CITY OF PORTLAND
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ▪ Sam Adams, Commissioner ▪ Dean Marriott, Director

TECHNICAL MEMORANDUM No. OF48-1

City Outfall Basin 48
Inline Solids Sampling

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

FROM: Linda Scheffler, City of Portland, Bureau of Environmental Services (BES)
Dawn Sanders, (BES)

COPIES: Kristine Koch, U.S. Environmental Protection Agency (EPA)
Julia Fowler, GSI Water Solutions, Inc.

DATE: January 17, 2008

SUBJECT: **Portland Harbor Source Control Investigation**

Introduction

This technical memorandum summarizes the results of BES's source control investigation of inline solids in the City Outfall Basin 48 stormwater conveyance system. Basin 48 is comprised primarily of residential rights-of-way, and the majority of stormwater flow from the basin is conveyed to a treatment pond before being discharged to the river. A small portion of the basin collects runoff from a road used to access the McCormick & Baxter Superfund site and Triangle Park DEQ Cleanup site which are located adjacent to Outfall 48.

This source control investigation evaluated inline solids within the Basin 48 stormwater conveyance system. Sediment data previously collected in the vicinity of the outfall indicated that outfall discharges may be a source of metals. One inline solids sample was collected from a location representative of the residential contributions to the basin and was analyzed for metals, as well as PCBs, polycyclic aromatic hydrocarbons (PAHs) and pesticides. Analytical results were compared to screening level values (SLVs) established in the Portland Harbor Joint Source Control Strategy (JSCS), and all detected concentrations were below toxicity SLVs (DEQ/EPA, 2005). Based on these investigation results, inline solids from residential contributions to Basin 48 are not a significant source of metals contaminants identified in river sediment adjacent to the outfall.

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

Basin 48 Configuration and Background

Basin Physical System. Figure 1 provides an overview of the Basin 48 stormwater conveyance system. The system collects runoff from a portion of North Willamette Boulevard and nearby residential streets, and a small portion of North Van Houten Place, which is the access road to the McCormick & Baxter and Triangle Park sites. The area served by Outfall 48 is approximately seven acres and the majority of the basin land use is residential. Stormwater discharge is routed through an engineered treatment pond and swale before discharging to the Willamette River via a 30-inch-diameter outfall. The treatment facility is designed with a 24-inch-diameter bypass line to handle storm flows that exceed the 20-year storm design standard.

Outfall 48 discharges into a shallow water embayment within the McCormick & Baxter Superfund site on the east bank of the Willamette River. Significant amounts of timber, debris, and sand accumulation have been observed on the riverbank in the immediate vicinity of Outfall 48, confirming that the cove is subject to back eddies and potential redeposition of sediment from both upstream and downstream of the outfall (CH2M HILL, 2004).

NPDES Permits. There are no records of National Pollutant Discharge Elimination System (NPDES) stormwater permits discharging to Basin 48.

Identified Cleanup Sites. According to the DEQ Environmental Cleanup Site Information (ECSI) database, there are no cleanup sites located within the Outfall 48 basin. However, the McCormick & Baxter Superfund site and the Triangle Park DEQ cleanup site are located adjacent to Outfall 48. Both sites are documented potential sources of PAHs and metals contamination, including arsenic at concentrations that exceed respective risk-based cleanup levels (DEQ, 2005). Additionally, releases of dioxins have been documented on the upland area of the McCormick & Baxter site (LWG, 2007).

In-river Sediment Sampling. The City collected six shallow sediment samples near Outfall 48 in October 2002 (CH2M HILL, 2004). Metals (arsenic, chromium, copper, lead, nickel, and zinc) , benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene and bis(2-ethylhexyl) phthalate were detected in one or more of the sediment samples at concentrations greater than JSCS toxicity SLVs (DEQ/EPA, 2005). Concentrations of DDx and Total PCBs were below JSCS toxicity SLVs but above bioaccumulation SLVs. Based on these results, Basin 48 was designated as a Priority 3 basin for source investigation. The City defines a Priority 3 basin as one where significant concentrations of contaminants have been detected in sediment near the outfall and the contaminants likely are attributable to upriver or adjacent sources.

The Lower Willamette Group (LWG) collected additional sediment samples in the embayment in 2004 and identified dioxin and arsenic as contaminants of potential concern (Integral, 2005; LWG, 2007). Based on sediment sample results, EPA designated the area near Outfall 48 as a preliminary area of potential concern (AOPC) based on elevated concentrations of metals and PAHs (EPA, 2005).

In response to the in-river sediment samples results and the EPA preliminary AOPC designation, the City conducted the investigation described in this TM to evaluate whether inline solids from Basin 48 are a potential source of contaminants to the Willamette River.

Field Activities

The sampling location was selected to represent solids contributions from the majority of the drainage basin. Inline solids sample IL-48-AAG776-0606 was collected at and immediately upstream of manhole AAG776, from materials observed in the 24-inch-diameter line that bypasses the stormwater treatment pond (see Figure 1). This manhole is upstream of the two catch basins adjacent to the railroad right-of-way that collect runoff from North Van Houten Place and potentially from the adjacent railroad right-of-way. The sample represents inline solids from residential stormwater that bypassed the treatment facility and contributions from catch basin ANE619, that accumulated since storm lines in this vicinity were last cleaned in 1993 and 1994.

Solids were dry, gray, and sandy in nature (see Attachment A), and no odor or visual evidence of contamination was observed in the sample. The sample was collected on June 28, 2006 using a stainless steel spoon and bowl, in accordance with BES Field Operations' Standard Operating Procedures. A photograph of the sample is included in Attachment A. Field notes taken during sampling activities are provided in Attachment B.

No solids were found in the main line downstream of manhole AAG776 or in the discharge line from the treatment pond. Manholes AAJ670 and AAJ671 were considered for sampling, as they are downstream of all known connections to the basin. During a preliminary field visit in May 2006, manhole AAJ671 could not be located, and manhole AAJ670 was found in damaged condition (see Attachment A). Manhole AAJ670 was repaired and subsequently inspected for solids, but no solids were observed during the time of sample collection.

