— CITY OF PORTLAND —
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ▪ Dan Saltzman, Commissioner ▪ Dean Marriott, Director

TECHNICAL MEMORANDUM No. OF22C-3

Outfall Basin 22C

Stormwater Investigation – Tualatin Hills Drainage Culvert

TO: Karen Tarnow, Oregon Department of Environmental Quality (DEQ)

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DATE: August 13, 2009

SUBJECT: **Portland Harbor Source Control Investigation**

Introduction

This technical memorandum summarizes the results of the City source investigation of stormwater runoff within the Outfall Basin 22C stormwater conveyance system and concludes that no further source investigation is warranted in the western branch of Basin 22C. In 2005, NW Natural (Gasco) conducted an investigation of stormwater and dry-weather flow in portions of the Basin 22C conveyance system. The investigation results suggested that sources of polycyclic aromatic hydrocarbons (PAHs) and metals may be present in stormwater discharges from the western branch, which collects runoff from primarily Forest Park. Because this assessment was based solely on one stormwater sample, DEQ and the City identified this is as a data gap and determined additional stormwater samples should be collected and analyzed to facilitate a more robust assessment of potential sources in the western branch of Basin 22C (BES, 2007a). Between February and June 2007, the City collected four stormwater grab samples from the Tualatin Hills drainage culvert (the same location as the 2005 Gasco sample) to evaluate discharges from the western branch of Basin 22C.

Additionally, as part of its upland stormwater sampling activities for Portland Harbor, the Lower Willamette Group (LWG) collected three stormwater samples in April 2007 and January 2008 representative of Forest Park stormwater runoff upstream of the City and Gasco samples. The LWG data are evaluated in this memorandum along with the City and Gasco data to determine whether there are significant sources of PAHs and metals discharging via the stormwater pathway to this portion of the Basin 22C conveyance system. Based on an evaluation of these results, significant sources of PAHs and metals are not present in the western branch of Basin 22C and no further source investigation is warranted in this portion of the basin.

This investigation is part of the City's ongoing source control program associated with the Portland Harbor City of Portland Outfalls Project. These investigation results are submitted pursuant to the August 13, 2003, Intergovernmental Agreement between DEQ and the City.

Basin 22C Configuration and Background

Outfall 22C discharges to the west side of the Willamette River at approximately river mile 6.9. Figure 1 provides an overview of the Basin 22C stormwater conveyance system. Land use in this 1,107-acre stormwater basin consists primarily of open space in Forest Park (93%), with approximately 6% zoned as industrial and 1% in use as major transportation.

Basin 22C consists of three main branches: northern, western and southern. The northern branch includes runoff from Highway 30 and railroad rights-of-way, the Koppers Industries, Inc. site, and a small portion of Forest Park. Discharges from these areas are conveyed to Outfall 22C via Doane Creek. The western branch conveys flows to Outfall 22C from the largest Forest Park component of the basin (including Doane Creek), the City Police Bureau Impound Yard, and a portion of Highway 30. These flows pass under Highway 30 and to the Doane Creek ditch via the 60-inch-diameter Tualatin Hills drainage culvert. The southern branch includes a portion of Forest Park, North Doane Lake, industrial properties along Highway 30, and highway and railroad rights-of-way. Flows from these three branches discharge into the Northwest Drainage Pond and out to Outfall 22C via an 84-inch-diameter storm line.

2005 Gasco Stormwater Sample. In 2005, Gasco collected solids and water samples at several locations within Basin 22C as part of a limited source investigation to evaluate the potential presence of manufactured gas plant constituents in Doane Creek and the Basin 22C conveyance system (Hahn and Associates, 2006). Investigation activities included stormwater and dry-weather flow sampling at multiple locations, including at the outlet of the Tualatin Hills drainage culvert. Of those samples collected at the culvert outlet, Gasco reported one stormwater sample that was collected in June 2005 during a wet-weather event; the remainder represented dry-weather flow. Figure 2 includes rain gage data for the period of the June 2005 Gasco sampling event at the Tualatin Hills drainage culvert.

The Gasco stormwater sample was analyzed for metals, volatile organic compounds, and semi-volatile organic compounds (SVOCs) (including PAHs and phthalates). PAHs and certain metals (copper, lead, and manganese) were detected in the stormwater sample at concentrations greater than the Joint Source Control Strategy (JSCS) screening level values (SLVs) (DEQ/EPA, 2005) in effect at that time. Phthalates were not detected in the sample; however, the laboratory method reporting limits exceeded one or more of the SLVs. For comparison with the 2007/2008 City and LWG stormwater data samples, the June 2005 stormwater sample results from the Tualatin Hills drainage culvert are summarized in Table 1.

2007/2008 LWG Stormwater Investigation. The LWG collected flow-weighted composite stormwater samples from manhole AAJ602 on April 18 and 23, 2007 and on January 9, 2008 (Anchor and Integral, 2007, 2008a and 2008b). Manhole AAJ602 is located in the western branch, upstream of Highway 30 and the Police Bureau impoundment yard (see Figure 1). This monitoring location represents runoff solely from Forest Park.

The LWG samples were analyzed for metals, PAHs, phthalates, PCB congeners, herbicides, and pesticides. For comparison purposes, only the results for those constituents (metals, PAHs and phthalates) analyzed in the City stormwater samples are presented in Table 1. Metals were

detected at low concentrations in the LWG samples (including only a few detections that slightly exceeded JSCS SLVs). With the exception of a few estimated concentrations near the method reporting limits, PAHs and phthalates were not detected in the LWG samples.

City 2007 Stormwater Investigation

Field Activities. The City coordinated with DEQ regarding the stormwater sampling activities before conducting the work. Stormwater grab samples were collected during four wet-weather events on February 27, May 2, June 5, and June 9, 2007 at the outlet of the Tualatin Hills drainage culvert as shown in Figure 1. Photographs of the sampling location and stormwater flow conditions are provided in Attachment A. Field notes taken during sampling activities are provided in Attachment B.

Stormwater collection and handling procedures were conducted using the applicable Standard Operating Procedures (SOPs) included in the City's *Amended Programmatic Sampling and Analysis Plan* (Programmatic SAP) for collection of water and solids samples for the City of Portland Outfalls Project (BES, 2007b) and in accordance with the *Amended Programmatic Quality Assurance Project Plan* (Programmatic QAPP) for the project (BES, 2007c). The SOPs were established by the City's Field Operations section to standardize the data collection methodologies for a wide range of monitoring activities and thereby maintain comparability and representativeness of the data produced. Although the Programmatic SAP and QAPP were finalized subsequent to the City's stormwater sampling at Outfall 22C, the SOPs were established and in use at the time of the sampling.

Storm Events Sampled. The JSCS establishes the following target storm event criteria for storm selection: a minimum antecedent dry period of 24 hours (with rainfall accumulation less than 0.1 inch), a minimum predicted rainfall of more than 0.2 inch within a 24-hour period, and an expected storm event duration of at least 3 hours. These criteria were developed for implementation by upland sites. In this case, they were used as general guidelines to determine which forecasted storms (forecasts obtained from Extended Range Forecasting, Inc.) should be targeted for sampling. Given the large basin size, the pervious nature due to the predominant Forest Park component, the dry-weather flows from Doane Creek, and the inherent local variability of spring storm events, field personnel were directed to use best professional judgment in selecting target storm events and timing sample collection to represent stormwater runoff from the entire western branch. Before sampling, field crews evaluated rain gage data and the flow conditions at the Tualatin Hills drainage culvert to ensure that samples represented stormwater discharges (see Attachment B).

Summaries of forecasted rainfall and weather conditions during the City's four stormwater sampling events and the Gasco June 2005 sampling event are presented in Table 2. Flow data were not collected as part of this investigation. Precipitation graphs for each event from data collected at the City's Bonny Slope School rain gage station (10351 NW Thompson Rd.) are shown on Figure 2. Rain gage data from this station are considered most likely to represent rainfall in this branch of Basin 22C, relative to other rain gage stations in the Portland area. However, as this gage is located approximately 2 miles west of the sampling location, near the top of the Tualatin Hills, these rain gage data may not accurately depict all rainfall conditions

occurring within Basin 22C, especially during events with sporadic, localized rain activity. Brief descriptions of the four storm events sampled are provided below.[1]

February 27, 2007: Approximately 0.1 inch of precipitation occurred in the 24 hours preceding this event, and no precipitation occurred in the 6 hours preceding the event. The minimum forecasted rainfall for February 27 was 0.17 inch; however, the forecasted range was between 0.17 and 0.31 inch. Rainfall began between 3:00 a.m. and 4:00 a.m. and ceased between 3:00 p.m. and 4:00 p.m. on February 27, producing a cumulative total rainfall of 0.48 inch over 12 hours. The stormwater sample was collected from the drainage culvert at 9:40 a.m.

May 2, 2007: Less than 0.1 inch of precipitation occurred in the 10 hours preceding this event. The minimum forecasted rainfall for May 2 was 0.17 inch; however, the forecasted range was between 0.17 and 0.31 inch. Rainfall began between 10:00 a.m. and 11:00 a.m. and ceased between 1:00 p.m. and 2:00 p.m. on May 2, producing a cumulative total of 0.11 inch over 4 hours. The stormwater sample was collected at 2:20 p.m.

June 5, 2007: Less than 0.1 inch of precipitation occurred in the 24 hours preceding this event. The minimum forecasted rainfall for June 5 was 0.08 inch, and the forecasted range was between 0.08 inch and greater than 0.18 inch. Relatively heavy rainfall began between 6:00 a.m. and 7:00 a.m. on June 5, but ceased by 7:00 a.m.; the total rainfall between 6:00 and 7:00 a.m. was 0.11 inch. The stormwater sample was collected at 7:42 a.m.

June 9, 2007: No precipitation occurred in the 24 hours preceding this event. The minimum forecasted rainfall for June 9 was 0.25 inch. Rainfall began between 8:00 a.m. and 9:00 a.m. and ceased between 3:00 p.m. and 4:00 p.m. on June 9, producing a cumulative total of 0.35 inch over 8 hours. The stormwater sample was collected at 4:07 p.m.

With the exception of the June 9th sample, all samples likely reflect first-flush conditions based on the basin characteristics, field observations, and the timing of sample collections.

Analytical Approach. The stormwater samples were analyzed by BES's Water Pollution and Control Laboratory (WPCL) and a subcontracted laboratory. The samples were analyzed for the constituents listed in the following table.

Analysis	Method	Laboratory
TSS	SM 2540D	WPCL
Total Mercury	WPCL SOP M-10.01	WPCL
Total Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, Silver, Zinc)	EPA 200.8	WPCL
TOC	EPA 415.1	Test America
PAHs and Phthalates	EPA 8270-SIM	Test America

[1] All times are reported in Pacific Standard Time (PST).

Summary of Results and Data Comparison

Storm Event Representativeness – Gasco vs. City Samples. A review of the precipitation data indicates that the storm event sampled by Gasco on June 1, 2005 (see Figure 2) was small and of short duration; only 0.01 inch of rainfall was recorded over a 1-hour period for this event. Based on the limited rainfall volume and storm duration, it is likely that stormwater discharges from this June 2005 event did not include runoff from the majority of the relatively large, mostly forested western branch. Additionally, photographs included in the 2006 Hahn and Associates report show relatively low flow conditions at the time of sampling as compared to the photograph taken during the City's February 27, 2007 sampling event (see Attachment A).

Overall, compared to the storm event sampled by Gasco, the stormwater samples collected by the City in 2007 are more representative of stormwater contributions from the western branch. Total precipitation amounts for the May 2 and June 5 events were less than the targeted 0.2 inch minimum, but field observations at the time of sampling indicated the sampled flow represented stormwater discharge. Based on these sampling conditions, the four City stormwater grab samples are considered to be representative of stormwater runoff from the entire drainage area of the Tualatin Hills drainage culvert, and therefore met the sampling objectives.

Chemical Analytical Results. Based on the June 2005 Gasco sample results, the City stormwater samples were submitted for analysis of metals, PAHs, phthalates, TOC, and TSS. The analytical results and the JSCS SLVs are summarized in Table 1. The laboratory analytical results and data review memorandum for the City stormwater samples are provided in Attachment C.

The analytical results from the City samples were compared with the June 2005 Gasco Tualatin Hills culvert sample to evaluate the representativeness of Gasco's single stormwater sample. The City's sample results also were compared to the LWG samples to evaluate potential contaminant contributions of runoff from Highway 30 and the Police Bureau impoundment yard. The results of the comparisons are summarized as follows:

PAHs: PAHs were detected at low and similar concentrations in the three City samples collected in May and June 2007. The concentrations in the February 2007 sample are the highest of the four City samples but are within an order of magnitude of concentrations in the May and June samples. Concentrations for some individual PAHs slightly exceeded the respective JSCS SLVs; in all cases these PAH detections were within the same order-of -magnitude as the SLVs. The June 2005 Gasco stormwater sample PAH results are generally 2 to 3 times higher than the corresponding PAH concentrations in all of the City samples. PAHs were not detected in the LWG samples with the exception of a few estimated concentrations near the method reporting limits.

Metals: Metals either were not detected or were detected at low concentrations in the City samples. Total arsenic, copper, and lead (and manganese in two of the samples) slightly exceeded (within an order-of-magnitude) their respective JSCS SLVs; results for all other metals were less than the SLVs. The June 2005 Gasco metal results are generally 2 to 4 times higher than the corresponding metal concentrations in the City samples. The metal detections in the LWG samples are slightly lower or similar to the concentrations detected in the City samples.

Phthalates: With the exception of a few estimated concentrations near the method reporting limits, phthalates were not detected in the City and the LWG samples.

Phthalates were not detected in the Gasco sample above the (elevated) method reporting limits.

The low concentrations of PAHs and metals in the LWG samples indicate that stormwater runoff from Forest Park is not a significant source of these constituents in the western branch of Basin 22C. Comparison of the City and LWG sample results suggests that the low PAH and metals concentrations detected in the City samples may be associated with runoff from the developed portions of the western branch.

Conclusions

The four City stormwater grab samples met the sampling objectives and are considered representative of stormwater runoff from the western branch of Basin 22C. The comparison of the City investigation results with the JSCS SLVs does not indicate the presence of significant sources of PAHs, metals, or phthalates within the western branch. Based on the comparison of the City and LWG Forest Park samples, the low concentrations of PAHs and metals detected in stormwater from the Tualatin Hills drainage culvert appear to be associated with stormwater runoff from developed areas such as Highway 30 or the Police Bureau impound yard. While concentrations of metals and PAHs are low relative to the range of concentrations reported for stormwater sampling locations within the Portland Harbor (Anchor and Integral, 2008b), the City will conduct a stormwater inspection at the impound yard to assess opportunities to implement stormwater best management practices to further reduce contaminant concentrations in stormwater discharging to the western branch.

Based upon the stormwater investigation results, no further source investigation is warranted for the western branch of Basin 22C.

References

Anchor and Integral. 2007. Round 3A Upland Stormwater Sampling Field Sampling Report. Prepared for the Lower Willamette Group by Anchor Environmental, LLC and Integral Consulting, Inc. November 30, 2007.

Anchor and Integral. 2008a. Round 3B Upland Stormwater Sampling Field Sampling Report. Prepared for the Lower Willamette Group by Anchor Environmental, LLC and Integral Consulting, Inc. June 13, 2008.

Anchor and Integral. 2008b. Portland Harbor RI/FS Round 3A and 3B Stormwater Data Report. Prepared for the Lower Willamette Group by Anchor Environmental, LLC and Integral Consulting, Inc. September 2008.

BES. 2007a. Letter to DEQ, City of Portland Outfalls Project, Outfall Basin 22C Data Gaps. City of Portland, Bureau of Environmental Services. February 22, 2007.

BES. 2007b. Amended Programmatic Sampling and Analysis Plan, City of Portland Outfalls Remedial Investigation/Source Control Measures Project. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.

BES. 2007c. Amended Programmatic Quality Assurance Project Plan, City of Portland Outfalls Project, Revision to Programmatic Source Control Remedial Investigation Work Plan

Appendix D. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.

DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005. (updated July 2007).

Hahn and Associates. 2006. City of Portland Outfall 22C Drainage Sampling Activities, Siltronic Corporation Property, 7200 NW Front Avenue, Portland, Oregon. Prepared for NW Natural by Hahn and Associates, Inc. June 2, 2006.

