Blue None	Samples on ice, cooling process has begun
Cooler Temperature Cooler Temperature Temp should be above freezing to 6°C	Biological	Tissuc	comments:	Date and Initials of person examining contents: 5-28-10 MA
Chain of Custody Present:	Yes 🗆 No	□n⁄a	1.	
Chain of Custody Filled Out:	X(Yes DNo	□N⁄A	2.	<u> </u>
Chain of Custody Relinquished:	Yes DNo	□N⁄A	3.	
Sampler Name & Signature on COC:	Пүөэ ⊠йо	□N/A	4.	
Samples Arrived within Hold Time:	X Yes □No	□N⁄A	5.	
Short Hold Time Analysis (<72hr):	□Yes ⊠No	□N⁄A	6.	
Rush Turn Around Time Requested:	□Yes ⊠No	□N⁄A	7.	
Sufficient Volume:	XIYes □No	□N⁄A	8.	
Correct Containers Used:	Yes □No	□N⁄A	9.	
-Pace Containers Used:	□Yes XNo	□n/a		
Containers Intact:	∕ÚYes □No	□N⁄A	10.	
Filtered volume received for Dissolved tests	□Yes □No	*XINA	11.	
Sample Labels match COC:	Yes DNo	□N⁄A	12.	
-includes date/time/ID/Analysis Matrix:	WI			
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	□Yes □No	ØN/A	13.	NO3 H2SO4 NaOH HCI
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes □No	X)N/A	Samp #	
Exceptions: VOA,Coliform, TOC, Oli and Grease, Wi-DRO (water	□Yes ØNo		Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	□Yes □No	Þ.	14.	
Headspace in VOA Vials (>6mm):	☐Yes ☐No	KINA	15.	
Trip Blank Present:	□Үөэ □№	X INA	16.	
Trip Blank Custody Seals Present	□Yes □No	AME		
Pace Trip Blank Lot # (if purchased):	·			
Client Notification/ Resolution:				Field Data Required? Y / N
Person Contacted:		Date/1	īme:	
Comments/ Resolution:		•		

Project Manager Review:	(P			Date: 06 01 10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the **Reactin Calydical Stimbles**, Inc. F-L213Rev.00, 05Aug2009 1700 Elm Street SE, Suite 200. Minneapolis. MN 55414



Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- See Discussion

Appendix B

Sample Analysis Summary



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID Filename

10130139001 P100609B_15 **SMT**

Injected By

Water Total Amount Extracted 1000 mL Matrix NA Dilution NA % Moisture

PTE0794-01 (FO 105620-Water)

Dry Weight Extracted ICAL ID

NA P100609B07 CCal Filename(s) P100609B 06 Method Blank ID BLANK-25249 Collected 05/25/2010 13:58 Received 05/28/2010 09:55 Extracted 06/04/2010 16:40 Analyzed 06/10/2010 00:46

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.587	3.07	2.0	0.0674	3 R
13C-4-MoCB	3	7.996	3.41	2.0	0.142	3 R 7 R
13C-2,2'-DiCB	4	8.283	1.58	2.0	0.139	7 R
13C-4,4'-DiCB	15	15.736	1.61	2.0	0.373	19 R
13C-2,2',6-TrCB	19	12.261	1.04	2.0	0.278	14 R
13C-3,4,4'-TrCB	37	23.770	1.15	2.0	0.973	49
13C-2,2',6,6'-TeCB	54	16.040	0.79	2.0	0.465	23 R
13C-3,4,4',5-TeCB	81	30.914	0.80	2.0	1.04	52
13C-3,3',4,4'-TeCB	77	31.484	0.80	2.0	1.21	61
13C-2,2',4,6,6'-PeCB	104	22.412	1.59	2.0	0.787	39
13C-2,3,3',4,4'-PeCB	105	35.056	1.61	2.0	1.09	55
13C-2,3,4,4',5-PeCB	114	34.402	1.62	2.0	1.14	57
13C-2,3',4,4',5-PeCB	118	33.899	1.61	2.0	1.13	57
13C-2,3',4,4',5'-PeCB	123	33.563	1.59	2.0	1.13	56
13C-3,3',4,4',5-PeCB	126	38.191	1.60	2.0	1.23	61
13C-2,2',4,4',6,6'-HxCB	155	28.549	1.31	2.0	0.968	48
13C-HxCB (156/157)	156/157	41.193	1.27	4.0	2.30	58
13C-2,3',4,4 ['] ,5,5'-HxĆB	167	40.086	1.28	2.0	1.07	54
13C-3,3',4,4',5,5'-HxCB	169	44.413	1.28	2.0	1.13	56
13C-2,2',3,4',5,6,6'-HpCB	188	34.418	1.06	2.0	1.46	73
13C-2,3,3',4,4',5,5'-HpCB	189	46.925	1.06	2.0	1.37	68
13C-2,2',3,3',5,5',6,6'-OcCB	202	39.801	0.89	2.0	1.55	77
13C-2,3,3',4,4',5,5',6-OcCB	205	49.490	0.91	2.0	1.24	62
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.214	0.79	2.0	1.16	58
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	46.408	0.80	2.0	1.44	72
13CDeCB	209	52.809	0.70	2.0	1.19	59
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.343	1.08	2.0	0.807	40
13C-2,3,3',5,5'-PeCB	111	31.635	1.60	2.0	1.42	71
13C-2,2',3,3',5,5',6-HpCB	178	37.521	1.05	2.0	1.42	71
Recovery Standards						
13C-2,5-DiCB	9	10.884	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.423	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.801	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.034	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	49.016	0.91	2.0	NA	NA
. , , , , , ,						

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0794-01 (FO 105620-Water) 10130139001 P100609B_15

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.250
2				ND		0.250
2 3 4				ND		0.250
4				ND		0.250
5 6				ND		0.250
6				ND		0.250
7				ND		0.250
8				ND		0.250
9				ND		0.250
10				ND		0.250
11				ND		1.50
12	12/13			ND		0.500
13	12/13			ND		0.500
14	12/13			ND		0.250
15				ND ND		0.250
16				ND ND		0.250
10				ND		0.250
17	40/00			ND		0.250
18	18/30			ND		0.500
19				ND		0.250
20	20/28			ND		0.500
21	21/33			ND		0.500
22				ND		0.250
23				ND		0.250
24				ND		0.250
25				ND		0.250
26	26/29			ND		0.500
27				ND		0.250
28	20/28			ND		0.500
29	26/29			ND		0.500
30	18/30			ND		0.500
31	10/30			ND		0.250
32				ND		0.250
33	21/33			ND ND		0.500
33 34	21/33					
34				ND		0.250
35				ND		0.250
36				ND		0.250
37				ND		0.250
38				ND		0.250
39				ND		0.250
40	40/41/71			ND		1.50
41	40/41/71			ND		1.50
42				ND		0.500
43	43/73			ND		1.000
44	44/47/65			ND		1.50
45	45/51			ND		1.000
46	· ·			ND		0.500
47	44/47/65			ND		1.50
48	, .,,,,,			ND		0.500
70				ND		0.000

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0794-01 (FO 105620-Water) 10130139001 P100609B_15