Summary of Results

The sample was analyzed for metals, PCBs, PAHs, pesticides, total organic carbon (TOC), and grain size. Table 1 summarizes the physical and chemical analytical data results. The laboratory results and data validation report for the sample are provided in Attachment C.

Analytical results were compared with the JSCS toxicity and bioaccumulation SLVs, and DEQ's Default Background Metal Concentrations for Soil (DEQ, 2002). The results of the comparisons are summarized as follows:

- **Metals.** All metals concentrations were below SLVs.
- **PCBs.** PCB Aroclor 1254 was detected in the sample at a concentration an order of magnitude lower than the JSCS toxicity SLV. No other Aroclors were detected.
- **PAHs.** PAHs were detected in the sample, but concentrations did not exceed applicable SLVs.
- **Pesticides.** 4,4'-DDE and 4,4'-DDT were detected at concentrations above the JSCS bioaccumulation SLVs and below the toxicity SLVs.

Conclusions

Based on the analytical results from the inline solids sample collected to represent basin stormwater solids contributions, inline solids from the residential portion of the Basin 48

stormwater conveyance system are not an apparent source of high metals found in the Willamette River samples near Outfall 48 (see table below). The sample did not exceed JSCS toxicity SLVs for metals, PCBs, PAHs or pesticides. Three contaminants detected above the JSCS bioaccumulation SLVs (Total PCBs, 4,4'-DDE, and 4,4'-DDT) were found at concentrations well below the JSCS toxicity SLVs.

Metal	Concentration in June 2006 Inline Solids Sample (mg/kg)	Concentration Range in City Sediment Samples (mg/kg)	JSCS Toxicity SLV
Arsenic	2.14	27.5 – 83.5	33
Chromium	28.5	44.9 -184	111
Copper	32.1	64.5 – 620	149
Lead	13.4	20.6 – 516	128
Nickel	21.5	44.6 – 179	48.6
Zinc	88.3	185 - 2650	459

The majority of storm flow from Basin 48 is treated in a constructed pond and swale prior to discharge to the river. This inline solids sample was collected from the storm line that bypasses the treatment facility and therefore represents solids from untreated stormwater. Two catch basins discharge to Basin 48 between the sample location and the outfall. The City recently collected stormwater samples, during four storm events, from a manhole downstream of these catch basin connections. Data will be evaluated to determine whether further investigations of the catch basins or potential sources within Basin 48 are warranted.

References

CH2M HILL. 2004. Programmatic Source Control Remedial Investigation Work Plan for the City of Portland Outfalls Project. Prepared for the City of Portland, Bureau of Environmental Services, March 19, 2004.

DEQ. 2002. DEQ Default Background Concentrations for Inorganic Contaminants in Various Environmental Media. Internal Memorandum from the Toxicology Workgroup to DEQ Project Managers, dated October 28, 2002.

DEQ. 2005. DEQ Site Summary Report. DEQ Environmental Cleanup Site Information Database (ECSI). Accessed November 2006. www.deq.state.or.us/wmc/ecsi/ecsiquery.htm.

DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Interim Final, dated September 2005, as amended July 2007.

EPA. 2005. EPA Letter to Lower Willamette Group. Portland Harbor RI/FS – Identification of Round 3 Data Gaps. December 2, 2005.

Integral. 2005. Portland Harbor RI/FS, Round 2A Sediment Site Characterization Report. Prepared for the Lower Willamette Group.

LWG. 2007. Comprehensive Round 2 Site Characterization Summary & Data Gaps Analysis Report, dated February 2007.

Table

Table 1 - *Summary of Chemical Analytical Results, Inline Solids Sampling, City Outfall Basin 48*

Figure

Figure 1 – *Outfall Basin 48 Inline Solids Sampling Location*

Attachments

Attachment A - *Field Photographs*
Attachment B - *Field Notes*
Attachment C - *Laboratory Reports*

Table 1
Summary of Chemical Analytical Results
Inline Solids Sampling
City Outfall Basin 48

Class	Analyte	Units	Inline Solids Manhole AAG776 IL-48-AAG776-0606 06/28/06	JSCS Screening Level Value[1] Toxicity	JSCS Screening Level Value[1] Bioaccumulation	DEQ Default Background Metal Concentrations in Soil[2]
Total Organic Carbon (TOC) (EPA 9060MOD)						
	TOC	mg/Kg	21100	--	--	--
Grain Size (ASTM D421/422)						
	Gravel (>4750 µm)	Fract %	5.4			
	Coarse Sand (4750-2000 µm)	Fract %	6			
	Medium Sand (2000-425 µm)	Fract %	46.5			
	Fine Sand (425-75 µm)	Fract %	35.6			
	Silt (3.2-75 µm)	Fract %	5.4			
	Clay (<3.2 µm)	Fract %	0.8			
Metals (EPA 6020)						
	Arsenic	mg/Kg	2.14	33	7	7
	Chromium	mg/Kg	28.5	111	--	42
	Copper	mg/Kg	32.1	149	--	36
	Lead	mg/Kg	13.4	128	17	17
	Nickel	mg/Kg	21.5	48.6	--	38
	Zinc	mg/Kg	88.3	459	--	86
Polychlorinated Biphenyls (EPA 8082)						
	Aroclor 1016	µg/Kg	9.2 U	530	--	--
	Aroclor 1221	µg/Kg	9.2 U	--		--
	Aroclor 1232	µg/Kg	9.2 U	--		--
	Aroclor 1242	µg/Kg	9.2 U	--		--
	Aroclor 1248	µg/Kg	9.2 U	1500		--
	Aroclor 1254	µg/Kg	39	300		--
	Aroclor 1260	µg/Kg	9.2 U	200		--
	Total PCBs[3]	µg/Kg	**39**	676	0.39	--
Polynuclear Aromatic Hydrocarbons (EPA 8270C-SIM)						
	1-Methylnaphthalene	µg/Kg	4.3 J	--	--	--
	2-Methylnaphthalene	µg/Kg	12	200	--	--
	Acenaphthene	µg/Kg	4.4 J	300	--	--
	Acenaphthylene	µg/Kg	1.5 J	200	--	--
	Anthracene	µg/Kg	6.4	845	--	--
	Benzo(a)anthracene	µg/Kg	31	1050	--	--
	Benzo(a)pyrene	µg/Kg	29	1450	--	--
	Benzofluoranthenes	µg/Kg	34	13000	--	--
	Benzo(g,h,i)perylene	µg/Kg	20	300	--	--
	Chrysene	µg/Kg	49	1290	--	--
	Dibenzo(a,h)anthracene	µg/Kg	8.1	1300	--	--
	Fluoranthene	µg/Kg	72	2230	37000	--
	Fluorene	µg/Kg	3.9 J	536	--	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	19	100	--	--
	Naphthalene	µg/Kg	13	561	--	--
	Phenanthrene	µg/Kg	56	1170	--	--
	Pyrene	µg/Kg	67	1520	1900	--