Tables

Figures

Attachments

Tables

Table 1
Summary of Chemical Analytical Results
Stormwater Samples
Outfall Basin 22C - Western Branch

		Tualatin Hills Drainage Culvert Stormwater Grab Samples					LWG - Forest Park Stormwater Composite Samples					JSCS Stormwater SLVs[1]		
		GASCO Sample - June 2005	City Sample - 1st Event	City Sample - 2nd Event	City Sample - 3rd Event	City Sample - 4th Event	LWG Sample - 1st Event	LWG Sample - Field Split	LWG Sample - 2nd Event	LWG Sample - Field Split	LWG Sample - 3rd Event	Human Health	Human Health	
Class Analyte	**Units**	6/1/2005	2/27/2007	5/2/2007	6/5/2007	6/9/2007	4/18/2007	4/18/2007	4/23/2007	4/23/2007	1/9/2008	Fish Consumption[2]	Drinking Water[3]	Ecological[4]
Field Measurements														
Conductivity	umhos/cm	NA	70	85	111	247	11	NA	8	NA	NA	--	--	--
pH	units	NA	6.1	7	6.5	6.9	6.73	NA	7.24	NA	NA	--	--	--
Temperature	Deg. C	NA	6.0	9.7	10.6	14.9	4.2	NA	9.9	NA	NA	--	--	--
Total Organic Carbon (EPA 415.1)														
TOC	mg/L	NA	2.31	1.78	5.78	3.57	2.8	NA	3.3	NA	4.5	--	--	--
Total Suspended Solids (SM 2540D)														
TSS	mg/L	NA	34	13	12	9	10	NA	10	NA	81	--	--	--
Total Metals (EPA 200.8)														
Arsenic	ug/L	1.00 U	**0.40**	**0.29**	**0.30**	**0.23**	**0.20**	NA	**0.20**	NA	**0.23** J	0.14	0.045	150
Cadmium	ug/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.01 U	NA	0.02 U	NA	0.02 J	--	5	0.094
Chromium	ug/L	7.38	3.49	1.28	1.27	0.88	0.87	NA	1.22	NA	3.05	--	100	--
Copper	ug/L	**21.4**	**5.65**	**2.9**	**6.77**	**5.98**	1.01 J	NA	1.16	NA	**3.07**	--	1300	2.7
Lead	ug/L	**17**	**4.66**	**1.34**	**2.16**	**1.43**	0.437	NA	0.403 J	NA	**1.57**	--	15	0.54
Manganese	ug/L	**118**	**53.9**	41.9	**50.1**	23.4	NA	NA	NA	NA	NA	100	50	120
Mercury[5]	ug/L	0.200 U	0.010	0.004	0.006	0.006	0.030 UJ	NA	0.030 U	NA	0.030 UJ	0.146	2	0.77
Nickel	ug/L	3.77	1.83	0.84	0.91	0.6	1.28	NA	0.95	NA	2.1	4600	730	16
Silver	ug/L	1.00 U	0.10 U	0.10 U	0.10 U	0.10 U	0.01 U	NA	0.01 U	NA	0.01 U	--	100	0.12
Zinc	ug/L	NA	26.8	13.1	23.7	19.1	3.69 J	NA	13.1 J	NA	8.59	26000	5000	36
PAHs (EPA 8270M-SIM)														
Acenaphthene	ug/L	0.0376	0.0194 U	0.0198 U	0.0222	0.0194 U	0.0032 U	0.0033 U	0.0033 U	0.0033 U	0.0047 U	990	0.2	520
Acenaphthylene	ug/L	0.02 U	0.0194 U	0.0198 U	0.0192 U	0.0194 U	0.0024 U	0.0024 U	0.0025 U	0.0025 U	0.0037 U	--	0.2	--
Anthracene	ug/L	0.0612	0.0194 U	0.0198 U	0.0192 U	0.0203	0.004 U	0.0041 U	0.0042 UJ	0.0042 UJ	0.0039 U	40000	0.2	0.73
Benzo(a)anthracene	ug/L	**0.137**	**0.0661**	**0.0378**	**0.0318**	**0.0382**	0.004 U	0.0041 U	0.0042 U	0.0042 U	0.0047 J	0.018	0.092	0.027
Benzo(a)pyrene	ug/L	**0.255**	**0.0914**	**0.0452**	**0.0385**	**0.0442**	0.0044 U	0.0045 U	R	R	0.0046 U	0.018	0.0092	0.014
Benzo(b)fluoranthene	ug/L	**0.2710**	**0.0930**	**0.0538**	**0.0560**	**0.0538**	0.0047 U	0.0048 U	0.0049 U	0.0049 U	0.0041 J	0.018	0.092	--
Benzo(k)fluoranthene	ug/L	**0.149**	**0.0749**	**0.034**	**0.0302**	**0.04**	0.0052 U	0.0054 U	0.0054 U	0.0054 U	0.0027 U	0.018	0.2	--
Benzo(g,h,i)perylene	ug/L	0.1870	0.1110	0.0436	0.0385	0.0427	0.0042 U	0.0043 U	0.0044 U	0.0044 U	0.0031 U	--	0.2	--
Chrysene	ug/L	**0.23**	**0.0928**	**0.0461**	**0.0418**	**0.0493**	0.0054 U	0.0056 U	0.0056 U	0.0056 U	0.0037 U	0.018	0.2	--
Dibenzofuran	ug/L	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	12	3.7
Dibenzo(a,h)anthracene	ug/L	**0.0487**	**0.0294**	0.0115	0.0114	0.012	0.0037 U	0.0038 U	0.0038 U	0.0038 U	0.0027 U	0.018	0.0092	--
Fluoranthene	ug/L	**0.629**	0.167	0.0716	0.0841	0.123	0.0048 U	0.0049 U	0.005 U	0.005 U	0.0066 J	140	0.2	--
Fluorene	ug/L	0.0373	0.0194 U	0.0198 U	0.0192 U	0.0194 U	0.0037 U	0.0038 U	0.0038 U	0.0038 U	0.0041 U	5300	0.2	3.9
Indeno(1,2,3-cd)pyrene	ug/L	**0.1370**	**0.0830**	**0.0329**	**0.0325**	**0.0342**	0.0034 U	0.0035 U	0.0035 U	0.0035 U	0.0028 U	0.018	0.092	--
Naphthalene	ug/L	0.0416	0.0194 U	0.0198 U	0.0192 U	0.0194 U	0.017 U	0.017 U	0.015 U	0.016 U	0.028 U	--	0.2	620
Phenanthrene	ug/L	**0.319**	0.105	0.0417	0.0593	0.0846	0.0033 U	0.0034 U	0.0034 U	0.0034 U	0.0054 U	--	0.2	--
Pyrene	ug/L	**0.213**	0.179	0.0644	0.0718	0.0999	0.0048 U	0.0049 U	0.005 U	0.005 U	0.0046 J	4000	0.2	--
Estimated Total PAHs	ug/L	2.7534	1.0926	0.4826	0.5181	0.6422	ND	ND	ND	ND	0.02	--	--	--
Phthalates (EPA 8270M-SIM)														
Bis(2-ethylhexyl)phthalate	ug/L	10.00 U	0.59 J	0.99 U	2.00 U	0.10 U	0.11 U	0.13 U	0.09 U	0.07 U	0.83 J	2.2	4.8	3
Butylbenzylphthalate	ug/L	5.00 U	1.00 U	0.99 U	0.96 U	0.10 U	0.03 U	0.02 U	0.02 U	0.01 U	0.02 U	1900	7300	3
Diethylphthalate	ug/L	5.00 U	1.00 U	0.99 U	0.96 U	0.10 U	0.02 U	0.02 U	0.03 U	0.02 U	0.02 U	44000	29000	3
Dimethylphthalate	ug/L	5.00 U	1.00 U	0.99 U	0.96 U	0.10 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	1100000	370000	3
Di-n-butylphthalate	ug/L	5.00 U	1.00 U	0.99 U	0.96 U	0.10 U	0.23 J	0.09 U	0.05 U	0.05 U	0.08 U	4500	3700	3
Di-n-octylphthalate	ug/L	5.00 U	1.00 U	0.99 U	0.96 U	0.10 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	--	1500	3

Notes:

J = The analyte was detected at a concentration less than the reporting limit and greater than the method detection and has been qualified as an estimated quantity.
U = The analyte was not detected above the reported sample quantification limit.
R = Rejected.
-- = No JSCS screening level available.
NA = not analyzed or not available
ug/L = Micrograms per liter.
mg/L = Milligrams per liter

[1] JSCS SLVs- Portland Harbor Joint Source Control Strategy Screening Level Values (DEQ/EPA Final December 2005, as amended July 2007).

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

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

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

[5] Mercury analysis by WPCL SOP M-10.01 and SW 7470A.

bold = concentration exceeds DEQ's SLV

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

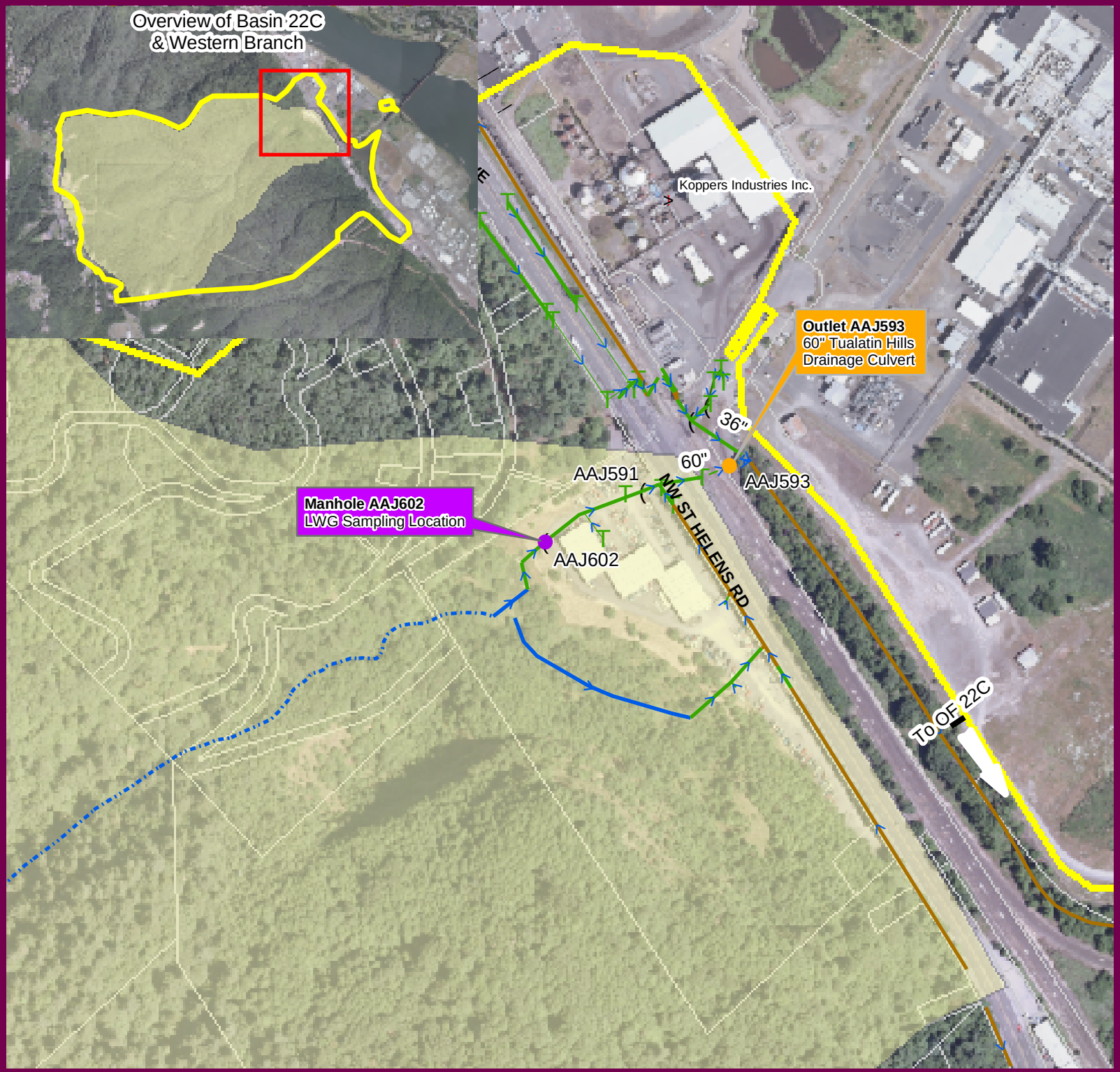
Table 2
2005 Gasco and 2007 City Stormwater Sampling Event Summary
Outfall Basin 22C
Tualatin Hills Drainage Culvert

Storm Date	Sample Time (PST)	Forecasted Total Precipitation [2] (inches)	Rain Gage Data (Bonny Slope School, 10351 NW Thompson Rd.)				
			Antecedent Dry Period [1]	Antecedent Cumulative Precipitation (inches)		Cumulative Rainfall (inches)	Storm Duration
				24-Hour	6-Hour		
Gasco sampling event							
06/01/05	11:30 a.m.	--	>24 hours	0.06	0.00	0.01	1 hour
City sampling events							
02/27/07	9:40 a.m.	0.17 – 0.31	9 hours	0.10	0.00	0.48	12 hours
05/02/07	2:20 p.m.	0.17 – 0.31	10 hours	0.20	0.01	0.11	4 hours
06/05/07	7:42 a.m.	0.08 – 0.17	>24 hours	0.01	0.00	0.11	1 hour
06/09/07	4:07 p.m.	0.25 – 0.42	>24 hours	0.00	0.00	0.35	8 hours

Notes:

PST = Pacific Standard Time
[1] Cumulative rainfall during this time less than 0.10 inches
[2] Provided by Extended Range Forecasting, Inc.
-- Not provided.

Figures



Legend

- Storm Pipe
- Ditch
- Constructed Channel
- Natural Channel
- Basin 22C Boundary
- Basin 22C - Western Branch
- Taxlot
- Manhole
- Inlet
- City/Gasco Sampling Location
- LWG Sampling Location
- DEQ Environmental Cleanup Sites

0 100 200 400 Feet

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

Figure 1
Basin 22C Stormwater Sampling Locations

Source: City of Portland BES Aerial photo 2008	Environmental Services City of Portland 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912
File Name: s:\gis\outfalls\outfall22c\ sampling\of22cbasin.mxd	**Program Manager:** Dawn Sanders Portland Harbor Superfund
Sheet No. 1 OF 1	**Date Printed:** 07/07/09 **Prepared by:** Sara Gardner

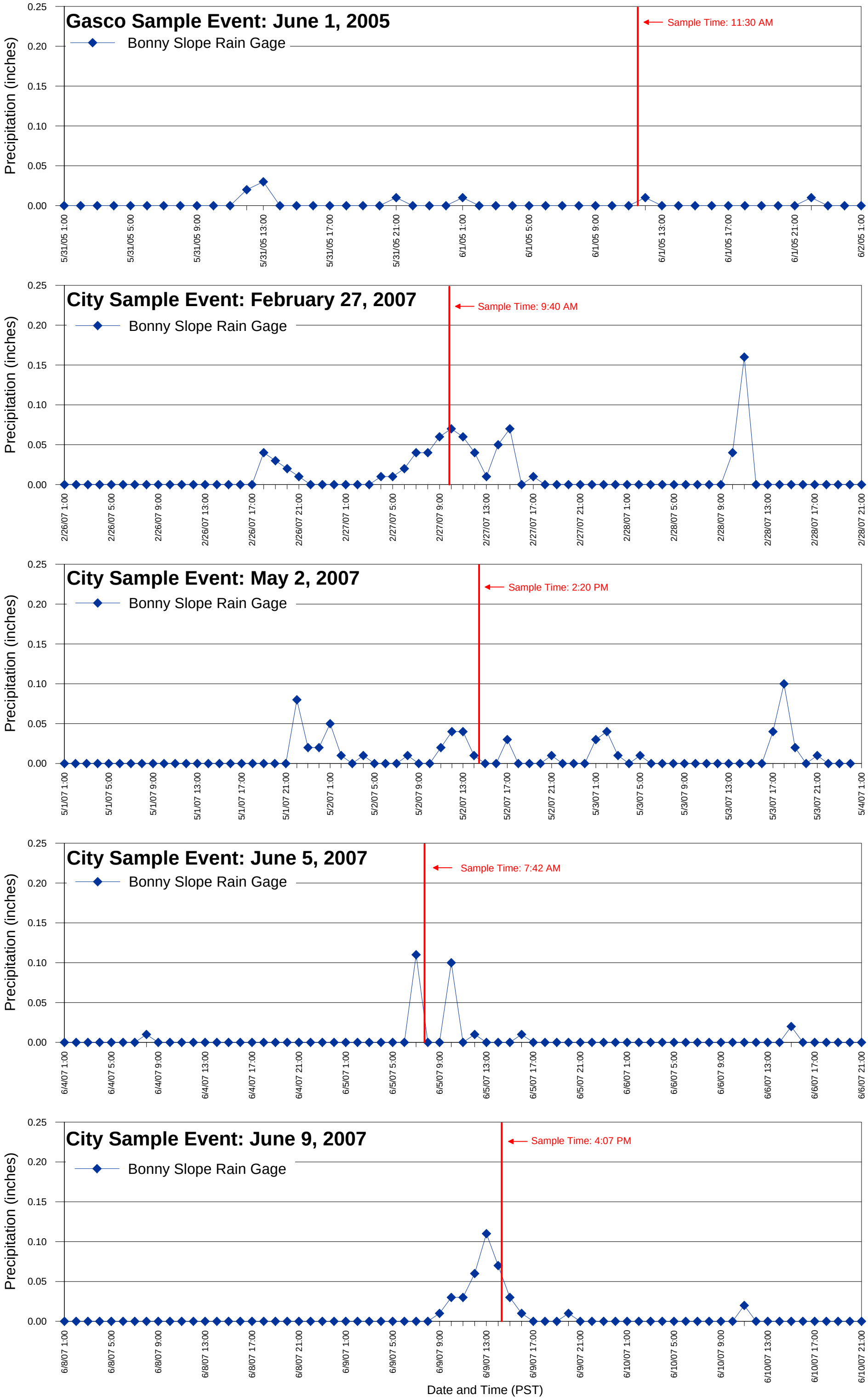


Figure 2
Storm Event Precipitation Graphs
Outfall Basin 22C

PST = Pacific Standard Time
Rain gage data obtained from USGS, Oregon Water Science Center (http://or.water.usgs.gov/non-usgs/bes/)

Attachment A
Field Photographs

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Photo 1 (January 29, 2007). Outlet of Tualatin Hills drainage culvert (non-storm conditions).