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.000
50	50/53			ND		1.000
51	45/51			ND		1.000
52	10/01			ND		0.500
53	50/53			ND		1.000
54	00/00			ND		0.500
55				ND		0.500
56				ND		0.500
57				ND		0.500
58				ND		0.500
59	59/62/75			ND		1.50
60	00,02,10			ND		0.500
61	61/70/74/76			ND		2.00
62	59/62/75			ND		1.50
63	00,027.0			ND		0.500
64				ND		0.500
65	44/47/65			ND		1.50
66	,, 66			ND		0.500
67				ND		0.500
68				ND		0.500
69	49/69			ND		1.000
70	61/70/74/76			ND		2.00
71	40/41/71			ND		1.50
72				ND		0.500
73	43/73			ND		1.000
74	61/70/74/76			ND		2.00
75	59/62/75			ND		1.50
76	61/70/74/76			ND		2.00
77				ND		0.500
78				ND		0.500
79				ND		0.500
80				ND		0.500
81				ND		0.500
82				ND		0.500
83				ND		0.500
84				ND		0.500
85	85/116/117			ND		1.50
86	86/87/97/108/119/125			ND		3.00
87	86/87/97/108/119/125			ND		3.00
88	88/91			ND		1.000
89				ND		0.500
90	90/101/113			ND		1.50
91	88/91			ND		1.000
92				ND		0.500
93	93/98/100/102			ND		2.00
94				ND		0.500
95				ND		0.500
96				ND		0.500

Conc = Concentration

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

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits

ND = Not Detected

RT = Retention Time I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0794-01 (FO 105620-Water) 10130139001 P100609B_15

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.00
98	93/98/100/102			ND		2.00
99				ND		0.500
100	93/98/100/102			ND		2.00
101	90/101/113			ND		1.50
102	93/98/100/102			ND		2.00
103				ND		0.500
104				ND		0.500
105				ND		0.500
106				ND		0.500
107	107/124			ND		1.000
108	86/87/97/108/119/125			ND		3.00
109				ND		0.500
110	110/115			ND		1.000
111				ND		0.500
112				ND		0.500
113	90/101/113			ND		1.50
114				ND		0.500
115	110/115			ND		1.000
116	85/116/117			ND		1.50
117	85/116/117			ND		1.50
118	00/110/11/			ND		0.500
119	86/87/97/108/119/125			ND		3.00
120	00/07/37/100/113/123			ND		0.500
121				ND		0.500
122				ND		0.500
123				ND		0.500
124	107/124			ND		1.000
125	86/87/97/108/119/125			ND		3.00
126	00/07/97/100/119/125			ND		0.500
127				ND		0.500
128	128/166			ND ND		1.000
129	129/138/163			ND		1.50
130	129/130/103			ND		0.500
131				ND ND		0.500
132				ND		0.500
133				ND ND		0.500
134	134/143			ND ND		1.000
135	135/151			ND ND		1.000
136	135/151			ND ND		0.500
130				ND ND		0.500
137	129/138/163			ND ND		1.50
130	139/140			ND ND		1.000
140	139/140			ND ND		1.000
140	133/140			ND ND		0.500
141				ND ND		0.500
	134/143					
143 144	134/143			ND ND		1.000 0.500
144				ND		0.500

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0794-01 (FO 105620-Water) 10130139001 P100609B_15

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145				ND		0.500
146				ND		0.500
147	147/149			ND		1.000
148				ND		0.500
149	147/149			ND		1.000
150				ND		0.500
151	135/151			ND		1.000
152				ND		0.500
153	153/168			ND		1.000
154				ND		0.500
155				ND		0.500
156	156/157			ND		1.000
157	156/157			ND		1.000
158	100/101			ND		0.500
159				ND		0.500
160				ND		0.500
161				ND		0.500
162				ND		0.500
163	129/138/163			ND		1.50
164	123/130/103			ND		0.500
165				ND		0.500
166	128/166			ND		1.000
167	120/100			ND ND		0.500
168	153/168			ND ND		1.000
169	155/166			ND ND		0.500
170				ND ND		0.500
170	171/173			ND ND		1.000
171	171/173			ND ND		
172	474/470			ND ND		0.500
	171/173					1.000
174				ND		0.500
175				ND		0.500
176				ND		0.500
177				ND		0.500
178				ND		0.500
179	400/400			ND		0.500
180	180/193			ND		1.000
181				ND		0.500
182	100/105			ND		0.500
183	183/185			ND		1.000
184	100/105			ND		0.500
185	183/185			ND		1.000
186				ND		0.500
187				ND		0.500
188				ND		0.500
189				ND		0.500
190				ND		0.500
191				ND		0.500
192				ND		0.500

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
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A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0794-01 (FO 105620-Water) 10130139001 P100609B_15

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.000
194				ND		0.750
195				ND		0.750
196				ND		0.750
197	197/200			ND		1.50
198	198/199			ND		1.50
199	198/199			ND		1.50
200	197/200			ND		1.50
201				ND		0.750
202				ND		0.750
203				ND		0.750
204				ND		0.750
205				ND		0.750
206				ND		0.750
207				ND		0.750
208				ND		0.750
209				ND		0.750

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTE0794-01 (FO 105620-Water) 10130139001 P100609B_15

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

ND = Not Detected

Water



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

Method 1668A Polychlorobiphenyl Blank Analysis Results

Matrix

Lab Sample ID BLANK-25249
Filename P100607A_08
Injected By SMT
Total Amount Extracted 1020 ml

Total Amount Extracted 1020 mL Extracted 06/04/2010 16:40 ICAL ID P100607A04 Analyzed 06/08/2010 00:55

CCal Filename(s) P100607A_03 Dilution NA

CCal Filename(s)	P100607A	_03		Dilution	NA		
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes 13C-2-MoCB 13C-4-MoCB 13C-2,2'-DiCB 13C-2,2'-DiCB 13C-2,2',6-TrCB 13C-3,4,4'-TrCB 13C-3,4,4'-5-TeCB 13C-3,3',4,4'-TeCB 13C-2,2',4,6,6'-PeCB 13C-2,2',4,6,6'-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HyCB 13C-2,2',3,4',5,5'-HpCB 13C-2,2',3,3',4,5,5'-HpCB 13C-2,2',3,3',4,5,5'-6-OcCB 13C-2,2',3,3',4,5,5',6-OcCB 13C-2,2',3,3',4,5,5',6-OcCB 13C-2,2',3,3',4,5,5',6-NoCB 13C-2,2',3,3',4,5,5',6,6'-NoCB 13C-2,2',3,3',4,5,5',6,6'-NoCB 13C-2,2',3,3',4,5,5',6,6'-NoCB	1 3 4 15 19 37 54 81 77 104 105 114 118 123 126 155 156/157 167 169 188 189 202 205 206 208 209	5.812 8.316 8.615 16.115 12.641 24.151 16.422 31.294 31.864 22.793 35.418 34.781 34.278 33.943 38.554 28.947 41.555 40.448 44.774 34.798 47.299 40.163 49.863 51.587 46.781 53.204	3.26 3.56 1.62 1.63 1.07 1.18 0.81 0.80 0.80 1.61 1.58 1.61 1.60 1.61 1.27 1.26 1.27 1.06 0.91 0.90 0.79 0.79	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	0.215 0.324 0.368 0.614 0.512 0.844 0.438 0.986 1.03 0.744 1.03 0.971 1.02 1.04 0.981 1.05 1.99 1.10 0.926 1.60 1.28 1.56 1.13 1.17 1.27 0.992	11 16 18 31 26 42 22 49 52 37 52 49 51 52 49 52 50 55 46 80 64 78 57 59 64 50	RRR R
Cleanup Standards 13C-2,4,4'-TrCB 13C-2,3,3',5,5'-PeCB 13C-2,2',3,3',5,5',6-HpCB	28 111 178	19.708 31.998 37.883	1.08 1.59 1.03	2.0 2.0 2.0	0.838 1.19 1.39	42 59 69	
Recovery Standards 13C-2,5-DiCB 13C-2,2',5,5'-TeCB 13C-2,2',4,5,5'-PeCB 13C-2,2',3,4,4',5'-HxCB 13C-2,2',3,3',4,4',5,5'-OcCB	9 52 101 138 194	11.251 21.787 29.181 37.397 49.389	1.61 0.80 1.62 1.29 0.91	2.0 2.0 2.0 2.0 2.0	NA NA NA NA	NA NA NA NA	