Table 1
Summary of Chemical Analytical Results
Inline Solids Sampling
City Outfall Basin 48

Class	Analyte	Units	**Inline Solids** Manhole AAG776 IL-48-AAG776-0606 06/28/06	JSCS Screening Level Value[1] Toxicity	JSCS Screening Level Value[1] Bioaccumulation	DEQ Default Background Metal Concentrations in Soil[2]
Pesticides (EPA 8081)						
	4,4'-DDD	µg/Kg	*1.9* U	28	0.33	--
	4,4'-DDE	µg/Kg	**0.36** J	31.3	0.33	--
	4,4'-DDT	µg/Kg	**12**	62.9	0.33	--
	Total DDT[4]		**12.36**	--	0.33	--
	Aldrin	µg/Kg	1.1	40	--	--
	Alpha-BHC	µg/Kg	1.7	--	--	--
	Alpha-Chlordane[5]	µg/Kg	*0.93* U	17.6	0.37	--
	Beta-BHC	µg/Kg	0.93 U	--	--	--
	Delta-BHC	µg/Kg	0.93 U	--	--	--
	Dieldrin	µg/Kg	*1.9* U	61.8	0.0081	--
	Endosulfan I	µg/Kg	0.93 U	--	--	--
	Endosulfan II	µg/Kg	1.9 U	--	--	--
	Endosulfan Sulfate	µg/Kg	1.9 U	--	--	--
	Endrin	µg/Kg	0.53 J	207	--	--
	Endrin aldehyde	µg/Kg	1.9 U	--	--	--
	Endrin ketone	µg/Kg	1.9 U	--	--	--
	Gamma-BHC (Lindane)	µg/Kg	0.93 U	4.99	--	--
	Gamma-Chlordane[5]	µg/Kg	*0.93* U	17.6	0.37	--
	Heptachlor	µg/Kg	0.93 U	10	--	--
	Heptachlor epoxide	µg/Kg	0.93 U	16	--	--
	Methoxychlor	µg/Kg	9.3 U	--	--	--
	Toxaphene	µg/Kg	93 U	--	--	--

Notes:

Chemical units in micrograms per kilogram (µg/Kg) or milligrams per kilogram (mg/Kg) dry weight.

-- = No JSCS screening level value has been established

Fract % = Percent of soil retained in grain size category during grain size analysis.

J = The analyte was detected and has been qualified as an estimated quantity.

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

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

(2) DEQ Environmental Cleanup Program Memo to Project Managers, Default Background Metal Concentrations in Soil. Oct. 28, 2002.

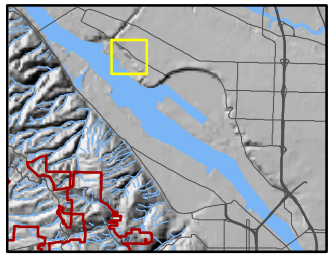
(3)Total PCBs = Sum of detected Aroclors.

(4) Total DDT = sum of detected DDD, DDE and DDT.

(5) SLV is for total chlordane.

bold - concentration exceeds JSCS Bioaccumulation SLV

italic - laboratory reporting limit exceeds SLV



Legend

- Storm Pipe
- Manhole
- Catch Basin
- Taxlots
- Outfall Basin 48
- Inline Solids Sampling Location
- City Outfall
- Non-City Outfall
- DEQ Environmental Cleanup Sites

0 125 250 500 Feet

Figure 1
Outfall Basin 48
Inline Solids
Sampling Location

Source: City of Portland BES Aerial photo 2006

Environmental Services City of Portland 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-3912

File Name: s:\gis\outfalls\outfalls_48\of48_inline.mxd

Program Manager: Dawn Sanders Portland Harbor Superfund

Sheet No. 1 OF 1

Date Printed: 01/14/08

Prepared by: Sara Gardner

Attachment A
Field Photographs

Photo 1 (May 2006). Damaged collar at manhole AAG670.

Photo 2 (May 2006). Looking towards river and catch basins adjacent to railroad right-of-way from manhole AAG776.

Photo 3 (May 2006). Line configuration at manhole AAG776. A 17-inch-diameter line from the treatment pond discharges to this manhole along with the 24-inch diameter bypass line.

Photo 4 (June, 2006). Inline solids collected from 0 to 3 ft upstream of manhole AAG776.

Attachment B
Field Notes

City of Portland
Environmental Services

DAILY FIELD REPORT

Project IN LINE SED SAMP
Location BASIN 48
Subject FIELD NOTES

Project No. 1020-001
Date 6-20-06
By MJH

0600 PREPARE EQUIPMENT FOR TODAYS SAMPLING EVENT.
AT BASIN 48 → S_6

0910 Arrive at BASIN 48. REVIEW WORK ORDER AND INSTRUCTIONS. LINDA HAS SENT EMAIL DESCRIBING ALTERNATE LOCATIONS AND PRIORITIES 6/13/06.

0920 SET UP TO ENTER AND INSPECT AAG 776.

0930 AT AAG 776. NO SEDS OBSERVED DOWNSTREAM. SOME SEDS OBSERVED UPSTREAM. ABOUT 12 OZ (3 JARS) DECIDE TO CAPTURE THESE SEDS WHILE WE ARE HERE (EVEN THOUGH) THOSE SEDS ARE THE THIRD OPTION ON LINDAS EMAIL.