Photo 2 (February 27, 2007). Flow conditions at Tualatin Hills drainage culvert during stormwater sampling event.

Photo 3 (February 27, 2007). Assessing flow conditions at Tualatin Hills drainage culvert.

Attachment B
Field Notes

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of 1

Project Portland Harbor Stormwater Samp
Project No. 1020.005
Location 22C-1
Date 2/27/07
Subject initial site recon, SW grab (event 1 of 4)
By ECH, JXB

0910 arrive @ 22C-1. light rain. Doane Creek appears elevated ~~[illegible]~~ and turbid due to heavy rain event just prior to arrival.

0923 verified location of 22C-1. confirmed pipe is 60 inches.
depth of flow in culvert = 13.2 inches
depth of flow in transect = 20 inches
velocity = 3.8 ft/s

0940 collected stormwater grab (event 1 of 4) approx 8 feet downstream of culvert on left hand side of creek bank.

~~[illegible]~~

in the two hours prior to sampling about 0.22 inches of rain fell according to the WPCL rain gage.

pH, temp, cond
waders

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Project PORTLAND HARBOR STORMWATER
Location OF 22C (DOANE CR)
Subject EVENT 2 (?) SAMPLING

Project No. 1020.005
Date 5/2/07
By DJH

BACKGROUND - ~0.3" RAIN FELL BETWEEN 2300 LAST NIGHT AND ~0400 DST TODAY. SHOWERS FORECASTED TODAY.

1000 PST ARRIVE TO CHECK CREEK FLOW = MOSTLY CLEAR AND NON-TURBULENT. DID NOT SAMPLE.

1100 PST - RETURN AFTER A SHORT SHOWER PASSED. STILL NON-TURBID (MOSTLY BASE FLOW) = DID NOT SAMPLE.

1415 PST - RETURN TO SITE FOLLOWING ABOUT 90 MINUTES OF MODERATELY INTENSE SHOWERS. NOT RAINING UPON ARRIVAL.

CREEK IS MORE ELEVATED THAN DURING TODAY'S PRIOR VISITS AND MORE TURBD, ALTHOUGH NOT EXTREMELY TURBID. WATER DEPTH IS ~5" DEEP AT DOWNSTREAM END OF BROKEN CULVERT / MOST OF CULVERT FLOOR IS RUSTED OUT.

1420 - COLLECT SAMPLES. THESE SAMPLES REPRESENT SPRING SHOWER RUNOFF AND MAY BE HALF (?) BASE FLOW.

Attachments

1435 - OFF TO LAB

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of 1

Project PORTLAND
Location OF 72C (DOANE CREEK)
Subject EVENT 3 SAMPLING)

Project No. 1020.005
Date 6/5/07
By ECH

BACKGROUND

BETWEEN 0600 AND 0700 (PST) 0.08 INCHES OF RAIN FELL. LIGHT SCATTERED SHOWERS WITH SOME ISOLATED T-STORMS PREDICTED FOR THE REST OF THE DAY.

0742 (PST)

ARRIVED ONSITE TO CHECK FLOW. IT WAS ELEVATED FROM RECENT RAIN EVENTS. ~~HEAVY~~ ECH DISTINCT OIL SHEEN ON TURBID FLOW. 1.8 INCHES OF WATER AT THE EDGE OF CULVERT. COLLECTED SAMPLES. ~~T~~ECH. CURRENTLY NO PRECIPITATION.

1250 (PST)

CHECKED BACK TO CONFIRM ~~ELEVA~~ ECH FLOW WAS ELEVATED DURING MORNING SAMPLE COLLECTION. FLOW WAS ONLY 0.2 INCHES AT EDGE OF CULVERT. ~~SHEEN~~ WAS GONE.

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of 1

Project OF22C - Doane Creek
Location Portland Harbor Superfund
Subject Event 4

Project No.
Date 6/9/07
By PCB/JTM

All times PST

1601 Arrived @ sampling location. Stream is slightly elevated measured depth at end of ~~EF~~ culvert on left side of culvert facing upstream. Depth = 2.5'.

1607 Filled sample bottles directly, except for the 250 mL prepreserved amber bottle for TOC; it was filled using a field rinsed decon'd stainless steel beaker.

1614 Off-site to resume other storm sampling

Attachments

Attachment C
Laboratory Reports and QA/QC Review

Laboratory Data QA/QC Review
Upland Source Control Investigation
Outfall Basin 22C

To: File

From: Julia Fowler, GSI

Date: July 1, 2008

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control investigation sampling and analyses conducted by the City of Portland (City) in Outfall Basin 22C from February to June 2007. Four stormwater samples were collected by the City and submitted for analyses. The results of the sampling and analyses are presented in the Technical Memorandum No. OF 22C-3.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and a subcontracted laboratory. The following laboratories conducted the analyses listed:

- BES WPCL
    - Total Metals – EPA 200.8
    - Total Mercury – WPCL SOP M-10.02
    - Total suspended solids (TSS) – SM 2540D
- Test America
    - Total Organic Carbon – EPA 415.1)
    - PAHs & phthalates – EPA 8270-SIM

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, unless otherwise noted, all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review is based on the available documentation supplied from the subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC

review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody for completeness and continuous custody
- Analysis within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits

The results of the laboratory report QA/QC review are presented below.

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures were adequate and sample integrity was maintained through the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the laboratory analyses of PAHs, phthalates, total organic carbon (TOC) and mercury. Di-n-octylphthalate was detected in the method blank for the May 2, 2007, sample (SW-22C-AAJ593-0207) and in the stormwater sample at an estimated concentration (greater than the method detection limit but less than the method reporting limit). The presence of this compound in the sample is considered to be a result of laboratory contamination; therefore, the sample result is noted as not detected at a concentration greater than the method reporting limit.

Bis(2-ethylhexyl)phthalate was detected in the method blank for the June 5, 2007, sample (SW-22C-AAJ593-0207) and in the stormwater sample. The presence of this compound in the sample is considered to be a result of laboratory contamination; therefore, as noted in the WPCL summary report, the method reporting limit is raised to 2 µg/l and the result is shown as not detected above this reporting limit.

Surrogate Recoveries

Surrogate recoveries were completed during the laboratory analysis of PAHs and phthalates. All surrogate recoveries were within laboratory control limits..

Laboratory Control/Duplicate Laboratory Control Samples

Laboratory control samples were processed during the laboratory analysis of PAHs, phthalates, mercury, and TOC. All laboratory control sample recoveries were within control limits.

Duplicate laboratory control samples were processed during the laboratory analysis of PAHs and phthalates. The recovery of acenaphthylene and naphthalene exceeded acceptable control limits; however, acceptable method performance was demonstrated through sample surrogate and laboratory control sample recoveries. All other recoveries and the RPDs were within quality control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spikes and matrix spike duplicates were processed during the laboratory analysis of metals, PAHs and phthalates. During the analysis of the February 27, 2007, sample (SW-22C-AAJ593-0207), matrix spike and matrix spike duplicate recoveries were outside the range of acceptable limits for bis(2-ethylhexyl)phthalate due to matrix interference; however, acceptable method performance was demonstrated through sample surrogate and laboratory control sample recoveries.

Other

An equipment (bottle) blank (laboratory sample FO070352) was submitted on March 13, 2007, and analyzed for metals, mercury, PAHs and phthalates. Naphthalene was detected in the sample at a concentration of 0.0343 µg/l. Naphthalene was not detected in any of the stormwater samples analyzed.

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

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 2/27/07
Page: 1 of 1
Collected By: EPH JXB

Project Name: PORTLAND HARBOR STORMWATER SAMP
File Number: 1020.005 Matrix: OTHER

OUTFALL 22C CHAIN-OF-CUSTODY

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: PAH + Phthaltes	General: TOC	General: TSS	Metals: Total Metals (As, Cd Cr, Cu, Pb, Mn, Ni, Ag, Zn) + Hg	Field: Temperature (Deg C) Meter #	Field: Conductivity (umhos/cm) Meter #	Field: pH (pH Units) Meter #
FO 070270	SW-22C-AAJ593-0207 6346 NW St Helens Rd	22C_1	2/27/07	0940	G	●	●	●	●	6.0	70	6.1

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1007	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: BETH H SCOTT Date: 2/27/07	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1007	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Rona Kluch Date: 2/27/07	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070270** **Sample Collected:** 2/27/2007 09:40 **Sample Received:** 02/27/07 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD EAST END HWY30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AL01899
EID File # : 1020.005
LocCode: PORTHASW
Collected By: ECH/JXB

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	70	µmhos/cm	1	SM 2510 B	02/27/07
pH (FIELD)	6.1	pH Units	0.1	SM 4500-H B	02/27/07
TEMPERATURE	6.0	Deg. C	0.1	SM 2550 B	02/27/07
GENERAL					
TOTAL SUSPENDED SOLIDS	34	mg/L	2	SM 2540 D	02/28/07
METALS					
MERCURY	0.010	µg/L	0.002	WPCLSOP M-1(	02/28/07
MERCURY BLANK	<0.002	µg/L	0.002	EPA 200.8	02/28/07
MERCURY DUPLICATE PRECISION RPD	7.25	% RPD		EPA 200.8	02/28/07
MERCURY DUPLICATE RESULT	0.0093	µg/L		EPA 200.8	02/28/07
MERCURY SPIKE AMOUNT	0.0222	µg/L			02/28/07
MERCURY SPIKE RECOVERY	93.2	%		EPA 200.8	02/28/07
MERCURY SPIKE RESULT	0.0307	µg/L		EPA 200.8	02/28/07
MERCURY, TOTAL, LFB AMOUNT	0.0200	µg/L		EPA 200.8	02/28/07
MERCURY, TOTAL, LFB RECOVERY	106	%		EPA 200.8	02/28/07
MERCURY, TOTAL, LFB RESULT	0.0212	µg/L		EPA 200.8	02/28/07
ICP-MS DUPLICATE PRECISION					
ARSENIC	2.53	RPD		EPA 200.8	03/01/07
CADMIUM	NR	RPD		EPA 200.8	03/01/07
CHROMIUM	1.73	RPD		EPA 200.8	03/01/07
COPPER	1.06	RPD		EPA 200.8	03/01/07
LEAD	0.642	RPD		EPA 200.8	03/01/07
MANGANESE	7.30	RPD		EPA 200.8	03/01/07
NICKEL	0.545	RPD		EPA 200.8	03/01/07
SILVER	NR	RPD		EPA 200.8	03/01/07
ZINC	2.94	RPD		EPA 200.8	03/01/07
ICP-MS DUPLICATE RESULT					
ARSENIC	0.39	µg/L		EPA 200.8	03/01/07
CADMIUM	<0.10	µg/L		EPA 200.8	03/01/07
CHROMIUM	3.43	µg/L		EPA 200.8	03/01/07
COPPER	5.71	µg/L		EPA 200.8	03/01/07
LEAD	4.69	µg/L		EPA 200.8	03/01/07
MANGANESE	50.1	µg/L		EPA 200.8	03/01/07

Report Date: 04/16/07 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070270** **Sample Collected:** 2/27/2007 09:40 **Sample Received:** 02/27/07 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD EAST END HWY30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AL01899
EID File # : 1020.005
LocCode: PORTHASW
Collected By: ECH/JXB

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
NICKEL	1.84	µg/L		EPA 200.8	03/01/07
SILVER	<0.10	µg/L		EPA 200.8	03/01/07
ZINC	27.6	µg/L		EPA 200.8	03/01/07
ICP-MS SPIKE AMOUNT					
ARSENIC	20.0	µg/L		EPA 200.8	03/01/07
CADMIUM	20.0	µg/L		EPA 200.8	03/01/07
CHROMIUM	20.0	µg/L		EPA 200.8	03/01/07
COPPER	20.0	µg/L		EPA 200.8	03/01/07
LEAD	20.0	µg/L		EPA 200.8	03/01/07
MANGANESE	20.0	µg/L		EPA 200.8	03/01/07
NICKEL	20.0	µg/L		EPA 200.8	03/01/07
SILVER	20.0	µg/L		EPA 200.8	03/01/07
ZINC	100	µg/L		EPA 200.8	03/01/07
ICP-MS SPIKE RECOVERY					
ARSENIC	100	%REC		EPA 200.8	03/01/07
CADMIUM	102	%REC		EPA 200.8	03/01/07
CHROMIUM	102	%REC		EPA 200.8	03/01/07
COPPER	102	%REC		EPA 200.8	03/01/07
LEAD	102	%REC		EPA 200.8	03/01/07
MANGANESE	93.8	%REC		EPA 200.8	03/01/07
NICKEL	98.4	%REC		EPA 200.8	03/01/07
SILVER	100	%REC		EPA 200.8	03/01/07
ZINC	104	%REC		EPA 200.8	03/01/07
ICP-MS SPIKE RESULT					
ARSENIC	20.4	µg/L		EPA 200.8	03/01/07
CADMIUM	20.3	µg/L		EPA 200.8	03/01/07
CHROMIUM	23.8	µg/L		EPA 200.8	03/01/07
COPPER	26.1	µg/L		EPA 200.8	03/01/07
LEAD	25.1	µg/L		EPA 200.8	03/01/07
MANGANESE	72.7	µg/L		EPA 200.8	03/01/07
NICKEL	21.5	µg/L		EPA 200.8	03/01/07
SILVER	20.0	µg/L		EPA 200.8	03/01/07
ZINC	131	µg/L		EPA 200.8	03/01/07
METALS BY ICP-MS (TOTAL) - 9					

Report Date: 04/16/07 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070270** **Sample Collected:** 2/27/2007 09:40 **Sample Received:** 02/27/07 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD EAST END HWY30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AL01899
EID File # : 1020.005
LocCode: PORTHASW
Collected By: ECH/JXB

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
ARSENIC	0.40	µg/L	0.1	EPA 200.8	03/01/07
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	03/01/07
CHROMIUM	3.49	µg/L	0.4	EPA 200.8	03/01/07
COPPER	5.65	µg/L	0.2	EPA 200.8	03/01/07
LEAD	4.66	µg/L	0.1	EPA 200.8	03/01/07
MANGANESE	53.9	µg/L	0.2	EPA 200.8	03/01/07
NICKEL	1.83	µg/L	0.2	EPA 200.8	03/01/07
SILVER	<0.10	µg/L	0.1	EPA 200.8	03/01/07
ZINC	26.8	µg/L	0.5	EPA 200.8	03/01/07
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	2.31	mg/L	1.0	EPA 415.1	03/02/07
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Benzo(a)anthracene	0.0661	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Benzo(a)pyrene	0.0914	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Benzo(b)fluoranthene	0.0930	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Benzo(ghi)perylene	0.111	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Benzo(k)fluoranthene	0.0749	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Bis(2-ethylhexyl) phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/28/07
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/28/07
Chrysene	0.0928	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Dibenzo(a,h)anthracene	0.0294	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/28/07
Dimethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/28/07
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/28/07
Di-n-octyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	02/28/07
Fluoranthene	0.167	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Indeno(1,2,3-cd)pyrene	0.0830	µg/L	0.00971	EPA 8270M-SIM	02/28/07
Naphthalene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Phenanthrene	0.105	µg/L	0.0194	EPA 8270M-SIM	02/28/07
Pyrene	0.179	µg/L	0.0194	EPA 8270M-SIM	02/28/07

Report Date: 04/16/07 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID:	**FO070270**	**Sample Collected:**	2/27/2007	09:40	**Sample Status:**	**COMPLETE AND VALIDATED**
		Sample Received:	02/27/07			

Proj./Company Name:	PORTLAND HARBOR STORMWATER SAMP	**Report Page:**	Page 4 of 4
Address/Location:	SW-22C-AAJ593-0207 6346 NW ST HELENS RD EAST END HWY30	**System ID:**	AL01899
Sample Point Code:	22C_1	**EID File # :**	1020.005
Sample Type:	GRAB	**LocCode:**	PORTHASW
Sample Matrix:	STORMWTR	**Collected By:**	ECH/JXB

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date

End of Report for Sample ID: FO070270

Report Date: 04/16/07 **Validated By: Signature on File**

TestAmerica
ANALYTICAL TESTING CORPORATION

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

March 22, 2007

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 02/27/07 16:40. The following list is a summary of the Work Orders contained in this report, generated on 03/22/07 17:27.