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms

ng s = Nanogram



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.250
2				ND		0.250
3				ND		0.250
4				ND		0.250
5				ND		0.250
4 5 6 7				ND		0.250
7				ND		0.250
8				ND		0.250
9				ND		0.250
10				ND		0.250
11				ND		1.50
12	12/13			ND		0.500
13	12/13			ND		0.500
14	12/13			ND ND		0.250
15				ND		0.250
16				ND		0.250
17				ND		0.250
18	18/30			ND ND		0.500
19	10/30			ND ND		0.250
20	20/28			ND ND		0.500
21	21/33			ND ND		0.500
22	21/33			ND ND		0.250
23				ND ND		0.250
23 24				ND ND		0.250
25 25				ND ND		0.250
26 26	26/29			ND ND		0.500
20 27	20/29			ND ND		0.250
28	20/28			ND ND		0.500
20 29	26/29			ND ND		0.500
30	18/30					0.500
30 31	10/30			ND ND		0.500 0.250
32				ND ND		0.250
32 33	21/33			ND ND		0.500
33 24	21/33			ND ND		0.250
34 35				ND ND		0.250
36				ND ND		0.250
36 37				ND ND		0.250
31 20						0.230
38 39				ND ND		0.250 0.250
39 40	40/41/71					
40 41	40/41/71			ND ND		1.50
	40/41/71			ND ND		1.50
42	42/72					0.500
43	43/73			ND ND		1.00
44 45	44/47/65			ND ND		1.50
45	45/51			ND		1.00

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

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

ND = Not Detected

RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.500
47	44/47/65			ND		1.50
48				ND		0.500
49	49/69			ND		1.00
50	50/53			ND		1.00
51	45/51			ND		1.00
52	16/61			ND		0.500
53	50/53			ND		1.00
54	33/33			ND		0.500
55				ND		0.500
56				ND		0.500
57				ND		0.500
58				ND		0.500
59	59/62/75			ND		1.50
60	33/32/13			ND		0.500
61	61/70/74/76			ND		2.00
62	59/62/75			ND		1.50
63				ND		0.500
64				ND		0.500
65	44/47/65			ND		1.50
66				ND		0.500
67				ND		0.500
68				ND		0.500
69	49/69			ND		1.00
70	61/70/74/76			ND		2.00
71	40/41/71			ND		1.50
72				ND		0.500
73	43/73			ND		1.00
74	61/70/74/76			ND		2.00
75	59/62/75			ND		1.50
76	61/70/74/76			ND		2.00
77				ND		0.500
78				ND		0.500
79				ND		0.500
80				ND		0.500
81				ND		0.500
82				ND		0.500
83				ND		0.500
84				ND		0.500
85	85/116/117			ND		1.50
86	86/87/97/108/119/125			ND		3.00
87	86/87/97/108/119/125			ND		3.00
88	88/91			ND		1.00
89				ND		0.500
90	90/101/113			ND		1.50

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

X = Outside QC Limits RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		1.00
92				ND		0.500
93	93/98/100/102			ND		2.00
94	00,00,100,102			ND		0.500
95				ND		0.500
96				ND		0.500
97	86/87/97/108/119/125			ND		3.00
98	93/98/100/102			ND		2.00
99	30/30/100/102			ND		0.500
100	93/98/100/102			ND		2.00
101	90/101/113			ND		1.50
102	93/98/100/102			ND ND		2.00
103	93/90/100/102			ND ND		0.500
103				ND ND		0.500
105				ND ND		0.500
105				ND ND		0.500
100	107/124			ND ND		1.00
108	86/87/97/108/119/125			ND		3.00
109	440/445			ND		0.500
110	110/115			ND		1.00
111				ND		0.500
112	00/404/440			ND		0.500
113	90/101/113			ND		1.50
114				ND		0.500
115	110/115			ND		1.00
116	85/116/117			ND		1.50
117	85/116/117			ND		1.50
118				ND		0.500
119	86/87/97/108/119/125			ND		3.00
120				ND		0.500
121				ND		0.500
122				ND		0.500
123				ND		0.500
124	107/124			ND		1.00
125	86/87/97/108/119/125			ND		3.00
126				ND		0.500
127				ND		0.500
128	128/166			ND		1.00
129	129/138/163			ND		1.50
130				ND		0.500
131				ND		0.500
132				ND		0.500
133				ND		0.500
134	134/143			ND		1.00
135	135/151			ND		1.00

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion X = Outside QC Limits

RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136				ND		0.500
137				ND ND		0.500
138	129/138/163			ND ND		1.50
139	139/140			ND ND		1.00
140	139/140			ND ND		1.00
140	139/140			ND ND		0.500
142				ND ND		0.500
142	134/143			ND ND		1.00
143	134/143			ND ND		0.500
144				ND ND		0.500
145				ND ND		0.500
	4.47/4.40					0.500
147	147/149			ND		1.00
148	147/149			ND ND		0.500
149	147/149					1.00
150	405/454			ND		0.500
151	135/151			ND		1.00
152	450/400			ND		0.500
153	153/168			ND		1.00
154				ND		0.500
155	/			ND		0.500
156	156/157			ND		1.00
157	156/157			ND		1.00
158				ND		0.500
159				ND		0.500
160				ND		0.500
161				ND		0.500
162				ND		0.500
163	129/138/163			ND		1.50
164				ND		0.500
165				ND		0.500
166	128/166			ND		1.00
167				ND		0.500
168	153/168			ND		1.00
169				ND		0.500
170				ND		0.500
171	171/173			ND		1.00
172				ND		0.500
173	171/173			ND		1.00
174				ND		0.500
175				ND		0.500
176				ND		0.500
177				ND		0.500
178				ND		0.500
179				ND		0.500
180	180/193			ND		1.00

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25249 P100607A_08

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
181				ND		0.500
182				ND		0.500
183	183/185			ND		1.00
184				ND		0.500
185	183/185			ND		1.00
186				ND		0.500
187				ND		0.500
188				ND		0.500
189				ND		0.500
190				ND		0.500
191				ND		0.500
192				ND		0.500
193	180/193			ND		1.00
194				ND		0.750
195				ND		0.750
196				ND		0.750
197	197/200			ND		1.50
198	198/199			ND		1.50
199	198/199			ND		1.50
200	197/200			ND		1.50
201				ND		0.750
202				ND		0.750
203				ND		0.750
204				ND		0.750
205				ND		0.750
206				ND		0.750
207				ND		0.750
208				ND		0.750
209				ND		0.750