JUST ENOUGH SEDS TO FILL OUR ANALYTE LIST

1001 FINISH UP AT AAG 776 AND MOVE TO AAG 670
WE WOULD LIKE TO FIND SEDS FROM UPSTREAM AT THIS SITE SO LONG AS THEY HAVE NOT BEEN IMPACTED BY SURFACE RUNOFF.

1010 NO BOX AT EITHER UP OR DOWN AT AAG 670

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Project INLINE SED SAMP
Location
Subject FIELD NOTES

Project No. 1020-001
Date 6-20-06
By MJP

1015 THE ~~NEXT~~ RE CAP. WE DID NOT FIND ANY SEDS DOWNSTREAM OF AA 6776, WHICH WAS FIRST PRIORITY, WE DID NOT FIND ANY SEDS UPSTREAM OF AAJ 670 WHICH WAS SECOND PRIORITY. WE DID FIND SEDS UPSTREAM OF AA6776 WHICH IS LINDA'S THIRD PRIORITY.
SINCE WE HAVE ENOUGH SAMPLE TO GET ALL OF THE ANALYTES I THINK THAT THIS CONCLUDES THE SAMPLING FOR THIS BASIN.

1048 ARRIVE AT CASCADE GENERAL. NO PROBLEM AT GATE. GO TO AAM 118. MATT ~~ENTERS~~ TO ASSESS SEDS + GET PIPE DIAMETERS AT THIS LOCATION

1052 MATT SEES A LARGE LOG IN THE DOWNSTREAM OUTFALL LINE NOT A COMPLETE BLOCKAGE BUT IT IS CREATING A DAM. DAMMED WATER GOES UP TO NODE THEN STOPS.
UP STREAM SEDS DO NOT APPEAR IMPACTED BY DAM.

1110 MATT RETRIEVES ALL OF THE SEDIMENT HE CAN FROM UPSTREAM OF THIS NODE

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City of Portland
Environmental Services

DAILY FIELD REPORT

Project IN'LINE SED SAMP
Project No. 1020-001
Location
Date 6-20-06
Subject FIELD NOTES
By MJH

1147 MATT COLLECTS SEDIMENTS DOWNSTREAM. THIS IS NOT REQUESTED BUT WE WANT TO GIVE LINDA THE OPTION OF RUNNING THESE IF SHE WANTS.

MATT OBSERVES THAT THERE IS A LATERAL FROM A CATCH BASIN GOING INTO THAT MH.

1201 LOOK DOWN ALTERNATE AAM 121. THIS MH IS IN MIDDLE OF EXIT LANE BY GUARD SHACK. WE WOULD NEED TO COORDINATE W/ CASCADE PRIOR TO GOING IN THERE. IT LOOKS LIKE THERE COULD BE SEDIMENTS IN THAT LOCATION.

1240 WRAP UP OPS AT THIS NODE, BREAK FOR LUNCH

1327 ARRIVE AT AAP 941.

1325 NO SEDS OBSERVED AT EITHER DIRECTION AT AAP 941
MOVE TO AAP 948

1340 SET UP AT AAP 948.
NO SEDS OBSERVED. FIELD WORK COMPLETE FOR TODAY. RETURN TO WPCL.

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City of Portland
Environmental Services

DAILY FIELD REPORT

Page 4 of 4

Project IN LINE SED SAMP
Project No. 1020.001
Location
Date 6-20-06
Subject FIELD NOTES
By MJH

1410 ARRIVE AT WPCL. ORGANIZE SAMPLES FOR SUBMISSION TO WPCL. TALK TO RENEE CHAUVIN ON BEST WAY TO SUBMIT SAMPLE FROM 118 DOWN STREAM. THE PROBLEM IS THIS: LINDA S. WANTS THIS ONE SAMPLE TO BE (A) ANALYZED FOR PER TIDE COC AND (B) THE ADDITIONAL SAMPLE TO BE RECEIVED UNTIL SHE FIGURES OUT THE SIEVING ISSUE. I TALK TO RENEE AND SHE ADVISES ME THAT THE BEST WAY IS TO SPLIT THE SAMPLE INTO 2 SEPARATE SAMPLES AND SUBMIT TO THE LAB TODAY.
I CALL LINDA AND TELL HER THIS AND SHE IS OK

1555 SUBMIT SAMPLES TO WPCL LAB UNDER COC. I NOTE ON CHAIN OF CUSTODY THAT F0060733 AND F0060734 ARE THE SAME SAMPLE AND HAVE JUST BEEN SPLIT.