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

Work Order	Project	ProjectNumber
PQB0945	Portland Harbor	36238

TestAmerica - Portland, OR

Crystal Jones For Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
F0070270	PQB0945-01	Water	02/27/07 09:40	02/27/07 16:40

Crystal Jones For Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQB0945-01 (F0070270)		**Water**			**Sampled: 02/27/07 09:40**					
Acenaphthene	EPA 8270m	ND	*0.0194*	0.0194	ug/l	1x	7021044	02/28/07 15:40	03/05/07 18:34	**U**
Acenaphthylene	"	ND	*0.0194*	0.0194	"	"	"	"	"	**U**
Anthracene	"	ND	*0.0194*	0.0194	"	"	"	"	"	**U**
Benzo (a) anthracene	"	**0.0661**	*0.00971*	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	**0.0914**	*0.00971*	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.0930**	*0.00971*	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.111**	*0.0194*	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.0749**	*0.00971*	0.00971	"	"	"	"	"	
Chrysene	"	**0.0928**	*0.00971*	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**0.0294**	*0.00971*	0.00971	"	"	"	"	"	
Fluoranthene	"	**0.167**	*0.0194*	0.0194	"	"	"	"	"	
Fluorene	"	ND	*0.0194*	0.0194	"	"	"	"	"	**U**
Indeno (1,2,3-cd) pyrene	"	**0.0830**	*0.00971*	0.00971	"	"	"	"	"	
Naphthalene	"	ND	*0.0194*	0.0194	"	"	"	"	"	**U**
Phenanthrene	"	**0.105**	*0.0194*	0.0194	"	"	"	"	"	
Pyrene	"	**0.179**	*0.0194*	0.0194	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*77.4%*		*25 - 125 %*	"			"	
Pyrene-d10			*101%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*101%*		*10 - 125 %*	"			"	
PQB0945-01RE1 (F0070270)		**Water**			**Sampled: 02/27/07 09:40**					
Bis(2-ethylhexyl)phthalate	EPA 8270m	**0.594**	*0.526*	1.00	ug/l	1x	7030179	03/06/07 14:33	03/09/07 21:23	**J**
Butyl benzyl phthalate	"	ND	*0.526*	1.00	"	"	"	"	"	**U**
Di-n-butyl phthalate	"	ND	*0.526*	1.00	"	"	"	"	"	**U**
Di-n-octyl phthalate	"	ND	*0.526*	1.00	"	"	"	"	"	**U**
Diethyl phthalate	"	ND	*0.526*	1.00	"	"	"	"	"	**U**
Dimethyl phthalate	"	ND	*0.526*	1.00	"	"	"	"	"	**U**
Surrogate(s): *Fluorene-d10*			*66.0%*		*25 - 125 %*	"			*03/16/07 20:44*	
Pyrene-d10			*78.8%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*69.6%*		*10 - 125 %*	"			"	

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Crystal Jones For Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

Conventional Chemistry Parameters per APHA/EPA Methods

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Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQB0945-01 (F0070270)		**Water**					**Sampled: 02/27/07 09:40**			
Total Organic Carbon	415.2/5310C	**2.31**	*0.317*	1.00	mg/l	1x	7030108	03/02/07 21:47	03/03/07 05:40	

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6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

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

TestAmerica - Portland, OR

QC Batch: 7021044 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7021044-BLK1)							**Extracted: 02/28/07 15:40**							
Acenaphthene	EPA 8270m	ND	0.0200	0.0200	ug/l	1x	--	--	--	--	--	--	03/05/07 18:01	U
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Surrogate(s): Fluorene-d10		*Recovery: 98.0%*			*Limits: 25-125%*	"							*03/05/07 18:01*	
Pyrene-d10		*88.8%*			*23-150%*	"							*"*	
Benzo (a) pyrene-d12		*99.6%*			*10-125%*	"							*"*	
LCS (7021044-BS1)							**Extracted: 02/28/07 15:40**							
Acenaphthene	EPA 8270m	2.40	0.0200	0.0200	ug/l	1x	--	2.50	96.0%	(35-120)	--	--	03/05/07 19:06	
Acenaphthylene	"	2.63	0.0200	0.0200	"	"	--	"	105%	(34-116)	--	--	"	
Anthracene	"	2.60	0.0200	0.0200	"	"	--	"	104%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.16	0.0100	0.0100	"	"	--	"	86.4%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.26	0.0100	0.0100	"	"	--	"	90.4%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.31	0.0100	0.0100	"	"	--	"	92.4%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	2.55	0.0200	0.0200	"	"	--	"	102%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	2.05	0.0100	0.0100	"	"	--	"	82.0%	(18-145)	--	--	"	
Chrysene	"	2.03	0.0100	0.0100	"	"	--	"	81.2%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(20-141)	--	--	"	
Fluoranthene	"	2.72	0.0200	0.0200	"	"	--	"	109%	(31-125)	--	--	"	
Fluorene	"	1.97	0.0200	0.0200	"	"	--	"	78.8%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.73	0.0100	0.0100	"	"	--	"	109%	(30-135)	--	--	"	
Naphthalene	"	2.47	0.0200	0.0200	"	"	--	"	98.8%	(30-113)	--	--	"	
Phenanthrene	"	2.80	0.0200	0.0200	"	"	--	"	112%	(34-126)	--	--	"	
Pyrene	"	3.14	0.0200	0.0200	"	"	--	"	126%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 88.0%*			*Limits: 25-125%*	"							*03/05/07 19:06*	
Pyrene-d10		*112%*			*23-150%*	"							*"*	

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

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

TestAmerica - Portland, OR

QC Batch: 7021044 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (7021044-BS1)								**Extracted: 02/28/07 15:40**						
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 100%*			*Limits: 10-125%*	*1x*							*03/05/07 19:06*	
LCS Dup (7021044-BSD1)								**Extracted: 02/28/07 15:40**						
Acenaphthene	EPA 8270m	2.70	0.0200	0.0200	ug/l	1x	--	2.50	108%	(35-120)	11.8%	(35)	03/05/07 19:39	
Acenaphthylene	"	2.94	0.0200	0.0200	"	"	--	"	118%	(34-116)	11.7%	"	"	L
Anthracene	"	2.94	0.0200	0.0200	"	"	--	"	118%	(24-119)	12.6%	"	"	
Benzo (a) anthracene	"	2.47	0.0100	0.0100	"	"	--	"	98.8%	(36-128)	13.4%	"	"	
Benzo (a) pyrene	"	2.66	0.0100	0.0100	"	"	--	"	106%	(17-128)	15.9%	"	"	
Benzo (b) fluoranthene	"	2.78	0.0100	0.0100	"	"	--	"	111%	(37-131)	18.3%	"	"	
Benzo (ghi) perylene	"	3.00	0.0200	0.0200	"	"	--	"	120%	(26-126)	16.2%	"	"	
Benzo (k) fluoranthene	"	2.41	0.0100	0.0100	"	"	--	"	96.4%	(18-145)	16.1%	"	"	
Chrysene	"	2.29	0.0100	0.0100	"	"	--	"	91.6%	(16-137)	12.0%	"	"	
Dibenzo (a,h) anthracene	"	3.19	0.0100	0.0100	"	"	--	"	128%	(20-141)	20.7%	"	"	
Fluoranthene	"	2.61	0.0200	0.0200	"	"	--	"	104%	(31-125)	4.69%	"	"	
Fluorene	"	2.26	0.0200	0.0200	"	"	--	"	90.4%	(27-124)	13.7%	"	"	
Indeno (1,2,3-cd) pyrene	"	3.21	0.0100	0.0100	"	"	--	"	128%	(30-135)	16.0%	"	"	
Naphthalene	"	2.89	0.0200	0.0200	"	"	--	"	116%	(30-113)	16.0%	"	"	L
Phenanthrene	"	3.08	0.0200	0.0200	"	"	--	"	123%	(34-126)	9.36%	"	"	
Pyrene	"	3.06	0.0200	0.0200	"	"	--	"	122%	(21-141)	3.23%	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 98.0%*			*Limits: 25-125%*	*"*							*03/05/07 19:39*	
Pyrene-d10		*106%*			*23-150%*	*"*							*"*	
Benzo (a) pyrene-d12		*109%*			*10-125%*	*"*							*"*	

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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.

Crystal Jones For Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

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

TestAmerica - Portland, OR

QC Batch: 7030179 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7030179-BLK1)							**Extracted: 03/06/07 14:33**							
Acenaphthene	EPA 8270m	ND	0.0200	0.0200	ug/l	1x	--	--	--	--	--	--	03/16/07 14:36	U
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	U
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	U
Bis(2-ethylhexyl)phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	03/09/07 20:14	U
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	U
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	U
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	U
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	U
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	U
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	03/16/07 14:36	U
Surrogate(s): Fluorene-d10		*Recovery: 79.6%*			*Limits: 25-125%*	"							*03/16/07 14:36*	
Pyrene-d10		*73.2%*			*23-150%*	"							*"*	
Benzo (a) pyrene-d12		*76.0%*			*10-125%*	"							*"*	
LCS (7030179-BS1)							**Extracted: 03/06/07 14:33**							
Acenaphthene	EPA 8270m	1.90	0.0200	0.0200	ug/l	1x	--	2.50	76.0%	(35-120)	--	--	03/16/07 15:07	
Acenaphthylene	"	1.93	0.0200	0.0200	"	"	--	"	77.2%	(34-116)	--	--	"	
Anthracene	"	2.15	0.0200	0.0200	"	"	--	"	86.0%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.75	0.0100	0.0100	"	"	--	"	70.0%	(36-128)	--	--	"	
Benzo (a) pyrene	"	1.85	0.0100	0.0100	"	"	--	"	74.0%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	1.93	0.0100	0.0100	"	"	--	"	77.2%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	2.02	0.0200	0.0200	"	"	--	"	80.8%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	1.75	0.0100	0.0100	"	"	--	"	70.0%	(18-145)	--	--	"	
Chrysene	"	1.61	0.0100	0.0100	"	"	--	"	64.4%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.18	0.0100	0.0100	"	"	--	"	87.2%	(20-141)	--	--	"	
Fluoranthene	"	1.88	0.0200	0.0200	"	"	--	"	75.2%	(31-125)	--	--	"	
Fluorene	"	1.61	0.0200	0.0200	"	"	--	"	64.4%	(27-124)	--	--	"	

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Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

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

TestAmerica - Portland, OR

QC Batch: 7030179 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (7030179-BS1)								**Extracted: 03/06/07 14:33**						
Indeno (1,2,3-cd) pyrene	EPA 8270m	2.19	0.0100	0.0100	ug/l	1x	--	2.50	87.6%	(30-135)	--	--	03/16/07 15:07	
Naphthalene	"	2.00	0.0200	0.0200	"	"	--	"	80.0%	(30-113)	--	--	"	
Phenanthrene	"	2.32	0.0200	0.0200	"	"	--	"	92.8%	(34-126)	--	--	"	
Bis(2-ethylhexyl)phthalate	"	2.88	0.526	1.00	"	"	--	4.00	72.0%	(20-150)	--	--	03/09/07 20:49	
Butyl benzyl phthalate	"	2.62	0.526	1.00	"	"	--	"	65.5%	"	--	--	"	
Di-n-butyl phthalate	"	2.70	0.526	1.00	"	"	--	"	67.5%	"	--	--	"	
Di-n-octyl phthalate	"	3.10	0.526	1.00	"	"	--	"	77.5%	"	--	--	"	
Diethyl phthalate	"	2.61	0.526	1.00	"	"	--	"	65.2%	"	--	--	"	
Dimethyl phthalate	"	2.58	0.526	1.00	"	"	--	"	64.5%	"	--	--	"	
Pyrene	"	2.05	0.0200	0.0200	"	"	--	2.50	82.0%	(21-141)	--	--	03/16/07 15:07	
Surrogate(s): Fluorene-d10		*Recovery: 77.6%*			*Limits: 25-125%*	"							*03/16/07 15:07*	
Pyrene-d10		*74.8%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*80.0%*			*10-125%*	"							"	
Matrix Spike (7030179-MS1)					**QC Source: PQC0122-22**			**Extracted: 03/06/07 14:33**						
Acenaphthene	EPA 8270m	1.55	0.0396	0.0396	ug/l	2x	ND	2.48	62.5%	(35-120)	--	--	03/19/07 15:27	D
Acenaphthylene	"	1.63	0.0396	0.0396	"	"	ND	"	65.7%	(34-116)	--	--	"	D
Anthracene	"	1.71	0.0396	0.0396	"	"	ND	"	69.0%	(24-119)	--	--	"	D
Benzo (a) anthracene	"	1.26	0.0198	0.0198	"	"	ND	"	50.8%	(22-129)	--	--	"	D
Benzo (a) pyrene	"	1.23	0.0198	0.0198	"	"	ND	"	49.6%	(4-112)	--	--	"	D
Benzo (b) fluoranthene	"	1.30	0.0198	0.0198	"	"	ND	"	52.4%	(0-136)	--	--	"	D
Benzo (ghi) perylene	"	1.46	0.0396	0.0396	"	"	ND	"	58.9%	(0-126)	--	--	"	D
Benzo (k) fluoranthene	"	1.25	0.0198	0.0198	"	"	ND	"	50.4%	(0-145)	--	--	"	D
Chrysene	"	1.15	0.0198	0.0198	"	"	ND	"	46.4%	(7-137)	--	--	"	D
Dibenzo (a,h) anthracene	"	1.49	0.0198	0.0198	"	"	ND	"	60.1%	(0-141)	--	--	"	D
Fluoranthene	"	1.83	0.0396	0.0396	"	"	0.0384	"	72.2%	(30-125)	--	--	"	D
Fluorene	"	1.36	0.0396	0.0396	"	"	0.0248	"	53.8%	(27-124)	--	--	"	D
Indeno (1,2,3-cd) pyrene	"	1.53	0.0198	0.0198	"	"	ND	"	61.7%	(0-135)	--	--	"	D
Naphthalene	"	1.82	0.0396	0.0396	"	"	0.232	"	64.0%	(30-126)	--	--	"	D
Phenanthrene	"	1.97	0.0396	0.0396	"	"	0.0763	"	76.4%	(34-126)	--	--	"	D
Bis(2-ethylhexyl)phthalate	"	3.00	0.521	0.990	"	1x	7.68	3.96	-118%	(10-150)	--	--	03/12/07 21:46	M2
Butyl benzyl phthalate	"	2.57	0.521	0.990	"	"	ND	"	64.9%	"	--	--	"	
Di-n-butyl phthalate	"	2.90	0.521	0.990	"	"	ND	"	73.2%	"	--	--	"	
Di-n-octyl phthalate	"	3.18	0.521	0.990	"	"	0.535	"	66.8%	"	--	--	"	
Diethyl phthalate	"	2.86	0.521	0.990	"	"	ND	"	72.2%	"	--	--	"	
Dimethyl phthalate	"	2.70	0.521	0.990	"	"	ND	"	68.2%	"	--	--	"	
Pyrene	"	1.68	0.0396	0.0396	"	2x	0.0387	2.48	66.2%	(14-168)	--	--	03/19/07 15:27	D
Surrogate(s): Fluorene-d10		*Recovery: 64.9%*			*Limits: 25-125%*	"							*03/19/07 15:27*	
Pyrene-d10		*61.7%*			*23-150%*	"							"	