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKWB BLANK-25249 P100607A_08

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

ND = Not Detected





Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCS-25250 P100607A_05

1000 mL P100607A04 P100607A_03 BLANK-25249 Matrix Water Dilution NA

Extracted 06/04/2010 16:40 Analyzed 06/07/2010 21:54

Injected By SMT

	r	Native Analy	tes	Labeled Analytes			
PCB Isomer	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ery
1	1.0	1.03	103	2.0	0.231	12	R
3	1.0	1.03	103	2.0	0.334	17	R
4	1.0	0.992	99	2.0	0.379	19	R
15	1.0	1.10	110	2.0	0.510	26	R
19	1.0	1.00	100	2.0	0.482	24	R
37	1.0	0.995	100	2.0	0.631	32	
54	1.0	1.04	104	2.0	0.392	20	R
81	1.0	1.04	104	2.0	0.759	38	
77	1.0	0.999	100	2.0	0.773	39	
104	1.0	0.974	97	2.0	0.608	30	
105	1.0	1.07	107	2.0	0.791	40	
114	1.0	1.07	107	2.0	0.746	37	
118	1.0	1.12	112	2.0	0.766	38	
123	1.0	1.05	105	2.0	0.787	39	
126	1.0	0.994	99	2.0	0.720	36	
155	1.0	0.976	98	2.0	0.951	48	
156/157	2.0	2.15	108	4.0	1.53	38	
167	1.0	1.09	109	2.0	0.858	43	
169	1.0	1.06	106	2.0	0.656	33	
188	1.0	1.01	101	2.0	1.61	81	
189	1.0	1.03	103	2.0	1.05	52	
202	1.0	0.965	96	2.0	1.50	75	
205	1.0	0.974	97	2.0	0.901	45	
206	1.0	0.945	94	2.0	0.925	46	
208	1.0	1.01	101	2.0	1.09	55	
209	1.0	1.12	112	2.0	0.767	38	

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion ng = Nanograms

I = Interference



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID Filename Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCSD-25251 P100607A_06 1010 mL P100607A04 P100607A_03

BLANK-25249

Matrix Water Dilution NA

Extracted 06/04/2010 16:40 Analyzed 06/07/2010 22:53

Injected By SMT

	N	lative Analyt	tes	Lal	peled Analyt	es	
PCB Isomer	Spiked Found (ng)		% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.05	105	2.0	0.277	14	R
3	1.0	1.01	101	2.0	0.383	19	R
4	1.0	1.02	102	2.0	0.437	22	R
15	1.0	1.10	110	2.0	0.631	32	
19	1.0	1.02	102	2.0	0.569	28	R
37	1.0	1.00	100	2.0	0.749	37	
54	1.0	1.12	112	2.0	0.469	23	R
81	1.0	1.03	103	2.0	0.856	43	
77	1.0	0.990	99	2.0	0.860	43	
104	1.0	0.969	97	2.0	0.726	36	
105	1.0	1.10	110	2.0	0.864	43	
114	1.0	1.10	110	2.0	0.814	41	
118	1.0	1.13	113	2.0	0.849	42	
123	1.0	1.04	104	2.0	0.866	43	
126	1.0	0.984	98	2.0	0.810	40	
155	1.0	0.996	100	2.0	1.05	52	
156/157	2.0	2.18	109	4.0	1.74	44	
167	1.0	1.09	109	2.0	0.982	49	
169	1.0	1.04	104	2.0	0.789	39	
188	1.0	0.986	99	2.0	1.44	72	
189	1.0	0.998	100	2.0	1.10	55	
202	1.0	0.975	97	2.0	1.35	67	
205	1.0	0.989	99	2.0	0.992	50	
206	1.0	0.971	97	2.0	1.02	51	
208	1.0	1.02	102	2.0	1.11	55	
209	1.0	1.12	112	2.0	0.881	44	

R = Recovery outside of method 1668A control limits

ND = Not Detected

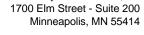
NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference

Nn = Result obtained from alternate analysis





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

Client **Test America**

Spike 1 ID LCS-25250 Spike 2 ID LCSD-25251 Spike 1 Filename Spike 2 Filename P100607A_05 P100607A_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	103	105	1.9	
4-MoCB	3	103	101	2.0	
2,2'-DiCB	4	99	102	3.0	
4,4'-DiCB	15	110	110	0.0	
2,2',6-TrCB	19	100	102	2.0	
3,4,4'-TrCB	37	100	100	0.0	
2,2',6,6'-TeCB	54	104	112	7.4	
3,3',4,4'-TeCB	77	100	99	1.0	
3,4,4',5-TeCB	81	104	103	1.0	
2,2',4,6,6'-PeCB	104	97	97	0.0	
2,3,3',4,4'-PeCB	105	107	110	2.8	
2,3,4,4',5-PeCB	114	107	110	2.8	
2,3',4,4',5-PeCB	118	112	113	0.9	
2,3',4,4',5'-PeCB	123	105	104	1.0	
3,3',4,4',5-PeCB	126	99	98	1.0	
2,2',4,4',6,6'-HxCB	155	98	100	2.0	
(156/157)	156/157	108	109	0.9	
2,3',4,4',5,5'-HxCB	167	109	109	0.0	
3,3',4,4',5,5'-HxCB	169	106	104	1.9	
2,2',3,4',5,6,6'-HpCB	188	101	99	2.0	
2,3,3',4,4',5,5'-HpCB	189	103	100	3.0	
2,2',3,3',5,5',6,6'-OcCB	202	96	97	1.0	
2,3,3',4,4',5,5',6-OcCB	205	97	99	2.0	
2,2',3,3',4,4',5,5',6-NoCB	206	94	97	3.1	
2,2',3,3',4,5,5',6,6'-NoCB	208	101	102	1.0	
Decachlorobiphenyl	209	112	112	0.0	

%REC = Percent Recovered

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



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Darrell Auvil Test America 9405 SW Nimbus Avenue Beaverton OR 97008

> REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10132106

Sample Receipt Date: 06/24/2010

Client Project #: PTF0688

Client Sub PO #: N/A

State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

July 23, 2010

Nate Habte, Project Manager (612) 607-6407

(612) 607-6444 (fax)

natnael.habte@pacelabs.com



This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

July 19, 2010



Pace Analytical Services, Inc.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts per trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 17-115%. With twenty two exceptions, flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the sample preparation steps did not significantly impact the measurement of the native congeners in the field sample.

Laboratory spike samples were also prepared with the sample batch using a reference matrix that had been fortified with native standards. The results show that the spiked native compounds were recovered at 94-104% with relative percent differences of 0-4.0%. These results indicate high levels of accuracy and precision for these analyses. Matrix spikes were not prepared with the sample batch.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
lowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

SUBCONTRACT ORDER **TestAmerica Portland**

PTF0688

6132101

SENDING LABORATORY:

TestAmerica Portland 9405 SW Nimbus Ave. Beaverton, OR 97008 Phone: (503) 906-9200

Fax: (503) 906-9210

Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone: (612) 607-1700

Fax: (612) 607-6444

Project Location: OR - OREGON

Receipt Temperature:

Y / N Ice:

701

Standard TAT is requested unless specific due date is requested. => Due Date: 3 Wl

Analysis

Units

Expires

Comments

Sample ID: PTF0688-01 (FO105706 - Water)

Sampled: 06/21/10 12:41

209 Congeners to Pace

1668 Coplanar PCBs - SUB ug/l

12/18/10 12:41

Containers Supplied:

1L Amber - Unpres. (B)