Attachments

CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

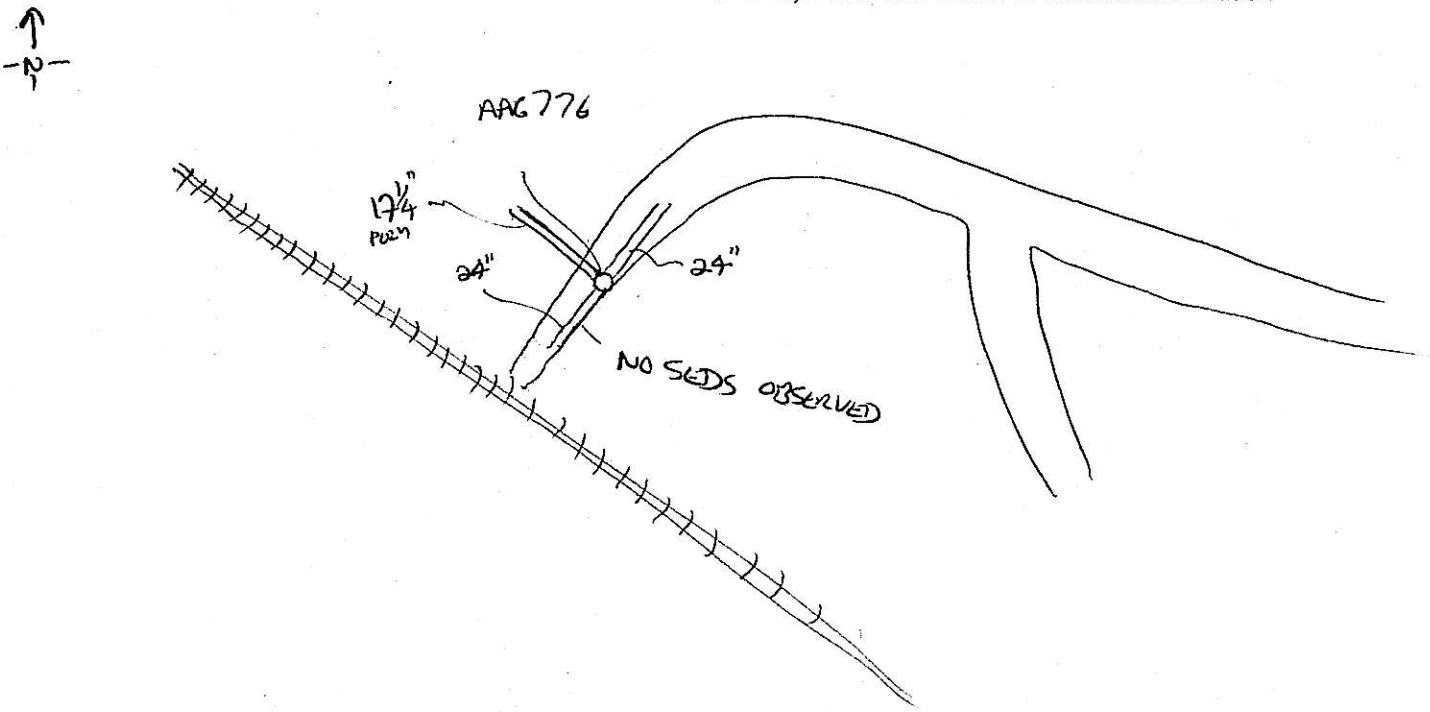
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 6-20-06	Time: 0930	Current Weather conditions: SUNNY 60'S
Sampling Team Present: MJH/LAP/MJS/ABW		
Basin: 48	Node: AAG 776	Subbasin:
Sampling Location Description/Address: N VAN HOUTEN PL + N. VAN HOUTEN CT.		

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	LINE IS DRY
Does river appear to back up to this location? Describe rate/color/odor of flow:	NO
Are sediments observed in the line?	NONE DOWN STREAM YES UPSTREAM
Are sample-able quantities of sediments present in the line?	YES UPSTREAM ABOUT 12"
Describe lateral extent of sample-able sediments present in the line:	START AT MH AND EXTEND ABOUT 3' UP.

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



Date: 6-20-06	SECTION 2 - SAMPLE COLLECTION REPORT	Node: AAG 776
Sampling Equipment:	☒ Stainless steel spoon & stainless steel ~~bucket~~ Bowl ☐ Other (Describe)	
Equipment Decontamination process:	☒ Per SOP7.01a ☐ Other (Describe)	
Sample date: 6-20-06	Sample time: 0941	
Sample Identification: (IL-XX-NNNNNN-mmyy) IL-98-AAG776-0606-U.S.		
Sample location description: (number of feet from node of entry)	UPSTREAM OF MH AAG776 FROM MH TO 3' UP.	
Sample collection technique:	SS SPOON USED TO COLLECT SEDS INTO SS. BOWL.	
Describe Color of sample:	GREY SAMPLE IS DRY	
Describe Texture/Particle size:	SANDS	
Describe visual or olfactory evidence of contamination:	NO	
Desacribe depth of solids in area where sample collected:	1/2"	
Describe amount and type of debris in sample:	-	
Compositing notes:		

Sample Jars Collected

If not enough sample to fill all of the jars, then fill jars in this order:				
WE COLLECTED 4 4-OZ JARS + 1 8-OZ JAR	Metals	One 4oz glass jar		
	PAHs/SVOCs	One 4oz glass jar		
	PCBs	One 4oz glass jar		
	TPH (two jars)	Two 4oz glass jars		
	TOC	One 4oz glass jar		

Duplicate sample collected?	NO. NOT ENOUGH SAMPLE
Duplicate sample fictitious identification # on COC:	-
Samples placed in chilled cooler? (Y)/N	
Samples delivered to lab? (Y)/N	Lab ID Number: FO 060731
Describe any deviations from standard procedures:	NO

CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

SEDIMENT SAMPLING FIELD DATA SHEET

Date: 6-20-06	Time: 1006	Current Weather conditions: SUNNY 70's
Sampling Team Present: MJH / MJS / LAP / ABW		
Basin: 48	Node: AAJ 670	Subbasin:
Sampling Location Description/Address: @ N VAN HOUTEN AT		

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	NO
Does river appear to back up to this location? Describe rate/color/odor of flow:	NO
Are sediments observed in the line?	NONE UP OR DOWN FROM NODE
Are sample-able quantities of sediments present in the line?	NO
Describe lateral extent of sample-able sediments present in the line:	NO