TestAmerica - Portland, OR

Crystal Jones For Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name: **Portland Harbor**	
6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	03/22/07 17:27

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

TestAmerica - Portland, OR

QC Batch: 7030179 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (7030179-MS1)					**QC Source: PQC0122-22**				**Extracted: 03/06/07 14:33**					
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 60.1%*			*Limits: 10-125%*	*2x*							*03/19/07 15:27*	
Matrix Spike Dup (7030179-MSD1)					**QC Source: PQC0122-22**				**Extracted: 03/06/07 14:33**					
Acenaphthene	EPA 8270m	1.54	0.0392	0.0392	ug/l	2x	ND	2.45	62.9%	(35-120)	0.638%	(45)	03/19/07 15:58	D
Acenaphthylene	"	1.64	0.0392	0.0392	"	"	ND	"	66.9%	(34-116)	1.81%	"	"	D
Anthracene	"	1.68	0.0392	0.0392	"	"	ND	"	68.6%	(24-119)	0.581%	"	"	D
Benzo (a) anthracene	"	1.22	0.0196	0.0196	"	"	ND	"	49.8%	(22-129)	1.99%	"	"	D
Benzo (a) pyrene	"	1.17	0.0196	0.0196	"	"	ND	"	47.8%	(4-112)	3.70%	"	"	D
Benzo (b) fluoranthene	"	1.32	0.0196	0.0196	"	"	ND	"	53.9%	(0-136)	2.82%	"	"	D
Benzo (ghi) perylene	"	1.38	0.0392	0.0392	"	"	ND	"	56.3%	(0-126)	4.51%	"	"	D
Benzo (k) fluoranthene	"	1.07	0.0196	0.0196	"	"	ND	"	43.7%	(0-145)	14.2%	"	"	D
Chrysene	"	1.11	0.0196	0.0196	"	"	ND	"	45.3%	(7-137)	2.40%	"	"	D
Dibenzo (a,h) anthracene	"	1.41	0.0196	0.0196	"	"	ND	"	57.6%	(0-141)	4.25%	"	"	D
Fluoranthene	"	1.76	0.0392	0.0392	"	"	0.0384	"	70.3%	(30-125)	2.67%	"	"	D
Fluorene	"	1.33	0.0392	0.0392	"	"	0.0248	"	53.3%	(27-124)	0.934%	"	"	D
Indeno (1,2,3-cd) pyrene	"	1.44	0.0196	0.0196	"	"	ND	"	58.8%	(0-135)	4.81%	"	"	D
Naphthalene	"	1.88	0.0392	0.0392	"	"	0.232	"	67.3%	(30-126)	5.03%	"	"	D
Phenanthrene	"	1.94	0.0392	0.0392	"	"	0.0763	"	76.1%	(34-126)	0.393%	"	"	D
Bis(2-ethylhexyl)phthalate	"	2.64	0.516	0.980	"	1x	7.68	3.92	-129%	(10-150)	8.91%	(50)	03/12/07 22:20	M2
Butyl benzyl phthalate	"	2.42	0.516	0.980	"	"	ND	"	61.7%	"	5.06%	"	"	
Di-n-butyl phthalate	"	2.64	0.516	0.980	"	"	ND	"	67.3%	"	8.40%	"	"	
Di-n-octyl phthalate	"	2.97	0.516	0.980	"	"	0.535	"	62.1%	"	7.29%	"	"	
Diethyl phthalate	"	2.65	0.516	0.980	"	"	ND	"	67.6%	"	6.58%	"	"	
Dimethyl phthalate	"	2.43	0.516	0.980	"	"	ND	"	62.0%	"	9.52%	"	"	
Pyrene	"	1.62	0.0392	0.0392	"	2x	0.0387	2.45	64.5%	(14-168)	2.60%	(45)	03/19/07 15:58	D
Surrogate(s): Fluorene-d10		*Recovery: 64.9%*			*Limits: 25-125%*	*"*							*03/19/07 15:58*	
Pyrene-d10		*60.0%*			*23-150%*	*"*							*"*	
Benzo (a) pyrene-d12		*58.0%*			*10-125%*	*"*							*"*	

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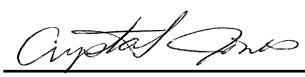

Crystal Jones For Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

TestAmerica - Portland, OR

QC Batch: 7030108 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7030108-BLK1)								**Extracted: 03/02/07 21:47**						
Total Organic Carbon	415.2/5310C	ND	0.317	1.00	mg/l	1x	--	--	--	--	--	--	03/03/07 03:51	U
LCS (7030108-BS1)								**Extracted: 03/02/07 21:47**						
Total Organic Carbon	415.2/5310C	19.7	0.317	1.00	mg/l	1x	--	20.0	98.5%	(85-115)	--	--	03/03/07 04:04	
Duplicate (7030108-DUP1)						**QC Source: PQB0890-01**			**Extracted: 03/02/07 21:47**					
Total Organic Carbon	415.2/5310C	0.596	0.317	1.00	mg/l	1x	0.541	--	--	--	9.67%	(20)	03/03/07 04:16	J
Matrix Spike (7030108-MS1)						**QC Source: PQB0890-01**			**Extracted: 03/02/07 21:47**					
Total Organic Carbon	415.2/5310C	27.1	0.321	1.01	mg/l	1x	0.541	25.3	105%	(75-125)	--	--	03/03/07 04:28	

TestAmerica - Portland, OR

Crystal Jones For Howard Holmes, Project Manager

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ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/22/07 17:27

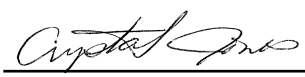
Notes and Definitions

Report Specific Notes:

D	-	Data reported from a preparation or analytical dilution.
J	-	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
L	-	Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.
M2	-	The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
U	-	Analyte included in the analysis but not detected.

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
Electronic Signature	-	Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.



Crystal Jones For Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PQB0945

CLIENT: City of Portland
INVOICE TO: Charles Lytle
REPORT TO:
ADDRESS: Jennifer Shackelford
PHONE: FAX:
P.O. NUMBER: 36238
PROJECT NAME: Portland Harbor
PROJECT NUMBER: Stormwater Samp.
SAMPLED BY:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [X] STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: (*)	REQUESTED ANALYSES: PAH + phthalates 8270 SIM	REQUESTED ANALYSES: TOC	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	TA WO ID
1	F0070270	2/27/07 0940		X	X	W	3	(*)	
2									
3									
4									
5									
6									
7									
8									
9									
10									

RELEASED BY: Rona Kuch — DATE: 2/27/07
PRINT NAME: Rona Kuch — FIRM: City of Portland — TIME: 13:15
RECEIVED BY: — DATE: 2/27/07
PRINT NAME: Bob F — FIRM: TAP — TIME: 13:15
RELEASED BY: — DATE:
PRINT NAME: — FIRM: — TIME:
RECEIVED BY: — DATE: lab
PRINT NAME: — FIRM: — TIME: 16:40

ADDITIONAL REMARKS: (*) Use custom PAH/phthalate list w/ Low DLs as per UIC project. Thanks

TEMP: 5.4

COC REV 05/2006

PAGE 1 OF 1

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and for any additional analyses performed on this project.
Payment for services is due within 30 days from the date of invoice unless otherwise contracted. Sample(s) will be disposed of after 30 days unless otherwise contracted.

(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By: (applies to temp at receipt)
Date: 2/27/07
Time: 13:15
Initials: BF

Logged-in By:
Date: 2/28/07
Initials: VH

Unpacked/Labeled By:
Date: 2/28/07
Initials: CH

Cooler ID: ____ (___ of ___)

Work Order No. PQB0945
Client: City of Portland
Project: Portland Harbor Stormwater (14)

Container Type:
1 Cooler
___ Box
___ None/Other ____

COC Seals:
___ Ship. Container ____ Sign By
___ On Bottles ____ Date
✓ None

Packing Material
___ Bubble Bags ___ Styrofoam
___ Foam Packs
✓ None/Other Other ____

Refrigerant:
___ Gel Ice Pack ____ ___ None
7 Loose Ice
___ None/Other ____

Received Via: Bill#
___ Fed Ex ___ Client
___ UPS X NCA Courier
___ DHL ___ Mid Valley
___ Senvoy ___ TDP
___ GS ___ Other ____

Cooler Temperature (*IR*): 5.4 °C Plastic (Glass) (circle one) (Frozen filters, Tedlars and aqueous Metals exempt)

Temperature Blank? ____ °C or (NA)

Trip Blank? Y or N or (NA)

Sample Containers:		ID			ID
Intact?	(Y) or N		Metals Preserved?	Y or N or (NA)	
Provided by NCA?	(Y) or N		Client QAPP Preserved?	Y or N or (NA)	
Correct Type?	(Y) or N		Adequate Volume? (for tests requested)	(Y) or N	
#Containers match COC?	(Y) or N		Water VOAs: Headspace?	Y or N or (NA)	
IDs/time/date match COC?	Y or (N)	no date/time on container	Comments:		
Hold Times in hold?	(Y) or N				

PROJECT MANAGEMENT

Is the Chain of Custody complete? Y or N If N, circle the items that were incomplete

Comments,Problems ____

Total access set up? Y or N
Has client been contacted regarding non-conformances? Y or N If Y, ____/____ Date Time

PM Initials: ____ Date: ____ Time: ____

(rev 3, 09/12/05)

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

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 5/2
Page: 1
Collected By: DJ

Project Name: PORTLAND HARBOR STORMWATER SAMP
File Number: 1020.005 Matrix: OTHER

QUTFALL 22C CHAIN-OF-CUSTODY

SAMPLE TIME IN P.S.T.

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: PAH + Phthaltes	General: TOC	General: TSS	Metals: Total Metals (As, Cd Cr, Cu, Pb, Mn, Ni, Ag, Zn) + Hg	Field: Temperature (Deg C) Meter: ORION Cell B	Field: Conductivity (umhos/cm) Meter: ORION Cell B	Field: pH (pH Units) Meter: ORION 4
FO 070548	SW-22C-AAJ593-0207 6345 NW St Helens Rd	22C_1	5/2/07	1420	G	●	●	●	●	9.7	85	7.0

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: Douglas J. Hutchinson Time: 1556	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: DOUG HUTCHINSON Date: 5/2/07	Printed Name Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: Time:	Signature: Time:	Signature: Time:	Signature: Time
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070548** **Sample Collected:** 5/2/2007 14:20 **Sample Received:** 05/02/07 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 2
System ID: AL04096
EID File # : 1020.005
LocCode: PORTHASW
Collected By: DJH

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	85	µmhos/cm	1	SM 2510 B	05/02/07
pH (FIELD)	7.0	pH Units	0.1	SM 4500-H B	05/02/07
TEMPERATURE	9.7	Deg. C	0.1	SM 2550 B	05/02/07
GENERAL					
TOTAL SUSPENDED SOLIDS	13	mg/L	2	SM 2540 D	05/03/07
METALS					
MERCURY	0.0043	µg/L	0.002	WPCLSOP M-1(	05/05/07
METALS BY ICP-MS (TOTAL) - 9					
ARSENIC	0.29	µg/L	0.1	EPA 200.8	05/04/07
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	05/04/07
CHROMIUM	1.28	µg/L	0.4	EPA 200.8	05/04/07
COPPER	2.90	µg/L	0.2	EPA 200.8	05/04/07
LEAD	1.34	µg/L	0.1	EPA 200.8	05/04/07
MANGANESE	41.9	µg/L	0.2	EPA 200.8	05/04/07
NICKEL	0.84	µg/L	0.2	EPA 200.8	05/04/07
SILVER	<0.10	µg/L	0.1	EPA 200.8	05/04/07
ZINC	13.1	µg/L	0.5	EPA 200.8	05/04/07
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	1.78	mg/L	1.00	EPA 415.1	05/09/07
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Acenaphthylene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Anthracene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Benzo(a)anthracene	0.0378	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Benzo(a)pyrene	0.0452	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Benzo(b)fluoranthene	0.0538	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Benzo(ghi)perylene	0.0436	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Benzo(k)fluoranthene	0.0340	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Bis(2-ethylhexyl) phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	05/07/07
Butyl benzyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	05/07/07
Chrysene	0.0461	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Dibenzo(a,h)anthracene	0.0115	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Diethyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	05/07/07

Report Date: 07/03/07 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070548** **Sample Collected:** 5/2/2007 14:20 **Sample Received:** 05/02/07 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 2
System ID: AL04096
EID File # : 1020.005
LocCode: PORTHASW
Collected By: DJH

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dimethyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	05/07/07
Di-n-butyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	05/07/07
Di-n-octyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	05/07/07
Fluoranthene	0.0716	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Fluorene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Indeno(1,2,3-cd)pyrene	0.0329	µg/L	0.00990	EPA 8270M-SIM	05/07/07
Naphthalene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Phenanthrene	0.0417	µg/L	0.0198	EPA 8270M-SIM	05/07/07
Pyrene	0.0644	µg/L	0.0198	EPA 8270M-SIM	05/07/07

End of Report for Sample ID: FO070548

Report Date: 07/03/07 **Validated By: Signature on File**

TestAmerica
ANALYTICAL TESTING CORPORATION

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

May 29, 2007

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 05/03/07 14:45. The following list is a summary of the Work Orders contained in this report, generated on 05/29/07 10:18.

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

Work Order	Project	ProjectNumber
PQE0172	Portland Harbor	36238

TestAmerica
ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	05/29/07 10:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 070548	PQE0172-01	Water	05/02/07 14:20	05/03/07 14:45

TestAmerica - Portland, OR

Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name: **Portland Harbor**	
6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	05/29/07 10:18

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQE0172-01 (FO 070548)		**Water**			**Sampled: 05/02/07 14:20**					
Acenaphthene	EPA 8270m	ND	*0.0198*	0.0198	ug/l	1x	7050294	05/07/07 11:50	05/09/07 15:17	
Acenaphthylene	"	ND	*0.0198*	0.0198	"	"	"	"	"	
Anthracene	"	ND	*0.0198*	0.0198	"	"	"	"	"	
Benzo (a) anthracene	"	**0.0378**	*0.00990*	0.00990	"	"	"	"	"	
Benzo (a) pyrene	"	**0.0452**	*0.00990*	0.00990	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.0538**	*0.00990*	0.00990	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.0436**	*0.0198*	0.0198	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.0340**	*0.00990*	0.00990	"	"	"	"	"	
Chrysene	"	**0.0461**	*0.00990*	0.00990	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**0.0115**	*0.00990*	0.00990	"	"	"	"	"	
Fluoranthene	"	**0.0716**	*0.0198*	0.0198	"	"	"	"	"	
Fluorene	"	ND	*0.0198*	0.0198	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.0329**	*0.00990*	0.00990	"	"	"	"	"	
Naphthalene	"	ND	*0.0198*	0.0198	"	"	"	"	"	
Phenanthrene	"	**0.0417**	*0.0198*	0.0198	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	ND	*0.521*	0.990	"	"	"	"	05/15/07 17:16	
Butyl benzyl phthalate	"	ND	*0.521*	0.990	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	*0.521*	0.990	"	"	"	"	"	
Di-n-octyl phthalate	"	**0.808**	*0.521*	0.990	"	"	"	"	"	**B, J**
Diethyl phthalate	"	ND	*0.521*	0.990	"	"	"	"	"	
Dimethyl phthalate	"	ND	*0.521*	0.990	"	"	"	"	"	
Pyrene	"	**0.0644**	*0.0198*	0.0198	"	"	"	"	05/09/07 15:17	
Surrogate(s): Fluorene-d10			*97.2%*		*25 - 125 %*	"			"	
Pyrene-d10			*106%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*92.3%*		*10 - 125 %*	"			"	

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	05/29/07 10:18

Conventional Chemistry Parameters per Standard Methods

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQE0172-01 (FO 070548)		**Water**				**Sampled: 05/02/07 14:20**				
Total Organic Carbon	SM 5310C	**1.78**	*0.317*	1.00	mg/l	1x	7050502	05/09/07 21:29	05/10/07 02:21	

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6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	05/29/07 10:18