Pace Analytical Client Nam	e:	Te	St	America	Project #	101321
Courier: Fed Ex UPS USPS C Tracking #: 41 70 1525 127	lient C] Com	mercia	al D Pace Other		ija (olater
Custody Seal on Cooler/Box Present: ye	es 🗌	no	Sea	ls intact: 🔲 yes 🔲	no Proj N	ame:
Packing Material: Bubble Wrap Bubb	ole Bage		None	Other	Temp Blank: Ye	s No
Thermometer Used 80344042 of 179425	Турс	of lo	в: (W	Blue None	Samples on ice, co	oling process has begun
Cooler Temperature Temp should be above freezing to 6°C	Biol	ogica	Tissu	e is Frozen: Yes No Comments:	Date and Initia contents:	e of person examining
Chain of Custody Present:	ĽΙΥe	s DNc	DN/	A 1.		
Chain of Custody Filled Out:		a □No	DN/	2.		
Chain of Custody Relinquished:	ØŶe	s DNc		A 3.		
Sampler Name & Signature on COC:	∐Ye	s 🗆 🗆		4.		
Samples Arrived within Hold Time:	Z¥√ei	B 🗆 No	DN	5.		
Short Hold Time Analysis (<72hr):	ΩΥe≀	s □No		6.		
Rush Turn Around Time Requested:	□Yes	2 12No		7.		
Sufficient Volume:	□Yeε	∍ □No	DNA	8.		
Correct Containers Used:	☑ Yes	□No		9.		
-Pace Containers Used:	□Yes	DNO				
Containers Intact:	[ZYes	□No	□N⁄A	10.		**************************************
Filtered volume received for Dissolved tests	□Yes	□No	CINVA	11.	- 1 	
Sample Labels match COC:	□ y 69	□No	□N⁄A	12.	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
-includes date/time/ID/Analysis Matrix: All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.		T	DAN/A	J3. □ HNO3	☐ H2SO4 ☐	NaOH HOI
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes	□No	DNA	Samp #	1800-1800	
Exceptions: VOA,Coliform, TOC, Oil and Grease, Wi-DRO (wate	ar □Yes	EJNo		Initial when completed	Lot # of added preservative	
Samples checked for dechlorination:	***************************************		EINA			
Headspace in VOA Vials (>6mm):	☐Yes		ZINVA		······································	
Trip Blank Present:	□Yes	□No	ZIÑA			
Frip Blank Custody Seals Present	□Yes	□No	□N⁄A			
Pace Trip Blank Lot # (if purchased):	_					
Client Notification/ Resolution:	```	***************************************		1. (Field Data Required?	Y / N
Person Contacted: Da(C) Au Comments/ Resolution:	<u> </u>	······································	Date/1	ime: 6 6 10 6	11:45	Δ.
- 1668-209	, 3	η Δ.	J	At de 7	2007, 26	me
					-J '	
						
	 					
Project Manager Review:		VA	#		Date:	28/10

Sample Condition Upon Receipt

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the Repth-Calydical SEINNE, Inc. F-L213Rev.00, 05Aug2009

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

Appendix B

Sample Analysis Summary



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID Lab Sample ID Filename

Injected By Total Amount Extracted

% Moisture Dry Weight Extracted

ICAL ID CCal Filename(s)

Method Blank ID

PTF0688-01 (FO105706)

10132106001

P100709B 09 BAL 996 mL

NA NA P100709B02 P100709B 01

BLANK-25552

Water Matrix Dilution NA

Collected 06/21/2010 12:41 Received 06/24/2010 09:55 Extracted 06/30/2010 19:30 Analyzed 07/10/2010 09:05

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.540	3.56	2.0	0.387	19 R
13C-4-MoCB	3	13.002	3.42	2.0	0.445	22 R
13C-2,2'-DiCB	4	13.374	1.66	2.0	0.349	17 R
13C-4,4'-DiCB	15	21.533	1.63	2.0	0.582	29
13C-2,2',6-TrCB	19	17.854	1.06	2.0	0.405	20 R
13C-3,4,4'-TrCB	37	29.823	1.06	2.0	1.05	52
13C-2,2',6,6'-TeCB	54	21.892	0.79	2.0	0.554	28
13C-3,4,4',5-TeCB	81	37.083	0.80	2.0	1.61	81
13C-3,3',4,4'-TeCB	77	37.670	0.81	2.0	1.71	86
13C-2,2',4,6,6'-PeCB	104	28.431	1.59	2.0	0.719	36
13C-2,3,3',4,4'-PeCB	105	41.275	1.64	2.0	1.94	97
13C-2,3,4,4',5-PeCB	114	40.604	1.60	2.0	1.88	94
13C-2,3',4,4',5-PeCB	118	40.051	1.63	2.0	1.90	95
13C-2,3',4,4',5'-PeCB	123	39.716	1.59	2.0	1.86	93
13C-3,3',4,4',5-PeCB	126	44.411	1.59	2.0	2.13	107
13C-2,2',4,4',6,6'-HxCB	155	34.618	1.27	2.0	1.10	55
13C-HxCB (156/157)	156/157	47.462	1.27	4.0	4.44	111
13C-2,3',4,4',5,5'-HxĆB	167	46.272	1.28	2.0	2.21	111
13C-3,3',4,4',5,5'-HxCB	169	50.766	1.29	2.0	2.29	115
13C-2,2',3,4',5,6,6'-HpCB	188	40.571	1.07	2.0	1.37	69
13C-2,3,3',4,4',5,5'-HpCB	189	53.357	1.06	2.0	2.29	114
13C-2,2',3,3',5,5',6,6'-OcCB	202	46.004	0.91	2.0	1.55	78
13C-2,3,3',4,4',5,5',6-OcCB	205	56.439	0.90	2.0	1.92	96
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.918	0.78	2.0	1.72 1.61	86
13C-2,2',3,3',4,5,5',6,6'-NoCB 13CDeCB	208 209	52.818 61.504	0.82 0.71	2.0 2.0	1.56	80 78
ISCDeCB	209	01.504	0.71	2.0	1.50	70
Cleanup Standards						
13C-2,4,4'-TrCB	28	25.229	1.08	2.0	0.947	47
13C-2,3,3',5,5'-PeCB	111	37.687	1.61	2.0	1.52	76
13C-2,2',3,3',5,5',6-HpCB	178	43.673	1.06	2.0	1.61	80
Recovery Standards						
13C-2,5-DiCB	9	16.285	1.63	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	27.375	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.870	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	43.237	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	55.836	0.92	2.0	NA	NA
, , , , , , ,						

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTF0688-01 (FO105706) 10132106001 P100709B_09

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
1				ND		0.251
2				ND		0.251
3				ND		0.251
4				ND		0.251
5				ND		0.251
6				ND		0.251
7				ND		0.251
8				ND		0.251
9				ND		0.251
10				ND		0.251
11				ND		1.51
12	12/13			ND		0.502
13	12/13			ND		0.502
14	12/13			ND		0.251
15				ND		0.251
16				ND ND		0.251
17				ND ND		0.251
18	18/30			ND ND		0.502
	10/30			ND ND		0.302
19 20	20/28			ND ND		
	20/20					0.502
21	21/33			ND		0.502
22				ND		0.251
23				ND		0.251
24				ND		0.251
25	00/00			ND		0.251
26	26/29			ND		0.502
27	00/00			ND		0.251
28	20/28			ND		0.502
29	26/29			ND		0.502
30	18/30			ND		0.502
31				ND		0.251
32				ND		0.251
33	21/33			ND		0.502
34				ND		0.251
35				ND		0.251
36				ND		0.251
37				ND		0.251
38				ND		0.251
39				ND		0.251
40	40/41/71			ND		1.51
41	40/41/71			ND		1.51
42				ND		0.502
43	43/73			ND		1.00
44	44/47/65			ND		1.51
45	45/51			ND		1.00
46				ND		0.502
47	44/47/65			ND		1.51
48				ND		0.502