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

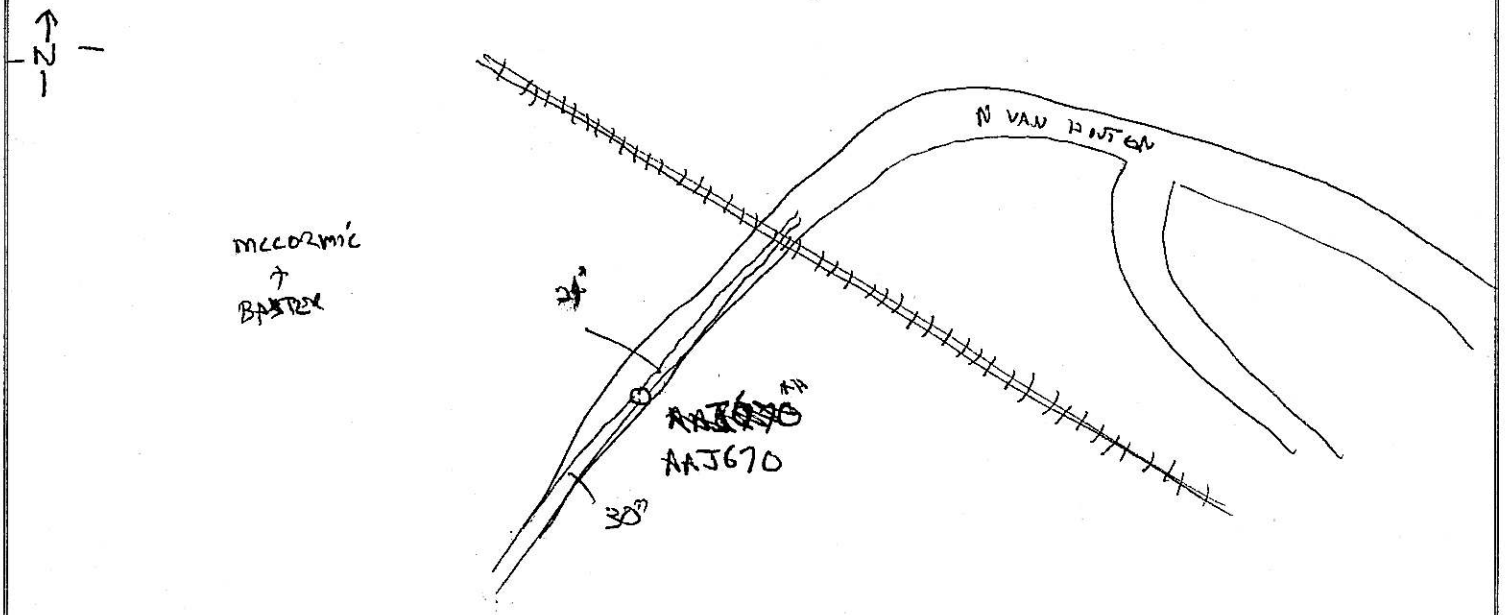


TABLE 1

STEPWISE DECONTAMINATION PROCEDURE

SOP 7.01A – DECONTAMINATION OF SAMPLING EQUIPMENT

Use the following steps to determine the correct equipment decontamination process. First determine the equipment to be decontaminated. Then, starting at Step 1, answer the questions proceeding to Step 9. Check the boxes in the right column. The resulting checked boxes indicate the appropriate decontamination process.

Project Name: IN LINE SED SAMP
Project Number: 1020001
Date: 6-19-06

Description of item to be decontaminated: SS SPOONS + BOWLS

Step Number	Decontamination Process	Check boxes below as necessary
Step 1	Wash with non-phosphate detergent solution, proceed to Step 2	☒ 10% Non-phosphate wash
Step 2	Rinse with tap water, proceed to Step 3	☒ Tap water rinse
Step 3	Is sample to be analyzed for metals or nutrients? (Yes) Does equipment have metal parts? (Yes) – Skip this step. Proceed to Step 5 No – Wash with 10% nitric acid solution, Proceed to Step 4 No – Proceed to Step 5	☐ 10% nitric acid wash
Step 4	Rinse with DI water, proceed to step 5	☒ DI water rinse
Step 5	Is sample to be analyzed for organics? No – Proceed to Step 7 (Yes) – Does analyte list include TOC, DOC, SOC analytes? (Yes) – Omit this step, proceed to Step 7 No – Does analyte list include PCBs? Yes – Wash with acetone, proceed to Step 6 No – Wash with 10% methanol/isopropyl alcohol solution, proceed to Step 6	☐ Acetone Wash ☐ 10% methanol wash
Step 6	Rinse with DI water, proceed to Step 7	☐ DI water rinse
Step 7	Rinse with ultrapure DI water, proceed to Step 8.	☒ Ultrapure DI water rinse
Step 8	Collect quality control blank samples per SOP 7.01c	
Step 9	Is sample to be used to collect metals samples?	☒ Wrap equipment in clean plastic bag.
	Is equipment to be used to collect organics samples?	☐ Wrap equipment in clean aluminum foil.

Attachment C
Laboratory Results

Laboratory Data QA/QC Review
Upland Source Control Investigation
City Outfall Basin 48

To: File

From: Robyn Cook, GSI

Date: March 20, 2007

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control investigation sampling and analyses recently conducted by the City of Portland (City) in Outfall Basin 48. This includes a sampling round conducted in June, 2006. A single solid sample was collected in the field. The results of the sampling and analysis are presented in the Technical Memorandum No. OF 48-1.

The laboratory analysis for this source control program sample was completed by the City's BES laboratory and three subcontracted laboratories. The following analyses were conducted each laboratory for each of the sampling rounds:

- BES Laboratory
    - Metals (EPA Method 6020)
- Analytical Resources, Inc.
    - Grain Size Analysis (ASTM D421/422)
- Test America
    - Total Organic Carbon (EPA Method 9060MOD)
- STL Laboratory
    - Semivolatile Organics (EPA Method 8270-SIM)
    - Pesticides (EPA Method 8081A)
    - Polychlorinated Biphenyls (EPA Method 8082)

Attachment C of the Technical Memorandum No. OF 48-1 presents the BES laboratory LIMS summary report for all analyses associated with this Outfall Basin investigation and the subcontracted laboratory's data reports. Subcontracted laboratories frequently receive batches of samples related to several BES sampling projects. In this case, only those analytical results (and

QA/QC pages) pertinent to this Outfall Basin investigation memorandum are provided with the subcontractor's reports.

This QA/QC review is based upon the available documentation supplied from each laboratory. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report:

- Chain-of-custody complete and correct
- Analysis within holding times
- Chemicals of interest in method blanks
- Surrogate recoveries within accuracy control limits
- Laboratory duplicates within analytical accuracy control limits
- Laboratory blank spike recoveries within accuracy control limits
- Laboratory blank spike duplicate results within analytical precision control limits
- Matrix spike recoveries within accuracy control limits
- Matrix spike duplicate results within analytical precision 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

Semi-Volatile Organic Analyses
The sample was extracted and analyzed within the required holding times.