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

TestAmerica - Portland, OR

QC Batch: 7050294 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7050294-BLK1)									**Extracted: 05/07/07 11:50**					
Acenaphthene	EPA 8270m	ND	0.0200	0.0200	ug/l	1x	--	--	--	--	--	--	05/09/07 14:46	
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	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	05/14/07 22:26	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	0.546	0.526	1.00	"	"	--	--	--	--	--	--	"	A-01, J
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	05/09/07 14:46	
Surrogate(s): Fluorene-d10		*Recovery: 100%*			*Limits: 25-125%*	"							*05/09/07 14:46*	
Pyrene-d10		*108%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*116%*			*10-125%*	"							"	
LCS (7050294-BS1)									**Extracted: 05/07/07 11:50**					
Acenaphthene	EPA 8270m	2.29	0.0400	0.0400	ug/l	2x	--	2.50	91.6%	(35-120)	--	--	05/10/07 00:52	
Acenaphthylene	"	2.32	0.0400	0.0400	"	"	--	"	92.8%	(34-116)	--	--	"	
Anthracene	"	2.22	0.0400	0.0400	"	"	--	"	88.8%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.43	0.0200	0.0200	"	"	--	"	97.2%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.43	0.0200	0.0200	"	"	--	"	97.2%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.40	0.0200	0.0200	"	"	--	"	96.0%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	2.72	0.0400	0.0400	"	"	--	"	109%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	2.41	0.0200	0.0200	"	"	--	"	96.4%	(18-145)	--	--	"	
Chrysene	"	2.38	0.0200	0.0200	"	"	--	"	95.2%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.70	0.0200	0.0200	"	"	--	"	108%	(20-141)	--	--	"	
Fluoranthene	"	2.79	0.0400	0.0400	"	"	--	"	112%	(31-125)	--	--	"	
Fluorene	"	2.34	0.0400	0.0400	"	"	--	"	93.6%	(27-124)	--	--	"	

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City of Portland Water Pollution Laboratory	Project Name: **Portland Harbor**	
6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	05/29/07 10:18

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

TestAmerica - Portland, OR

QC Batch: 7050294 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (7050294-BS1)								**Extracted: 05/07/07 11:50**						
Indeno (1,2,3-cd) pyrene	EPA 8270m	2.65	0.0200	0.0200	ug/l	2x	--	2.50	106%	(30-135)	--	--	05/10/07 00:52	
Naphthalene	"	2.45	0.0400	0.0400	"	"	--	"	98.0%	(30-113)	--	--	"	
Phenanthrene	"	2.50	0.0400	0.0400	"	"	--	"	100%	(34-126)	--	--	"	
Bis(2-ethylhexyl)phthalate	"	4.79	1.05	2.00	"	"	--	4.00	120%	(20-150)	--	--	05/14/07 22:59	
Butyl benzyl phthalate	"	4.61	1.05	2.00	"	"	--	"	115%	"	--	--	"	
Di-n-butyl phthalate	"	4.70	1.05	2.00	"	"	--	"	118%	"	--	--	"	
Di-n-octyl phthalate	"	4.96	1.05	2.00	"	"	--	"	124%	"	--	--	"	B
Diethyl phthalate	"	4.62	1.05	2.00	"	"	--	"	116%	"	--	--	"	
Dimethyl phthalate	"	4.65	1.05	2.00	"	"	--	"	116%	"	--	--	"	
Pyrene	"	2.70	0.0400	0.0400	"	"	--	2.50	108%	(21-141)	--	--	05/10/07 00:52	
Surrogate(s): Fluorene-d10		*Recovery: 75.2%*			*Limits: 25-125%*	"							*05/10/07 00:52*	
Pyrene-d10		*94.8%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*98.0%*			*10-125%*	"							"	
LCS Dup (7050294-BSD1)								**Extracted: 05/07/07 11:50**						
Acenaphthene	EPA 8270m	2.40	0.0400	0.0400	ug/l	2x	--	2.50	96.0%	(35-120)	4.69%	(35)	05/10/07 01:23	
Acenaphthylene	"	2.59	0.0400	0.0400	"	"	--	"	104%	(34-116)	11.4%	"	"	
Anthracene	"	2.27	0.0400	0.0400	"	"	--	"	90.8%	(24-119)	2.23%	"	"	
Benzo (a) anthracene	"	2.53	0.0200	0.0200	"	"	--	"	101%	(36-128)	3.83%	"	"	
Benzo (a) pyrene	"	2.50	0.0200	0.0200	"	"	--	"	100%	(17-128)	2.84%	"	"	
Benzo (b) fluoranthene	"	2.59	0.0200	0.0200	"	"	--	"	104%	(37-131)	8.00%	"	"	
Benzo (ghi) perylene	"	2.77	0.0400	0.0400	"	"	--	"	111%	(26-126)	1.82%	"	"	
Benzo (k) fluoranthene	"	2.45	0.0200	0.0200	"	"	--	"	98.0%	(18-145)	1.65%	"	"	
Chrysene	"	2.47	0.0200	0.0200	"	"	--	"	98.8%	(16-137)	3.71%	"	"	
Dibenzo (a,h) anthracene	"	2.73	0.0200	0.0200	"	"	--	"	109%	(20-141)	0.922%	"	"	
Fluoranthene	"	2.63	0.0400	0.0400	"	"	--	"	105%	(31-125)	6.45%	"	"	
Fluorene	"	2.16	0.0400	0.0400	"	"	--	"	86.4%	(27-124)	8.00%	"	"	
Indeno (1,2,3-cd) pyrene	"	2.69	0.0200	0.0200	"	"	--	"	108%	(30-135)	1.87%	"	"	
Naphthalene	"	2.48	0.0400	0.0400	"	"	--	"	99.2%	(30-113)	1.22%	"	"	
Phenanthrene	"	2.52	0.0400	0.0400	"	"	--	"	101%	(34-126)	0.995%	"	"	
Bis(2-ethylhexyl)phthalate	"	4.62	1.05	2.00	"	"	--	4.00	116%	(20-150)	3.39%	(50)	05/14/07 23:32	
Butyl benzyl phthalate	"	4.54	1.05	2.00	"	"	--	"	114%	"	0.873%	"	"	
Di-n-butyl phthalate	"	4.58	1.05	2.00	"	"	--	"	114%	"	3.45%	"	"	
Di-n-octyl phthalate	"	4.84	1.05	2.00	"	"	--	"	121%	"	2.45%	"	"	B
Diethyl phthalate	"	4.58	1.05	2.00	"	"	--	"	114%	"	1.74%	"	"	
Dimethyl phthalate	"	4.53	1.05	2.00	"	"	--	"	113%	"	2.62%	"	"	
Pyrene	"	2.13	0.0400	0.0400	"	"	--	2.50	85.2%	(21-141)	23.6%	(35)	05/10/07 01:23	
Surrogate(s): Fluorene-d10		*Recovery: 75.2%*			*Limits: 25-125%*	"							*05/10/07 01:23*	
Pyrene-d10		*75.2%*			*23-150%*	"							"	

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	05/29/07 10:18

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

TestAmerica - Portland, OR

QC Batch: 7050294 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (7050294-BSD1)													**Extracted: 05/07/07 11:50**	
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 98.4%*			*Limits: 10-125%*	*2x*							*05/10/07 01:23*	

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	05/29/07 10:18

Conventional Chemistry Parameters per Standard Methods - Laboratory Quality Control Results

TestAmerica - Portland, OR

QC Batch: 7050502 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7050502-BLK1)								**Extracted: 05/09/07 21:29**						
Total Organic Carbon	SM 5310C	ND	0.317	1.00	mg/l	1x	--	--	--	--	--	--	05/09/07 22:21	
LCS (7050502-BS1)								**Extracted: 05/09/07 21:29**						
Total Organic Carbon	SM 5310C	20.7	0.317	1.00	mg/l	1x	--	20.0	104%	(85-115)	--	--	05/09/07 22:34	
Duplicate (7050502-DUP1)				**QC Source: PQE0049-01**				**Extracted: 05/09/07 21:29**						
Total Organic Carbon	SM 5310C	ND	0.317	1.00	mg/l	1x	ND	--	--	--	NR	(20)	05/09/07 22:46	
Matrix Spike (7050502-MS1)				**QC Source: PQE0049-01**				**Extracted: 05/09/07 21:29**						
Total Organic Carbon	SM 5310C	24.3	0.321	1.01	mg/l	1x	ND	25.3	96.0%	(75-125)	--	--	05/09/07 22:58	

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	05/29/07 10:18

Notes and Definitions

Report Specific Notes:

A-01 - Extraction contamination.

B - Analyte was detected in the associated Method Blank.

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

Laboratory Reporting Conventions:

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

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

NR/NA - Not Reported / Not Available

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

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

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

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

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

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

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

Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Portland, OR

Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: 9QE0172

CLIENT: City of Portland

REPORT TO: Jennifer Shackelford
ADDRESS:

PHONE: FAX:

INVOICE TO: Charles Lytle

P.O. NUMBER: 36238

PROJECT NAME: Portland Harbor
PROJECT NUMBER: Stormwater Samp
SAMPLED BY:

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: ~~10~~ STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PAH + phthalates 8270-SIM (*)	TOC	PRESERVATIVE										MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	TA WO ID
			REQUESTED ANALYSES															
1	F0070548	5/2/07 1420	X	X											W	3		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

RELEASED BY:	Rona Kluch		DATE: 5/3/07	RECEIVED BY:	Bob F		DATE: 5/3/07
PRINT NAME:	Rona Kluch	FIRM: City of Portland	TIME: 12:45	PRINT NAME:	Bob F	FIRM: TAP	TIME: 12:45
RELEASED BY:			DATE:	RECEIVED BY:			DATE: lab
PRINT NAME:		FIRM:	TIME:	PRINT NAME:		FIRM:	TIME: 14:45

ADDITIONAL REMARKS: (*) Use custom PAH/phthalates list w/ Low DLs as per UIC project.

TEMP: 4.9

COC REV 09/2004

5.1

TestAmerica Sample Receipt Checklist

Cooler ID(s): 208 248

Work Order No.: PQE0172

Client: Col Portland

Project: Portland Harbor

Received by: *(section A)* Date: 5/3/07 Time: 1245 Initials: JSF

Unpacked by: *(section B)* Date: 5-3 Initials: MP

Logged-in by: Date: 5-3 Initials: MP

***ESI Clients *(see Section C)*

Cooler Temperature (IR): 5.1 4.9 °C plastic (glass) NA *(oil/air samples, ESI client)*

Temperature out of range:
___No Ice
___Ice Melted
___W/in 4 Hours
___Other:

A

Custody Seals: (#____)

Signature: Y N Dated:_____

X None

Container Type:

2 #Cooler(s)

____#Box(s)

____None (___#Other:_____)

Coolant Type:

____Gel Ice

X Loose Ice

____None

Packing Material:

____Bubble Bags

____Styrofoam Cubbies

X None (____Other:_____)

Received by:

X TA Courier

____Senvoy

____UPS

____Fed Ex

____Client

____TDP

____DHL

____SDS

____Mid-Valley

____GS/TA

____GS/Senvoy

____Other:_____

B

Sample Status:

(If N circled, see NOD)

General:

Intact? (Y) N

Containers Match COC? (Y) N none given

IDs Match COC? (Y) N

For Analyses Requested:

Correct Type & Preservation? (Y) N

Adequate Volume? (Y) N

Within Hold Time? (Y) N

Volatiles:

Voas Free of Headspace? Y N (NA)

TB on COC? not provided Y N (NA)

Metals:

HNO3 Preserved? Y N (NA)

C

***ESI Clients Only:

Temperature Blank: _____°C not provided

All preserved bottles checked Y N NA *(voas)*

All preserved accordingly? Y N *(see NOD)* NA *(voas)*

Army Corp: Geiger (ticks/min): ____ ____ ____ ____

Temperatures (IR): _____°C _____°C _____°C _____°C

(left) (middle) (right) (air)

Project Managers:

Comments:_____

*PM Reviewed:*_____ *(Initial/Date)*

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

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 6-5-07
Page: 1 of 1
Collected By: JXB/FCH

Project Name: PORTLAND HARBOR STORMWATER SAMP
File Number: 1020.005 Matrix: OTHER

OUTFALL 22C CHAIN-OF-CUSTODY

Distinct oily sheen on surface of water during time of sampling.

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: PAH + Phthaltes	General: TOC	General: TSS	Metals: Total Metals (As, Cd Cr, Cu, Pb, Mn, Ni, Ag, Zn) + Hg	Field: Temperature (Deg C) Meter: YSI 6000 #2	Field: Conductivity (umhos/cm) Meter: YSI 6000 #2	Field: pH (pH Units) Meter: YSI 6000 #2	Field: Depth (inches) JXB
FO 070676	SW-22C-AAJ593-0207 6346 NW St Helens Rd	22C_1	6-5-07	0742	G	●	●	●	●	10.6	111	6.5	1.8

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature:	Signature:	Signature:	Signature:
Time: 1320	Time:	Time:	Time:
Printed Name: Jeremiah Bawden	Printed Name:	Printed Name:	Printed Name:
Date: 6/5/07	Date:	Date:	Date:
Received By: 1.	**Received By: 2.**	**Received By: 3.**	**Received By: 4.**
Signature:	Signature:	Signature:	Signature:
Time: 1320	Time:	Time:	Time:
Printed Name: Rona Kluch	Printed Name:	Printed Name:	Printed Name:
Date: 6/5/07	Date:	Date:	Date:

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070676** **Sample Collected:** 6/5/2007 07:42 **Sample Received:** 06/05/07 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD-UNDER HWY 30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AL05245
EID File # : 1020.005
LocCode: PORTHASW
Collected By: JXB/ECH

Comments:
QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Bis-(2-Ethylhexyl)phthalate was detected in the method blank at 1.56 ug/L. The 1.26 ug/L of this compound detected in the sample is presumed due to laboratory contamination, and the reporting limit is therefore raised to 2 ug/L.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	111	µmhos/cm	1	SM 2510 B	06/05/07
pH (FIELD)	6.5	pH Units	0.1	SM 4500-H B	06/05/07
TEMPERATURE	10.6	Deg. C	0.1	SM 2550 B	06/05/07
GENERAL					
TOTAL SUSPENDED SOLIDS	12	mg/L	2	SM 2540 D	06/07/07
METALS					
MERCURY	0.0061	µg/L	0.002	WPCLSOP M-1(	06/06/07
METALS BY ICP-MS (TOTAL) - 9					
ARSENIC	0.30	µg/L	0.1	EPA 200.8	06/07/07
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	06/07/07
CHROMIUM	1.27	µg/L	0.4	EPA 200.8	06/07/07
COPPER	6.77	µg/L	0.2	EPA 200.8	06/07/07
LEAD	2.16	µg/L	0.1	EPA 200.8	06/07/07
MANGANESE	50.1	µg/L	0.2	EPA 200.8	06/07/07
NICKEL	0.91	µg/L	0.2	EPA 200.8	06/07/07
SILVER	<0.10	µg/L	0.1	EPA 200.8	06/07/07
ZINC	23.7	µg/L	0.5	EPA 200.8	06/07/07
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	5.78	mg/L	1.0	EPA 415.1	06/15/07
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	0.0222	µg/L	0.020	EPA 8270M-SIM	06/12/07
Acenaphthylene	<0.020	µg/L	0.020	EPA 8270M-SIM	06/12/07
Anthracene	<0.020	µg/L	0.020	EPA 8270M-SIM	06/12/07
Benzo(a)anthracene	0.0318	µg/L	0.010	EPA 8270M-SIM	06/12/07
Benzo(a)pyrene	0.0385	µg/L	0.010	EPA 8270M-SIM	06/12/07
Benzo(b)fluoranthene	0.0560	µg/L	0.010	EPA 8270M-SIM	06/12/07
Benzo(ghi)perylene	0.0385	µg/L	0.020	EPA 8270M-SIM	06/12/07
Benzo(k)fluoranthene	0.0302	µg/L	0.010	EPA 8270M-SIM	06/12/07
Bis(2-ethylhexyl) phthalate	<2.00	µg/L	2.00	EPA 8270M-SIM	06/12/07
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	06/12/07
Chrysene	0.0418	µg/L	0.010	EPA 8270M-SIM	06/12/07
Dibenzo(a,h)anthracene	0.0114	µg/L	0.010	EPA 8270M-SIM	06/12/07

Report Date: 08/09/07 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070676** **Sample Collected:** 6/5/2007 07:42 **Sample Received:** 06/05/07 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD-UNDER HWY 30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 2
System ID: AL05245
EID File # : 1020.005
LocCode: PORTHASW
Collected By: JXB/ECH

Comments:
QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Bis-(2-Ethylhexyl)phthalate was detected in the method blank at 1.56 ug/L. The 1.26 ug/L of this compound detected in the sample is presumed due to laboratory contamination, and the reporting limit is therefore raised to 2 ug/L.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	06/12/07
Dimethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	06/12/07
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	06/12/07
Di-n-octyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	06/12/07
Fluoranthene	0.0841	µg/L	0.020	EPA 8270M-SIM	06/12/07
Fluorene	<0.020	µg/L	0.020	EPA 8270M-SIM	06/12/07
Indeno(1,2,3-cd)pyrene	0.0325	µg/L	0.010	EPA 8270M-SIM	06/12/07
Naphthalene	<0.020	µg/L	0.020	EPA 8270M-SIM	06/12/07
Phenanthrene	0.0593	µg/L	0.020	EPA 8270M-SIM	06/12/07
Pyrene	0.0718	µg/L	0.020	EPA 8270M-SIM	06/12/07

End of Report for Sample ID: FO070676

Report Date: 08/09/07 **Validated By: Signature on File**

TestAmerica
ANALYTICAL TESTING CORPORATION

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

July 19, 2007

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 06/07/07 18:10. The following list is a summary of the Work Orders contained in this report, generated on 07/19/07 20:27.