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTF0688-01 (FO105706) 10132106001 P100709B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69			ND		1.00
50	50/53			ND		1.00
51	45/51			ND		1.00
52				ND		0.502
53	50/53			ND		1.00
54				ND		0.502
55				ND		0.502
56				ND		0.502
57				ND		0.502
58				ND		0.502
59	59/62/75			ND		1.51
60				ND		0.502
61	61/70/74/76			ND		2.01
62	59/62/75			ND		1.51
63	30,02,13			ND		0.502
64				ND		0.502
65	44/47/65			ND		1.51
66	11/1//00			ND		0.502
67				ND		0.502
68				ND		0.502
69	49/69			ND ND		1.00
70	61/70/74/76			ND		2.01
70 71						
	40/41/71			ND		1.51
72	40/70			ND		0.502
73	43/73			ND		1.00
74	61/70/74/76			ND		2.01
75	59/62/75			ND		1.51
76	61/70/74/76			ND		2.01
77				ND		0.502
78				ND		0.502
79				ND		0.502
80				ND		0.502
81				ND		0.502
82				ND		0.502
83				ND		0.502
84				ND		0.502
85	85/116/117			ND		1.51
86	86/87/97/108/119/125			ND		3.01
87	86/87/97/108/119/125			ND		3.01
88	88/91			ND		1.00
89	33,31			ND		0.502
90	90/101/113			ND		1.51
91	88/91			ND		1.00
92	GO/ 3 T			ND ND		0.502
93	93/98/100/102			ND ND		2.01
93 94	33/30/100/102			ND ND		0.502
9 4 95						0.502
				ND ND		
96				ND		0.502

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTF0688-01 (FO105706) 10132106001 P100709B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125			ND		3.01
98	93/98/100/102			ND		2.01
99				ND		0.502
100	93/98/100/102			ND		2.01
101	90/101/113			ND		1.51
102	93/98/100/102			ND		2.01
103				ND		0.502
104				ND		0.502
105				ND		0.502
106				ND		0.502
107	107/124			ND		1.00
108	86/87/97/108/119/125			ND		3.01
109				ND		0.502
110	110/115			ND		1.00
111				ND		0.502
112				ND		0.502
113	90/101/113			ND		1.51
114				ND		0.502
115	110/115			ND		1.00
116	85/116/117			ND		1.51
117	85/116/117			ND		1.51
118				ND		0.502
119	86/87/97/108/119/125			ND		3.01
120				ND		0.502
121				ND		0.502
122				ND		0.502
123	407/404			ND		0.502
124	107/124			ND		1.00
125	86/87/97/108/119/125			ND		3.01
126				ND		0.502
127	128/166			ND		0.502
128 129				ND ND		1.00 1.51
130	129/138/163			ND ND		0.502
131				ND ND		0.502
132				ND ND		0.502
133				ND ND		0.502
134	134/143			ND ND		1.00
135	135/151			ND ND		1.00
136	133/131			ND ND		0.502
137				ND ND		0.502
138	129/138/163			ND ND		1.51
139	139/140			ND		1.00
140	139/140			ND		1.00
141	. 50, 1 10			ND		0.502
142				ND		0.502
143	134/143			ND		1.00
144	- · · · ·			ND		0.502

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits Nn = Value obtained from additional analyses ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTF0688-01 (FO105706) 10132106001 P100709B_09

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
145				ND		0.502
146				ND		0.502
147	147/149			ND		1.00
148				ND		0.502
149	147/149			ND		1.00
150				ND		0.502
151	135/151			ND		1.00
152				ND		0.502
153	153/168			ND		1.00
154				ND		0.502
155				ND		0.502
156	156/157			ND		1.00
157	156/157			ND		1.00
158	100/101			ND		0.502
159				ND		0.502
160				ND		0.502
161				ND		0.502
162				ND		0.502
163	129/138/163			ND		1.51
164	123/130/103			ND		0.502
165				ND		0.502
166	128/166			ND		1.00
167	120/100			ND		0.502
168	153/168			ND		1.00
169	155/100			ND ND		0.502
170				ND ND		0.502
170	171/173			ND ND		1.00
171	17 1/173			ND ND		0.502
172	171/173			ND ND		1.00
173	17 1/173			ND ND		0.502
174				ND ND		0.502
				ND ND		
176 177				ND ND		0.502 0.502
				ND ND		0.502
178 179				ND ND		0.502 0.502
179	180/193			ND ND		
180	180/193					1.00
181				ND ND		0.502
182	400/405			ND		0.502
183	183/185			ND		1.00
184	400/405			ND		0.502
185	183/185			ND		1.00
186				ND ND		0.502
187				ND		0.502
188				ND		0.502
189				ND		0.502
190				ND		0.502
191				ND		0.502
192				ND		0.502

Conc = Concentration

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

B = Less than 10 times higher than method blank level R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

ng's = Nanograms



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTF0688-01 (FO105706) 10132106001 P100709B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193			ND		1.00
194				ND		0.753
195				ND		0.753
196				ND		0.753
197	197/200			ND		1.51
198	198/199			ND		1.51
199	198/199			ND		1.51
200	197/200			ND		1.51
201				ND		0.753
202				ND		0.753
203				ND		0.753
204				ND		0.753
205				ND		0.753
206				ND		0.753
207				ND		0.753
208				ND		0.753
209				ND		0.753

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

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



Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID Lab Sample ID Filename PTF0688-01 (FO105706) 10132106001 P100709B_09

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

ND = Not Detected

Water

Matrix



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

Method 1668A Polychlorobiphenyl **Blank Analysis Results**

Lab Sample ID BLANK-25552 Filename P100702A 07 Injected By CVS 1020 mL

Total Amount Extracted Extracted 06/30/2010 19:30 **ICAL ID** P100702A02 Analyzed 07/02/2010 16:43