Pesticides Analyses
The sample was extracted and analyzed within the required holding times.

Polychlorinated Biphenyls (PCBs) Analyses
The sample was extracted and analyzed within the required holding times.

Metal Analyses
The sample was extracted and analyzed within the required holding times.

Total Organic Carbon Analyses
The sample was extracted and analyzed within the required holding times.

Grain Size Analyses
There are no required holding times for this analysis.

Method Blanks

Method blanks were processed during the laboratory analysis of SVOCs, pesticides, PCBs, total organic carbon (TOC) and metals. No chemicals were detected in the method blanks associated with TOC, metals, pesticides or PCBs. Two analytes (bis(2-Ethylhexyl)phthalate and pyrene) were detected in a method blank associated with the SVOC analysis. The samples contained both bis(2-Ethylhexyl)phthalate and pyrene at concentrations significantly higher than the method blank, therefore no data are qualified.

Surrogate Recoveries

Surrogate recoveries were completed during the laboratory analysis of SVOCs, pesticides and PCBs. All surrogate recoveries were within laboratory control limits for the analysis of SVOCs and PCBs. Two of the surrogates analyzed with the pesticide blank and laboratory control sample during pesticide analysis (tetrachloro-m-xylene) was outside laboratory control limits. The surrogate recovery was just outside of the range of acceptable limits, and surrogate recoveries were within laboratory control limits for the sample analyses; therefore no data are qualified.

Laboratory Duplicates

A laboratory duplicate was processed during the analyses of TOC. The duplicate was outside of laboratory control limits due to a non-homogeneous sample matrix. No data are qualified.

Laboratory Control Sample Recoveries

Laboratory control samples were processed during the laboratory analyses of pesticides, SVOCs, PCBs, TOC, and metals. All laboratory blank spike recoveries were within laboratory control limits.

Laboratory Control Sample Duplicates

Laboratory blank spike duplicates were processed during the laboratory analysis of pesticides, PCBs and SVOCs. The relative percent difference (RPD) between the laboratory blank and the laboratory blank spike duplicates were within quality control limits for both analyses.

Matrix Spike Recoveries

Laboratory matrix spikes and matrix spike duplicates were processed during the laboratory analysis of pesticides, SVOCs PCBs, and TOC. The RPDs between the matrix spike and the matrix spike duplicates were within quality control limits the three analyses.

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: 6-20-06
Page: 1 of 1
Collected By: MJH/LAP/MJS

Project Name: PORTLAND HARBOR INLINE SAMP
File Number: 1020.001 **Matrix:** OTHER

OUTFALL 48

*STL will perform Pesticide /PCB and PAH analysis
STL - Please send invoice to Howard Holmes at Northcreek and lab reports to Renee Chauvin or Jennifer Shackleford

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: Pesticides|PCBs*	General: PAH*	General: Total Organic Carbon	General: Grain Size (ASTM)	General	General	General	Metals: Total Metals (Cr, Cu, Pb, Ni, Zn)	Metals	Metals	Field Comments
FO 060731	IL-48-AAG776-0606 upstream of node	48_1	6-20-06	0941	G	●	●	●	●				●			
2																
3																
4																
5																
6																
7																
8																
9																
10																

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1554	Signature: Time	Signature: Time:	Signature: Time:
Printed Name: MICOPER HAUSER Date: 6-20-06	Printed Name: Date	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1554	Signature: Time	Signature: Time:	Signature: Time:
Printed Name: Rona Klneb Date: 6/20/06	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: **FO060731** **Sample Collected:** 6/20/2006 09:41 **Sample Received:** 06/20/06 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-48-AAG776-0606
UPSTREAM OF NODE
Sample Point Code: 48_1
Sample Type: GRAB
Sample Matrix: SEDIMENT

Report Page: Page 1 of 3
System ID: AK05430
EID File # : 1020.001
LocCode: PORTHARI
Collected By: MJH/LAP/MJS

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some semi-volatile analytes were detected in the method blank but at insignificant levels compared to concentrations in the sample. Results flagged as EST are above the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
METALS					
ARSENIC	2.14	mg/Kg dry wt	0.50	EPA 6020	06/22/06
CHROMIUM	28.5	mg/Kg dry wt	0.50	EPA 6020	06/22/06
COPPER	32.1	mg/Kg dry wt	0.25	EPA 6020	06/22/06
LEAD	13.4	mg/Kg dry wt	0.10	EPA 6020	06/22/06
NICKEL	21.5	mg/Kg dry wt	0.25	EPA 6020	06/22/06
ZINC	88.3	mg/Kg dry wt	0.50	EPA 6020	06/22/06
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	21100	mg/Kg dry wt	508	EPA 9060 MOD	06/26/06
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	0.8	Fract %		ASTM D421/422	07/05/06
Coarse Sand (4750-2000 µm)	6.0	Fract %		ASTM D421/422	07/05/06
Fine Sand (425-75 µm)	35.6	Fract %		ASTM D421/422	07/05/06
Gravel (>4750 µm)	5.4	Fract %		ASTM D421/422	07/05/06
Medium Sand (2000-425 µm)	46.5	Fract %		ASTM D421/422	07/05/06
Silt (13-9 µm)	1.7	Fract %		ASTM D421/422	07/05/06
Silt (22-13 µm)	0.8	Fract %		ASTM D421/422	07/05/06
Silt (32-22 µm)	0.4	Fract %		ASTM D421/422	07/05/06
Silt (7-3.2 µm)	0.8	Fract %		ASTM D421/422	07/05/06
Silt (75-32 µm)	0.9	Fract %		ASTM D421/422	07/05/06
Silt (9-7 µm)	0.8	Fract %		ASTM D421/422	07/05/06
PESTICIDES BY EPA 8081 - STL					
4,4'-DDD	<1.9	µg/Kg dry wt	1.9	EPA 8081	06/30/06
4,4'-DDE	EST 0.36	µg/Kg dry wt	1.9	EPA 8081	06/30/06
4,4'-DDT	12	µg/Kg dry wt	1.9	EPA 8081	06/30/06
Aldrin	1.1	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Alpha-BHC	1.7	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Alpha-Chlordane	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Beta-BHC	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Delta-BHC	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Dieldrin	<1.9	µg/Kg dry wt	1.9	EPA 8081	06/30/06
Endosulfan I	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Endosulfan II	<1.9	µg/Kg dry wt	1.9	EPA 8081	06/30/06
Endosulfan Sulfate	<1.9	µg/Kg dry wt	1.9	EPA 8081	06/30/06