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

Work Order	Project	ProjectNumber
PQF0300	Portland Harbor	36238

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 070676	PQF0300-01	Water	06/05/07 07:42	06/07/07 18:10

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

Analytical Case Narrative

TestAmerica - Portland, OR

PQF0300

On 6/12/07, the client made the decision to have us extract the sample within hold time with standard glassware rather than extract the sample one day past hold using ultra clean glassware.
On 7/9/07 the client made the decision to use the data with blank contamination rather than have the sample re-extracted past hold time.

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name: **Portland Harbor**	
6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	07/19/07 20:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF0300-01 (FO 070676)		**Water**			**Sampled: 06/05/07 07:42**					
Acenaphthene	EPA 8270m	**0.0222**	-----	0.0192	ug/l	1x	7060491	06/12/07 15:50	06/27/07 17:28	
Acenaphthylene	"	ND	-----	0.0192	"	"	"	"	"	
Anthracene	"	ND	-----	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	**0.0318**	-----	0.00962	"	"	"	"	"	
Benzo (a) pyrene	"	**0.0385**	-----	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.0560**	-----	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.0385**	-----	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.0302**	-----	0.00962	"	"	"	"	"	
Chrysene	"	**0.0418**	-----	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**0.0114**	-----	0.00962	"	"	"	"	"	
Fluoranthene	"	**0.0841**	-----	0.0192	"	"	"	"	"	
Fluorene	"	ND	-----	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.0325**	-----	0.00962	"	"	"	"	"	
Naphthalene	"	ND	-----	0.0192	"	"	"	"	"	
Phenanthrene	"	**0.0593**	-----	0.0192	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	**1.26**	-----	0.962	"	"	"	"	07/06/07 08:23	**B**
Butyl benzyl phthalate	"	ND	-----	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	0.962	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	0.962	"	"	"	"	"	
Pyrene	"	**0.0718**	-----	0.0192	"	"	"	"	06/27/07 17:28	
Surrogate(s): Fluorene-d10			*83.9%*		*25 - 125 %*	"			"	
Pyrene-d10			*88.9%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*95.8%*		*10 - 125 %*	"			"	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

Conventional Chemistry Parameters per APHA/EPA Methods

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF0300-01 (FO 070676)		**Water**				**Sampled: 06/05/07 07:42**				
Total Organic Carbon	EPA 415.2	**5.78**	-----	1.00	mg/l	1x	7060711	06/15/07 22:02	06/16/07 03:18	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

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

TestAmerica - Portland, OR

QC Batch: 7060491 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7060491-BLK1)									**Extracted: 06/12/07 15:50**					
Acenaphthene	EPA 8270m	ND	---	0.0200	ug/l	1x	--	--	--	--	--	--	06/27/07 01:22	
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	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	1.56	---	1.00	"	"	--	--	--	--	--	--	07/05/07 22:48	A-01
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	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	06/27/07 01:22	
Surrogate(s): Fluorene-d10		*Recovery: 73.7%*			*Limits: 25-125%*	"							*06/27/07 01:22*	
Pyrene-d10		*78.8%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*93.9%*			*10-125%*	"							"	
LCS (7060491-BS1)									**Extracted: 06/12/07 15:50**					
Acenaphthene	EPA 8270m	2.11	---	0.0400	ug/l	2x	--	2.50	84.3%	(35-120)	--	--	06/26/07 21:16	
Acenaphthylene	"	2.23	---	0.0400	"	"	--	"	89.3%	(34-116)	--	--	"	
Anthracene	"	2.29	---	0.0400	"	"	--	"	91.8%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.56	---	0.0200	"	"	--	"	102%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.52	---	0.0200	"	"	--	"	101%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.71	---	0.0200	"	"	--	"	108%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	2.46	---	0.0400	"	"	--	"	98.5%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	2.65	---	0.0200	"	"	--	"	106%	(18-145)	--	--	"	
Chrysene	"	2.29	---	0.0200	"	"	--	"	91.5%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.60	---	0.0200	"	"	--	"	104%	(20-141)	--	--	"	
Fluoranthene	"	2.44	---	0.0400	"	"	--	"	97.7%	(31-125)	--	--	"	
Fluorene	"	2.23	---	0.0400	"	"	--	"	89.2%	(27-124)	--	--	"	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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ANALYTICAL TESTING CORPORATION

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

City of Portland Water Pollution Laboratory	Project Name: **Portland Harbor**	
6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	07/19/07 20:27

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

TestAmerica - Portland, OR

QC Batch: 7060491 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (7060491-BS1)								**Extracted: 06/12/07 15:50**						
Indeno (1,2,3-cd) pyrene	EPA 8270m	2.62	---	0.0200	ug/l	2x	--	2.50	105%	(30-135)	--	--	06/26/07 21:16	
Naphthalene	"	1.97	---	0.0400	"	"	--	"	78.7%	(30-113)	--	--	"	
Phenanthrene	"	2.29	---	0.0400	"	"	--	"	91.4%	(34-126)	--	--	"	
Bis(2-ethylhexyl)phthalate	"	4.24	---	2.00	"	"	--	4.00	106%	(20-150)	--	--	07/06/07 02:10	B
Butyl benzyl phthalate	"	3.35	---	2.00	"	"	--	"	83.9%	"	--	--	"	
Di-n-butyl phthalate	"	3.36	---	2.00	"	"	--	"	83.9%	"	--	--	"	
Di-n-octyl phthalate	"	3.02	---	2.00	"	"	--	"	75.5%	"	--	--	"	
Diethyl phthalate	"	3.29	---	2.00	"	"	--	"	82.1%	"	--	--	"	
Dimethyl phthalate	"	3.28	---	2.00	"	"	--	"	82.1%	"	--	--	"	
Pyrene	"	1.82	---	0.0400	"	"	--	2.50	72.9%	(21-141)	--	--	06/26/07 21:16	
Surrogate(s): Fluorene-d10		*Recovery: 79.8%*			*Limits: 25-125%*	"							*06/26/07 21:16*	
Pyrene-d10		*65.7%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*94.9%*			*10-125%*	"							"	
LCS Dup (7060491-BSD1)								**Extracted: 06/12/07 15:50**						
Acenaphthene	EPA 8270m	1.89	---	0.0400	ug/l	2x	--	2.50	75.6%	(35-120)	10.9%	(35)	06/26/07 21:47	
Acenaphthylene	"	2.06	---	0.0400	"	"	--	"	82.2%	(34-116)	8.26%	"	"	
Anthracene	"	2.06	---	0.0400	"	"	--	"	82.3%	(24-119)	10.9%	"	"	
Benzo (a) anthracene	"	2.45	---	0.0200	"	"	--	"	97.8%	(36-128)	4.65%	"	"	
Benzo (a) pyrene	"	2.42	---	0.0200	"	"	--	"	97.0%	(17-128)	3.78%	"	"	
Benzo (b) fluoranthene	"	2.66	---	0.0200	"	"	--	"	106%	(37-131)	1.75%	"	"	
Benzo (ghi) perylene	"	2.39	---	0.0400	"	"	--	"	95.6%	(26-126)	2.95%	"	"	
Benzo (k) fluoranthene	"	2.57	---	0.0200	"	"	--	"	103%	(18-145)	3.19%	"	"	
Chrysene	"	2.20	---	0.0200	"	"	--	"	88.2%	(16-137)	3.69%	"	"	
Dibenzo (a,h) anthracene	"	2.52	---	0.0200	"	"	--	"	101%	(20-141)	3.08%	"	"	
Fluoranthene	"	2.31	---	0.0400	"	"	--	"	92.3%	(31-125)	5.68%	"	"	
Fluorene	"	1.88	---	0.0400	"	"	--	"	75.2%	(27-124)	17.0%	"	"	
Indeno (1,2,3-cd) pyrene	"	2.55	---	0.0200	"	"	--	"	102%	(30-135)	2.43%	"	"	
Naphthalene	"	1.79	---	0.0400	"	"	--	"	71.4%	(30-113)	9.69%	"	"	
Phenanthrene	"	2.08	---	0.0400	"	"	--	"	83.2%	(34-126)	9.42%	"	"	
Bis(2-ethylhexyl)phthalate	"	4.17	---	2.00	"	"	--	4.00	104%	(20-150)	1.67%	(50)	07/06/07 02:44	B
Butyl benzyl phthalate	"	3.40	---	2.00	"	"	--	"	85.0%	"	1.32%	"	"	
Di-n-butyl phthalate	"	3.44	---	2.00	"	"	--	"	85.9%	"	2.43%	"	"	
Di-n-octyl phthalate	"	2.84	---	2.00	"	"	--	"	71.1%	"	6.02%	"	"	
Diethyl phthalate	"	3.17	---	2.00	"	"	--	"	79.2%	"	3.68%	"	"	
Dimethyl phthalate	"	3.02	---	2.00	"	"	--	"	75.5%	"	8.29%	"	"	
Pyrene	"	1.63	---	0.0400	"	"	--	2.50	65.4%	(21-141)	10.8%	(35)	06/26/07 21:47	
Surrogate(s): Fluorene-d10		*Recovery: 68.4%*			*Limits: 25-125%*	"							*06/26/07 21:47*	
Pyrene-d10		*59.1%*			*23-150%*	"							"	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

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

TestAmerica - Portland, OR

QC Batch: 7060491 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (7060491-BSD1)													**Extracted: 06/12/07 15:50**	
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 93.3%*			*Limits: 10-125%*	*2x*							*06/26/07 21:47*	

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

TestAmerica - Portland, OR

QC Batch: 7060711 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7060711-BLK1)								**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	ND	---	1.00	mg/l	1x	--	--	--	--	--	--	06/16/07 00:18	
LCS (7060711-BS1)								**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	19.6	---	1.00	mg/l	1x	--	20.0	98.1%	(85-115)	--	--	06/16/07 00:33	
Duplicate (7060711-DUP1)					**QC Source: PQF0188-15**			**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	2.65	---	1.00	mg/l	1x	2.50	--	--	--	5.89%	(20)	06/16/07 00:46	
Matrix Spike (7060711-MS1)					**QC Source: PQF0188-15**			**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	24.9	---	1.01	mg/l	1x	2.50	25.3	88.5%	(75-125)	--	--	06/16/07 01:01	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/19/07 20:27

Notes and Definitions

Report Specific Notes:

A-01 - Extraction contamination.

B - Analyte was detected in the associated Method Blank.

Laboratory Reporting Conventions:

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

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

NR/NA - Not Reported / Not Available

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

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

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

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

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

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

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

Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Portland, OR

Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210 X
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907 563 9200 FAX 563 9210

CHAIN OF CUSTODY REPORT

Work Order #: RF0300

CLIENT: City of Portland
INVOICE TO: Charles Lytle
REPORT TO: ADDRESS: Jennifer Shackelford
PHONE: FAX:
P.O. NUMBER: 36238
PROJECT NAME: Portland Harbor
PROJECT NUMBER: Stormwater Samp
SAMPLED BY:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: ~~10~~ STD | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: PAH+phthalates 8270-SIM (*)	REQUESTED ANALYSES: TOC	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	TA WO ID
1	F0 070676	6/5/07 0742	X	X	W	3		
2								
3								
4								
5								
6								
7								
8								
9								
10								

RELEASED BY: Rona Knek — FIRM: City of Portland — DATE: 6/7/07 — TIME: 15:40
RECEIVED BY: Bob F — FIRM: TAC — DATE: 6/7/07 — TIME: 15:40
RELEASED BY: — DATE: —
RECEIVED BY: — FIRM: — DATE: lab — TIME: 18:10

ADDITIONAL REMARKS: (*) Use custom PAH/phthalate list w/Low DLs as per UIC project.

TEMP: 2.4

COC REV 09-2004

PAGE 1 OF 1

TestAmerica Sample Receipt Checklist

Received by: (section A) Date: 6/7/07 Time: 15:40 Initials: BK

Unpacked by: (section B) Date: 6/8/07 Initials: HBD

Logged-in by: Date: 6/8/07 Initials: AK

Work Order No: PQF030

Client: Cof Portland

Project: Portland Harbor

Cooler ID(s): 342

***ESI Clients (see Section C)

Temperature out of range:
___No Ice
___Ice Melted
___W/in 4 Hours
___Other:

Cooler Temperature (IR): 3.4 °C plastic (glass) NA (oil/air samples, ESI client)

A

Custody Seals: (#____)

Signature: Y N Dated:_____

X None

Container Type:

1 #Cooler(s)

____#Box(s)

____None (___#Other:_____)

Coolant Type:

____Gel Ice

X Loose Ice

____None

Packing Material:

____Bubble Bags

X Styrofoam Cubbies

____None (____Other:_____)

Received from:

X TA Courier

____Senvoy

____UPS

____Fed Ex

____Client

____TDP

____DHL

____SDS

____Mid-Valley

____GS/TA

____GS/Senvoy

____Other:_____

B

Sample Status:

(If N circled, see NOD)

General:

Intact? (Y) N

Containers Match COC? (Y) N none given

IDs Match COC? (Y) N

For Analyses Requested:

Correct Type & Preservation? (Y) N

Adequate Volume? (Y) N

Within Hold Time? (Y) N

Volatiles:

VOAs Free of Headspace? Y N (NA)

TB on COC? not provided Y N (NA)

Metals:

HNO3 Preserved? Y N (NA)

C

***ESI Clients Only:

Temperature Blank: _____°C not provided

All preserved bottles checked Y N NA *(voas/soils/all unp.)*

All preserved accordingly? Y N *(see NOD)* NA *(voas/soils/all unp.)*

Army Corp:

Geiger (ticks/min): ___ ___ ___ ___

Temperatures (IR): _____°C _____°C _____°C _____°C

(left) (middle) (right) (air)

Project Managers:

Comments:_____

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

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 6/9/07
Page: 1 of 1
Collected By: JTM, RCB

Project Name: PORTLAND HARBOR STORMWATER SAMP
File Number: 1020.005 Matrix: OTHER

OUTFALL 22C CHAIN-OF-CUSTODY

☑ Sample time recorded in PST

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: PAH + Phthaltes	General: TOC	General: TSS	Metals: Total Metals (As, Cd Cr, Cu, Pb, Mn, Ni, Ag, Zn) + Hg	Field: Temperature (Deg C) Meter:	Field: Conductivity (umhos/cm) Meter:	Field: pH (pH Units) Meter: Orion #3	Field: depth (in.)
FO 070730	SW-22C-AAJ593-0207 6346 NW St Helens Rd	22C_1	6/9/07	1607	G	●	●	●	●	14.9	247	6.9	2.5"

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: Jordan McLean Time: 1953	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Jordan McLean Date: 6/9/07	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	Received By: 2.	Received By: 3.	Received By: 4.
Signature: Time:	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070730** **Sample Collected:** 6/9/2007 16:07 **Sample Status:** **COMPLETE AND VALIDATED**
Sample Received: 06/09/07

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD-UNDER HWY30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AL05452
EID File # : 1020.005
LocCode: PORTHASW
Collected By: JJM/RCB