CCal Filename(s) P100702A 01 Dilution

CCai Filename(s)	P100702A	_01		Dilution	NA	
PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes 13C-2-MoCB 13C-4-MoCB 13C-4-MoCB 13C-2,2'-DiCB 13C-4,4'-DiCB 13C-2,2',6-TrCB 13C-2,2',6,6'-TeCB 13C-3,4,4'-5-TeCB 13C-3,3',4,4'-TeCB 13C-2,2',4,6,6'-PeCB 13C-2,3,3',4,4'-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,3',4,4',5-PeCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',6,6'-HxCB 13C-2,2',4,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HxCB 13C-2,2',3,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5'-HpCB 13C-2,2',3,3',4,4',5,5'-G-OcCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-OcCB 13C-2,2',3,3',4,4',5,5',6-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB 13C-2,2',3,3',4,4',5,5',6,6'-NoCB	1 3 4 15 19 37 54 81 77 104 105 114 118 123 155 156/157 167 169 188 189 202 205 206 208 209	9.552 13.027 13.399 21.561 17.881 29.854 21.920 37.118 37.705 28.462 41.312 40.641 40.088 39.752 44.449 34.652 47.502 46.311 50.807 40.608 53.392 46.043 56.497 58.977 52.853 61.564	3.03 2.86 1.61 1.53 1.08 1.04 0.80 0.79 0.79 1.62 1.63 1.59 1.63 1.59 1.60 1.27 1.27 1.26 1.28 1.07 1.04 0.92 0.91 0.77	2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	0.0890 0.106 0.100 0.327 0.151 1.08 0.294 1.91 1.96 0.841 2.19 2.17 2.14 2.25 1.13 3.67 1.88 1.88 1.88 1.98 1.79 1.79 1.74 1.69	4 R 5 R 16 R 16 8 R 15 96 98 42 110 110 107 113 57 92 94 94 84 99 90 94 88 87 84
Cleanup Standards 13C-2,4,4'-TrCB 13C-2,3,3',5,5'-PeCB 13C-2,2',3,3',5,5',6-HpCB	28 111 178	25.275 37.722 43.711	1.04 1.57 1.05	2.0 2.0 2.0	0.722 1.80 1.82	36 90 91
Recovery Standards 13C-2,5-DiCB 13C-2,2',5,5'-TeCB 13C-2,2',4,5,5'-PeCB 13C-2,2',3,4,4',5'-HxCB 13C-2,2',3,3',4,4',5,5'-OcCB	9 52 101 138 194	16.311 27.405 34.904 43.275 55.872	1.60 0.79 1.61 1.28 0.91	2.0 2.0 2.0 2.0 2.0	NA NA NA NA	NA NA NA NA

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

Nn = Value obtained from additional analyses

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference ng's = Nanograms



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25552 P100702A 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1				ND		0.246
2				ND		0.246
3				ND		0.246
4				ND		0.246
4 5 6 7				ND		0.246
6				ND		0.246
7				ND		0.246
8				ND		0.246
9				ND		0.246
10				ND		0.246
11				ND		1.48
12	12/13			ND		0.492
13	12/13			ND		0.492
14	,.0			ND		0.246
15				ND		0.246
16				ND		0.246
17				ND		0.246
18	18/30			ND		0.492
19	. 0, 00			ND		0.246
20	20/28			ND		0.492
21	21/33			ND		0.492
22	, 00			ND		0.246
23				ND		0.246
24				ND		0.246
25				ND		0.246
26	26/29			ND		0.492
27				ND		0.246
28	20/28			ND		0.492
29	26/29			ND		0.492
30	18/30			ND		0.492
31				ND		0.246
32				ND		0.246
33	21/33			ND		0.492
34				ND		0.246
34 35				ND		0.246
36				ND		0.246
37				ND		0.246
38				ND		0.246
39				ND		0.246
40	40/41/71			ND		1.48
41	40/41/71			ND		1.48
42	 •			ND		0.492
43	43/73			ND		0.984
44	44/47/65			ND		1.48
45	45/51			ND		0.984

Conc = Concentration

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

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion

X = Outside QC Limits RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25552 P100702A 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46				ND		0.492
47	44/47/65			ND		1.48
48				ND		0.492
49	49/69			ND		0.984
50	50/53			ND		0.984
51	45/51			ND		0.984
52	16/61			ND		0.492
53	50/53			ND		0.984
54	33/33			ND		0.492
55				ND		0.492
56				ND		0.492
57				ND		0.492
58				ND		0.492
59	59/62/75			ND		1.48
60	33/32/13			ND		0.492
61	61/70/74/76			ND		1.97
62	59/62/75			ND		1.48
63				ND		0.492
64				ND		0.492
65	44/47/65			ND		1.48
66				ND		0.492
67				ND		0.492
68				ND		0.492
69	49/69			ND		0.984
70	61/70/74/76			ND		1.97
71	40/41/71			ND		1.48
72				ND		0.492
73	43/73			ND		0.984
74	61/70/74/76			ND		1.97
75	59/62/75			ND		1.48
76	61/70/74/76			ND		1.97
77				ND		0.492
78				ND		0.492
79				ND		0.492
80				ND		0.492
81				ND		0.492
82				ND		0.492
83				ND		0.492
84				ND		0.492
85	85/116/117			ND		1.48
86	86/87/97/108/119/125			ND		2.95
87	86/87/97/108/119/125			ND		2.95
88	88/91			ND		0.984
89				ND		0.492
90	90/101/113			ND		1.48

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated * = See Discussion X = Outside QC Limits

RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25552 P100702A 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91			ND		0.984
92				ND		0.492
93	93/98/100/102			ND		1.97
94	00,00,100,102			ND		0.492
95				ND		0.492
96				ND		0.492
97	86/87/97/108/119/125			ND		2.95
98	93/98/100/102			ND		1.97
99	00/00/100/102			ND		0.492
100	93/98/100/102			ND		1.97
101	90/101/113			ND		1.48
102	93/98/100/102			ND		1.97
102	93/90/100/102			ND ND		0.492
103				ND ND		0.492
105				ND ND		0.492
105				ND ND		0.492
100	107/124			ND ND		0.492
108	86/87/97/108/119/125			ND		2.95
109	440/445			ND		0.492
110	110/115			ND		0.984
111				ND		0.492
112	00/404/440			ND		0.492
113	90/101/113			ND		1.48
114				ND		0.492
115	110/115			ND		0.984
116	85/116/117			ND		1.48
117	85/116/117			ND		1.48
118				ND		0.492
119	86/87/97/108/119/125			ND		2.95
120				ND		0.492
121				ND		0.492
122				ND		0.492
123				ND		0.492
124	107/124			ND		0.984
125	86/87/97/108/119/125			ND		2.95
126				ND		0.492
127				ND		0.492
128	128/166			ND		0.984
129	129/138/163			ND		1.48
130				ND		0.492
131				ND		0.492
132				ND		0.492
133				ND		0.492
134	134/143			ND		0.984
135	135/151			ND		0.984

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected NA = Not Applicable NC = Not Calculated

* = See Discussion X = Outside QC Limits

RT = Retention Time I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25552 P100702A 07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136				ND		0.492
137				ND		0.492
138	129/138/163			ND		1.48
139	139/140			ND ND		0.984
140	139/140			ND		0.984
141	100/140			ND		0.492
142				ND ND		0.492
143	134/143			ND		0.984
144	10-1/11-10			ND		0.492
145				ND		0.492
146				ND ND		0.492
147	147/149			ND		0.984
148	147/143			ND ND		0.492
149	147/149			ND		0.984
150	171/175			ND		0.492
151	135/151			ND		0.432
152	100/101			ND ND		0.492
153	153/168			ND		0.432
154	133/100			ND ND		0.492
155				ND ND		0.492
156	156/157			ND ND		0.492
157	156/157			ND ND		0.984
158	130/131			ND ND		0.492
159				ND ND		0.492
160				ND		0.492
161				ND		0.492
162				ND ND		0.492
163	129/138/163			ND ND		1.48
164	123/130/103			ND ND		0.492
165				ND ND		0.492
166	128/166			ND ND		0.492
167	120/100			ND		0.492
168	153/168			ND ND		0.432
169	133/100			ND		0.492
170				ND ND		0.492
170	171/173			ND ND		0.492
172	17 1/173			ND		0.492
173	171/173			ND		0.492
173	11 1/113			ND ND		0.492
174				ND ND		0.492
175				ND ND		0.492
176				ND ND		0.492
177				ND ND		0.492
176				ND ND		0.492 0.492
179	180/193			ND ND		0.492 0.984
100	100/193			ואט		0.904

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

NC = Not Calculated

* = See Discussion

X = Outside QC Limits RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID Filename

BLANK-25552 P100702A 07

				Concentration	EMPC	EML
IUPAC	Co-elutions	RT	Ratio	ng/L	ng/L	ng/L
181				ND		0.492
182				ND		0.492
183	183/185			ND		0.984
184				ND		0.492
185	183/185			ND		0.984
186				ND		0.492
187				ND		0.492
188				ND		0.492
189				ND		0.492
190				ND		0.492
191				ND		0.492
192				ND		0.492
193	180/193			ND		0.984
194				ND		0.738
195				ND		0.738
196				ND		0.738
197	197/200			ND		1.48
198	198/199			ND		1.48
199	198/199			ND		1.48
200	197/200			ND		1.48
201				ND		0.738
202				ND		0.738
203				ND		0.738
204				ND		0.738
205				ND		0.738
206				ND		0.738
207				ND		0.738
208				ND		0.738
209				ND		0.738

Conc = Concentration

EML =Method Specified Reporting Limit (1668A)

EMPC = Estimated Maximum Possible Concentration

A = Limit of Detection based on signal to noise

B = Less than 10 times higher than method blank level

R = Recovery outside of Method 1668A control limits

ng/L = Nanograms per liter

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

X = Outside QC Limits

RT = Retention Time

I = Interference



Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID Lab Sample ID Filename DFBLKBN BLANK-25552 P100702A_07

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

ND = Not Detected



Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID
Filename

Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID LCS-25553 P100702A_03

1020 mL P100702A02 P100702A_01 BLANK-25552 Matrix Dilution Water NA

Extracted 06/30/2010 19:30 Analyzed 07/02/2010 12:22

Injected By CVS

PCB Isomer	N	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	∍ry	
1	1.0	1.02	102	2.0	0.147	7	R	
3	1.0	1.02	102	2.0	0.224	11	R	
4	1.0	1.04	104	2.0	0.214	11	R	
15	1.0	0.987	99	2.0	0.452	23	R	
19	1.0	0.985	99	2.0	0.309	15	R	
37	1.0	0.981	98	2.0	1.06	53		
54	1.0	0.943	94	2.0	0.419	21	R	
81	1.0	0.967	97	2.0	2.09	104		
77	1.0	0.981	98	2.0	2.20	110		
104	1.0	0.979	98	2.0	0.774	39		
105	1.0	0.997	100	2.0	2.14	107		
114	1.0	0.971	97	2.0	2.09	105		
118	1.0	0.983	98	2.0	2.09	105		
123	1.0	0.971	97	2.0	2.10	105		
126	1.0	0.980	98	2.0	2.25	113		
155	1.0	0.963	96	2.0	1.18	59		
156/157	2.0	1.99	100	4.0	3.88	97		
167	1.0	1.000	100	2.0	1.93	97		
169	1.0	0.993	99	2.0	1.92	96		
188	1.0	0.991	99	2.0	1.81	91		
189	1.0	1.01	101	2.0	2.08	104		
202	1.0	0.988	99	2.0	1.95	97		
205	1.0	0.983	98	2.0	1.98	99		
206	1.0	0.981	98	2.0	1.86	93		
208	1.0	0.969	97	2.0	1.90	95		
209	1.0	0.988	99	2.0	1.76	88		

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

^{* =} See Discussion ng = Nanograms

I = Interference



Method 1668A Polychlorobiphenyls **Laboratory Control Spike Analysis Results**

Lab Sample ID Filename

Total Amount Extracted ICAL ID

CCal Filename(s) Method Blank ID

LCSD-25554 P100702A_04

1000 mL P100702A02 P100702A_01 BLANK-25552 Matrix Water Dilution NA

Extracted 06/30/2010 19:30 Analyzed 07/02/2010 13:26

Injected By **CVS**

PCB Isomer	N	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recove	ry	
1	1.0	1.04	104	2.0	0.130	7	R	
3	1.0	1.02	102	2.0	0.146	7	R	
4	1.0	1.06	106	2.0	0.135	7	R	
15	1.0	1.03	103	2.0	0.189	9	R	
19	1.0	0.980	98	2.0	0.138	7	R	
37	1.0	0.991	99	2.0	0.957	48		
54	1.0	0.935	94	2.0	0.181	9	R	
81	1.0	0.998	100	2.0	2.04	102		
77	1.0	1.00	100	2.0	2.09	104		
104	1.0	0.978	98	2.0	0.669	33		
105	1.0	1.01	101	2.0	2.29	114		
114	1.0	0.978	98	2.0	2.23	111		
118	1.0	0.991	99	2.0	2.26	113		
123	1.0	0.977	98	2.0	2.27	114		
126	1.0	0.984	98	2.0	2.39	120		
155	1.0	0.956	96	2.0	1.17	58		
156/157	2.0	2.01	101	4.0	3.99	100		
167	1.0	0.988	99	2.0	2.03	101		
169	1.0	0.998	100	2.0	1.99	100		
188	1.0	0.990	99	2.0	1.92	96		
189	1.0	1.01	101	2.0	2.21	110		
202	1.0	0.992	99	2.0	2.09	104		
205	1.0	0.989	99	2.0	2.05	103		
206	1.0	0.970	97	2.0	1.92	96		
208	1.0	0.986	99	2.0	1.97	99		
209	1.0	0.973	97	2.0	1.80	90		

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms I = Interference



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

Client Test America

 Spike 1 ID
 LCS-25553
 Spike 2 ID
 LCSD-25554

 Spike 1 Filename
 P100702A_03
 Spike 2 Filename
 P100702A_04

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD	
2-MoCB	1	102	104	1.9	
4-MoCB	3	102	102	0.0	
2,2'-DiCB	4	104	106	1.9	
4,4'-DiCB	15	99	103	4.0	
2,2',6-TrCB	19	99	98	1.0	
3,4,4'-TrCB	37	98	99	1.0	
2,2',6,6'-TeCB	54	94	94	0.0	
3,3',4,4'-TeCB	77	98	100	2.0	
3,4,4',5-TeCB	81	97	100	3.0	
2,2',4,6,6'-PeCB	104	98	98	0.0	
2,3,3',4,4'-PeCB	105	100	101	1.0	
2,3,4,4',5-PeCB	114	97	98	1.0	
2,3',4,4',5-PeCB	118	98	99	1.0	
2,3',4,4',5'-PeCB	123	97	98	1.0	
3,3',4,4',5-PeCB	126	98	98	0.0	
2,2',4,4',6,6'-HxCB	155	96	96	0.0	
(156/157)	156/157	100	101	1.0	
2,3',4,4',5,5'-HxCB	167	100	99	1.0	
3,3',4,4',5,5'-HxCB	169	99	100	1.0	
2,2',3,4',5,6,6'-HpCB	188	99	99	0.0	
2,3,3',4,4',5,5'-HpCB	189	101	101	0.0	
2,2',3,3',5,5',6,6'-OcCB	202	99	99	0.0	
2,3,3',4,4',5,5',6-OcCB	205	98	99	1.0	
2,2',3,3',4,4',5,5',6-NoCB	206	98	97	1.0	
2,2',3,3',4,5,5',6,6'-NoCB	208	97	99	2.0	
Decachlorobiphenyl	209	99	97	2.0	

%REC = Percent Recovered

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