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	247	µmhos/cm	1	SM 2510 B	06/09/07
pH (FIELD)	6.9	pH Units	0.1	SM 4500-H B	06/09/07
TEMPERATURE	14.9	Deg. C	0.1	SM 2550 B	06/09/07
GENERAL					
TOTAL SUSPENDED SOLIDS	9	mg/L	2	SM 2540 D	06/11/07
METALS					
MERCURY	0.0057	µg/L	0.002	WPCLSOP M-1(	06/21/07
METALS BY ICP-MS (TOTAL) - 9					
ARSENIC	0.23	µg/L	0.1	EPA 200.8	06/13/07
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	06/13/07
CHROMIUM	0.88	µg/L	0.4	EPA 200.8	06/13/07
COPPER	5.98	µg/L	0.2	EPA 200.8	06/13/07
LEAD	1.43	µg/L	0.1	EPA 200.8	06/13/07
MANGANESE	23.4	µg/L	0.2	EPA 200.8	06/13/07
NICKEL	0.60	µg/L	0.2	EPA 200.8	06/13/07
SILVER	<0.10	µg/L	0.1	EPA 200.8	06/13/07
ZINC	19.1	µg/L	0.5	EPA 200.8	06/13/07
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	3.57	mg/L	1.00	EPA 415.1	06/15/07
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Anthracene	0.0203	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Benzo(a)anthracene	0.0382	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Benzo(a)pyrene	0.0442	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Benzo(b)fluoranthene	0.0538	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Benzo(ghi)perylene	0.0427	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Benzo(k)fluoranthene	0.0400	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Bis(2-ethylhexyl) phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/13/07
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/13/07
Chrysene	0.0493	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Dibenzo(a,h)anthracene	0.0120	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/13/07

Report Date: 08/09/07 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO070730** **Sample Collected:** 6/9/2007 16:07 **Sample Received:** 06/09/07 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-22C-AAJ593-0207
6346 NW ST HELENS RD-UNDER HWY30
Sample Point Code: 22C_1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 2
System ID: AL05452
EID File # : 1020.005
LocCode: PORTHASW
Collected By: JJM/RCB

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/13/07
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/13/07
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	06/13/07
Fluoranthene	0.123	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Indeno(1,2,3-cd)pyrene	0.0342	µg/L	0.00971	EPA 8270M-SIM	06/13/07
Naphthalene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Phenanthrene	0.0846	µg/L	0.0194	EPA 8270M-SIM	06/13/07
Pyrene	0.0999	µg/L	0.0194	EPA 8270M-SIM	06/13/07

End of Report for Sample ID: FO070730

Report Date: 08/09/07 **Validated By: Signature on File**

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ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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July 18, 2007

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 06/11/07 12:47. The following list is a summary of the Work Orders contained in this report, generated on 07/18/07 18:47.

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

Work Order	Project	ProjectNumber
PQF0395	Portland Harbor	36238

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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ANALYTICAL TESTING CORPORATION

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City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/18/07 18:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 070730	PQF0395-01	Water	06/09/07 16:07	06/11/07 12:47

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name: **Portland Harbor**	
6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	07/18/07 18:47

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF0395-01 (FO 070730)		**Water**			**Sampled: 06/09/07 16:07**					
Acenaphthene	EPA 8270m	ND	-----	0.0194	ug/l	1x	7060515	06/13/07 14:20	06/27/07 21:41	
Acenaphthylene	"	ND	-----	0.0194	"	"	"	"	"	
Anthracene	"	**0.0203**	-----	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	**0.0382**	-----	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	**0.0442**	-----	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.0538**	-----	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.0427**	-----	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.0400**	-----	0.00971	"	"	"	"	"	
Chrysene	"	**0.0493**	-----	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	**0.0120**	-----	0.00971	"	"	"	"	"	
Fluoranthene	"	**0.123**	-----	0.0194	"	"	"	"	"	
Fluorene	"	ND	-----	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.0342**	-----	0.00971	"	"	"	"	"	
Naphthalene	"	ND	-----	0.0194	"	"	"	"	"	
Phenanthrene	"	**0.0846**	-----	0.0194	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	ND	-----	0.971	"	"	"	"	07/06/07 03:52	
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	"	"	"	"	"	
Pyrene	"	**0.0999**	-----	0.0194	"	"	"	"	06/27/07 21:41	
Surrogate(s): Fluorene-d10			*70.4%*		*25 - 125 %*	"			"	
Pyrene-d10			*91.9%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*96.0%*		*10 - 125 %*	"			"	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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

City of Portland Water Pollution Laboratory	Project Name:	**Portland Harbor**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/18/07 18:47

Conventional Chemistry Parameters per APHA/EPA Methods

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF0395-01 (FO 070730)		**Water**				**Sampled: 06/09/07 16:07**				
Total Organic Carbon	EPA 415.2	**3.57**	-----	1.00	mg/l	1x	7060711	06/15/07 22:02	06/16/07 03:31	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

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

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

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
07/18/07 18:47

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

TestAmerica - Portland, OR

QC Batch: 7060515 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7060515-BLK1)									**Extracted: 06/13/07 14:20**					
Acenaphthene	EPA 8270m	ND	---	0.0200	ug/l	1x	--	--	--	--	--	--	06/27/07 00:52	
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	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	07/05/07 22:14	
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	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	06/27/07 00:52	
Surrogate(s): Fluorene-d10		*Recovery: 74.8%*			*Limits: 25-125%*	"							*06/27/07 00:52*	
Pyrene-d10		*69.0%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*89.5%*			*10-125%*	"							"	
LCS (7060515-BS1)									**Extracted: 06/13/07 14:20**					
Acenaphthene	EPA 8270m	2.19	---	0.0400	ug/l	2x	--	2.50	87.5%	(35-120)	--	--	06/26/07 20:13	
Acenaphthylene	"	2.42	---	0.0400	"	"	--	"	96.8%	(34-116)	--	--	"	
Anthracene	"	2.35	---	0.0400	"	"	--	"	93.9%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.62	---	0.0200	"	"	--	"	105%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.57	---	0.0200	"	"	--	"	103%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	3.22	---	0.0200	"	"	--	"	129%	(37-131)	--	--	"	
Benzo (ghi) perylene	"	2.40	---	0.0400	"	"	--	"	96.1%	(26-126)	--	--	"	
Benzo (k) fluoranthene	"	2.60	---	0.0200	"	"	--	"	104%	(18-145)	--	--	"	
Chrysene	"	2.33	---	0.0200	"	"	--	"	93.3%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.55	---	0.0200	"	"	--	"	102%	(20-141)	--	--	"	
Fluoranthene	"	2.61	---	0.0400	"	"	--	"	105%	(31-125)	--	--	"	
Fluorene	"	2.41	---	0.0400	"	"	--	"	96.2%	(27-124)	--	--	"	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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6543 N. Burlington Ave.	Project Number: 36238	Report Created:
Portland, OR 97203	Project Manager: Jennifer Shackelford	07/18/07 18:47

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

TestAmerica - Portland, OR

QC Batch: 7060515 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (7060515-BS1)									**Extracted: 06/13/07 14:20**					
Indeno (1,2,3-cd) pyrene	EPA 8270m	2.56	---	0.0200	ug/l	2x	--	2.50	102%	(30-135)	--	--	06/26/07 20:13	
Naphthalene	"	2.07	---	0.0400	"	"	--	"	82.7%	(30-113)	--	--	"	
Phenanthrene	"	2.34	---	0.0400	"	"	--	"	93.5%	(34-126)	--	--	"	
Bis(2-ethylhexyl)phthalate	"	3.34	---	2.00	"	"	--	4.00	83.6%	(20-150)	--	--	07/06/07 01:03	
Butyl benzyl phthalate	"	3.30	---	2.00	"	"	--	"	82.4%	"	--	--	"	
Di-n-butyl phthalate	"	3.26	---	2.00	"	"	--	"	81.4%	"	--	--	"	
Di-n-octyl phthalate	"	3.02	---	2.00	"	"	--	"	75.6%	"	--	--	"	
Diethyl phthalate	"	3.15	---	2.00	"	"	--	"	78.6%	"	--	--	"	
Dimethyl phthalate	"	3.02	---	2.00	"	"	--	"	75.5%	"	--	--	"	
Pyrene	"	1.85	---	0.0400	"	"	--	2.50	73.8%	(21-141)	--	--	06/26/07 20:13	
Surrogate(s): Fluorene-d10		*Recovery: 88.9%*			*Limits: 25-125%*	"							*06/26/07 20:13*	
Pyrene-d10		*66.2%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*96.1%*			*10-125%*	"							"	
LCS Dup (7060515-BSD1)									**Extracted: 06/13/07 14:20**					
Acenaphthene	EPA 8270m	1.96	---	0.0400	ug/l	2x	--	2.50	78.4%	(35-120)	11.0%	(35)	06/26/07 20:45	
Acenaphthylene	"	2.15	---	0.0400	"	"	--	"	85.9%	(34-116)	12.0%	"	"	
Anthracene	"	2.20	---	0.0400	"	"	--	"	88.1%	(24-119)	6.38%	"	"	
Benzo (a) anthracene	"	2.46	---	0.0200	"	"	--	"	98.4%	(36-128)	6.46%	"	"	
Benzo (a) pyrene	"	2.42	---	0.0200	"	"	--	"	96.7%	(17-128)	6.12%	"	"	
Benzo (b) fluoranthene	"	2.96	---	0.0200	"	"	--	"	118%	(37-131)	8.24%	"	"	
Benzo (ghi) perylene	"	2.34	---	0.0400	"	"	--	"	93.5%	(26-126)	2.69%	"	"	
Benzo (k) fluoranthene	"	2.82	---	0.0200	"	"	--	"	113%	(18-145)	8.22%	"	"	
Chrysene	"	2.17	---	0.0200	"	"	--	"	86.6%	(16-137)	7.41%	"	"	
Dibenzo (a,h) anthracene	"	2.45	---	0.0200	"	"	--	"	97.9%	(20-141)	4.10%	"	"	
Fluoranthene	"	2.59	---	0.0400	"	"	--	"	103%	(31-125)	1.01%	"	"	
Fluorene	"	2.12	---	0.0400	"	"	--	"	84.8%	(27-124)	12.6%	"	"	
Indeno (1,2,3-cd) pyrene	"	2.48	---	0.0200	"	"	--	"	99.4%	(30-135)	2.93%	"	"	
Naphthalene	"	1.89	---	0.0400	"	"	--	"	75.7%	(30-113)	8.89%	"	"	
Phenanthrene	"	2.19	---	0.0400	"	"	--	"	87.7%	(34-126)	6.40%	"	"	
Bis(2-ethylhexyl)phthalate	"	3.32	---	2.00	"	"	--	4.00	83.1%	(20-150)	0.618%	(50)	07/06/07 01:37	
Butyl benzyl phthalate	"	3.28	---	2.00	"	"	--	"	82.1%	"	0.348%	"	"	
Di-n-butyl phthalate	"	3.13	---	2.00	"	"	--	"	78.2%	"	4.04%	"	"	
Di-n-octyl phthalate	"	2.77	---	2.00	"	"	--	"	69.3%	"	8.76%	"	"	
Diethyl phthalate	"	3.04	---	2.00	"	"	--	"	76.0%	"	3.35%	"	"	
Dimethyl phthalate	"	3.03	---	2.00	"	"	--	"	75.7%	"	0.280%	"	"	
Pyrene	"	1.74	---	0.0400	"	"	--	2.50	69.5%	(21-141)	6.08%	(35)	06/26/07 20:45	
Surrogate(s): Fluorene-d10		*Recovery: 79.1%*			*Limits: 25-125%*	"							*06/26/07 20:45*	
Pyrene-d10		*62.7%*			*23-150%*	"							"	

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Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/18/07 18:47

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

TestAmerica - Portland, OR

QC Batch: 7060515 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (7060515-BSD1)													**Extracted: 06/13/07 14:20**	
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 94.7%*			*Limits: 10-125%*	*2x*							*06/26/07 20:45*	

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6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/18/07 18:47

Conventional Chemistry Parameters per APHA/EPA Methods - Laboratory Quality Control Results

TestAmerica - Portland, OR

QC Batch: 7060711 **Water Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7060711-BLK1)								**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	ND	---	1.00	mg/l	1x	--	--	--	--	--	--	06/16/07 00:18	
LCS (7060711-BS1)								**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	19.6	---	1.00	mg/l	1x	--	20.0	98.1%	(85-115)	--	--	06/16/07 00:33	
Duplicate (7060711-DUP1)					**QC Source: PQF0188-15**			**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	2.65	---	1.00	mg/l	1x	2.50	--	--	--	5.89%	(20)	06/16/07 00:46	
Matrix Spike (7060711-MS1)					**QC Source: PQF0188-15**			**Extracted: 06/15/07 22:02**						
Total Organic Carbon	EPA 415.2	24.9	---	1.01	mg/l	1x	2.50	25.3	88.5%	(75-125)	--	--	06/16/07 01:01	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	07/18/07 18:47

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
Electronic Signature	-	Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
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2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PQFO395

CLIENT: City of Portland

REPORT TO: Jennifer Shackelford
ADDRESS:

PHONE: FAX:

INVOICE TO: Charles Lytle

P.O. NUMBER: 36238

PROJECT NAME: Portland Harbor
PROJECT NUMBER: Stormwater Samp
SAMPLED BY:

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: [10 STD.] [7] [5] [4] [3] [2] [1] [<1]
Petroleum Hydrocarbon Analyses: [5 STD.] [4] [3] [2] [1] [<1]
[OTHER] Specify:
* *Turnaround Requests less than standard may incur Rush Charges.*

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE (X)	REQUESTED ANALYSES: PAH+phthalates 8270-SIM	REQUESTED ANALYSES: TOC	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	TA WO ID
1	FO 070730	6/9/07 1607		X	X	W	3		
2									
3									
4									
5									
6									
7									
8									
9									
10									

RELEASED BY: Rona Kluck — FIRM: City of Portland — DATE: 6/11/07 — TIME: 1247
RECEIVED BY: — PRINT NAME: Jeremy Magill — FIRM: TAP — DATE: 6-11-07 — TIME: 12:47
RELEASED BY: — PRINT NAME: — FIRM: — DATE: — TIME:
RECEIVED BY: — PRINT NAME: — FIRM: — DATE: — TIME: 13:35

ADDITIONAL REMARKS: (X) Use custom PAH/phthalates list w/Low DLS as per UIC project.

TEMP:

COC REV 05/2006

PAGE 1 OF 1

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and for any additional analyses performed on this project.
Payment for services is due within 30 days from the date of invoice unless otherwise contracted. Sample(s) will be disposed of after 30 days unless otherwise contracted.

TestAmerica Sample Receipt Checklist

Received by: *(section A)* Date: 6-11-07 Time: 12:47 Initials: JM

Unpacked by: *(section B)* Date: 6/11/07 Initials: HBD

Logged-in by: Date: _____ Initials: _____

Work Order No. PQF0515 Client: COP Project: Portland Harbor

Cooler ID(s): 237, 163

***ESI Clients *(see Section C)*

Cooler Temperature (IR): 1.6 °C (1.5) plastic (glass) NA *(oil/air samples, ESI client)*

Temperature out of range:
___No Ice
___Ice Melted
___Wtn 4 Hours
___Other: _____

A

Custody Seals: (#____)
Signature: (Y) N Dated: 6-11-07
____None

Container Type:
2 #Cooler(s)
____#Box(s)
____None (___#Other:_____)

Coolant Type:
____Gel Ice
X Loose Ice
____None

Packing Material:
____Bubble Bags
X Styrofoam Cubbies
____None (____Other:_____)

Received from:
X TA Courier
____Senvoy
____UPS
____Fed Ex
____Client
____TDP
____DHL
____SDS
____Mid-Valley
____GS/TA
____GS/Senvoy
____Other:_____

B

Sample Status:
(If N circled, see NOD)

General:
Intact? (Y) N
Containers Match COC? (Y) N none given
IDs Match COC? (Y) N

For Analyses Requested:
Correct Type & Preservation? (Y) N
Adequate Volume? (Y) N
Within Hold Time? (Y) N

Volatiles:
VOAs Free of Headspace? Y N (NA)
TB on COC? not provided Y N (NA)

Metals:
HNO3 Preserved? Y N (NA)

C

***ESI Clients Only:

Temperature Blank: _____°C not provided
All preserved bottles checked Y N NA *(voas/soils/all unp.)*
All preserved accordingly? Y N *(see NOD)* NA *(voas/soils/all unp.)*

Army Corp: Geiger (ticks/min): ___ ___ ___ ___

Temperatures (IR): _____°C _____°C _____°C _____°C
(left) (middle) (right) (air)

Project Managers:

Comments: _____