Report Date: 01/03/07 **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: **FO060731** **Sample Collected:** 6/20/2006 09:41 **Sample Received:** 06/20/06 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-48-AAG776-0606
UPSTREAM OF NODE
Sample Point Code: 48_1
Sample Type: GRAB
Sample Matrix: SEDIMENT

System ID: AK05430
EID File # : 1020.001
LocCode: PORTHARI
Collected By: MJH/LAP/MJS

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some semi-volatile analytes were detected in the method blank but at insignificant levels compared to concentrations in the sample. Results flagged as EST are above the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin	EST 0.53	µg/Kg dry wt	1.9	EPA 8081	06/30/06
Endrin Aldehyde	<1.9	µg/Kg dry wt	1.9	EPA 8081	06/30/06
Endrin ketone	<1.9	µg/Kg dry wt	1.9	EPA 8081	06/30/06
Gamma-BHC(Lindane)	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Gamma-Chlordane	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Heptachlor	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Heptachlor Epoxide	<0.93	µg/Kg dry wt	0.93	EPA 8081	06/30/06
Methoxychlor	<9.3	µg/Kg dry wt	9.3	EPA 8081	06/30/06
Toxaphene	<93	µg/Kg dry wt	93	EPA 8081	06/30/06
POLYCHLORINATED BIPHENYLS (PCBs) - STL					
Aroclor 1016	<9.2	µg/Kg dry wt	9.2	EPA 8082	06/29/06
Aroclor 1221	<9.2	µg/Kg dry wt	9.2	EPA 8082	06/29/06
Aroclor 1232	<9.2	µg/Kg dry wt	9.2	EPA 8082	06/29/06
Aroclor 1242	<9.2	µg/Kg dry wt	9.2	EPA 8082	06/29/06
Aroclor 1248	<9.2	µg/Kg dry wt	9.2	EPA 8082	06/29/06
Aroclor 1254	39.0	µg/Kg dry wt	9.2	EPA 8082	06/29/06
Aroclor 1260	<9.2	µg/Kg dry wt	9.2	EPA 8082	06/29/06
SEMI-VOLATILE ORGANICS, CUSTOM - STL					
1-Methylnaphthalene	EST 4.3	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
2-Methylnaphthalene	12	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Acenaphthene	EST 4.4	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Acenaphthylene	EST 1.5	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Anthracene	6.4	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Benzo(a)anthracene	31	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Benzo(a)pyrene	29	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Benzo(g,h,i)perylene	20	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Benzofluoranthenes	34	µg/Kg dry wt	10.0	EPA 8270-SIM	06/28/06
Chrysene	49	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Dibenzo(a,h)anthracene	8.1	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Fluoranthene	72	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Fluorene	EST 3.9	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Indeno(1,2,3-cd)pyrene	19	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Naphthalene	13	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06
Phenanthrene	56	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06

Report Date: 01/03/07 **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: **FO060731** **Sample Collected:** 6/20/2006 09:41 **Sample Received:** 06/20/06 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-48-AAG776-0606
UPSTREAM OF NODE
Sample Point Code: 48_1
Sample Type: GRAB
Sample Matrix: SEDIMENT

Report Page: Page 3 of 3
System ID: AK05430
EID File # : 1020.001
LocCode: PORTHARI
Collected By: MJH/LAP/MJS

Comments:
QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some semi-volatile analytes were detected in the method blank but at insignificant levels compared to concentrations in the sample. Results flagged as EST are above the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Pyrene	67	µg/Kg dry wt	5.0	EPA 8270-SIM	06/28/06

End of Report for Sample ID: FO060731

Report Date: 01/03/07 **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

July 20, 2006

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 06/21/06 12:35. The following list is a summary of the Work Orders contained in this report, generated on 07/20/06 13:23.

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

Work Order	Project	ProjectNumber
PPF0890	Portland Harbor	36238

Howard Holmes, Project Manager

TestAmerica
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	07/20/06 13:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 060731	PPF0890-01	Soil	06/20/06 09:41	06/21/06 12:35
FO 060732	PPF0890-02	Soil	06/20/06 11:35	06/21/06 12:35
FO 060733	PPF0890-03	Soil	06/20/06 11:41	06/21/06 12:35

TestAmerica - Portland, OR

Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
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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	07/20/06 13:23

Conventional Chemistry Parameters by APHA/EPA Methods

TestAmerica - Seattle, WA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPF0890-01 (FO 060731)		**Soil**				**Sampled: 06/20/06 09:41**				
Total Organic Carbon	EPA 9060 mod.	**21100**	-----	508	mg/kg dry	1x	6G05040	06/26/06 12:00	07/03/06 15:30	
PPF0890-03 (FO 060733)		**Soil**				**Sampled: 06/20/06 11:41**				
Total Organic Carbon	EPA 9060 mod.	**45100**	-----	700	mg/kg dry	1x	6G05040	06/26/06 12:00	07/03/06 15:30	

TestAmerica - Portland, OR

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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	07/20/06 13:23

Physical Parameters by APHA/ASTM/EPA Methods

TestAmerica - Seattle, WA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPF0890-01 (FO 060731)		**Soil**					**Sampled: 06/20/06 09:41**			
Dry Weight	BSOPSPL003R08	**98.4**	-----	1.00	%	1x	6F30047	06/30/06 15:08	07/03/06 00:00	
PPF0890-03 (FO 060733)		**Soil**					**Sampled: 06/20/06 11:41**			
Dry Weight	BSOPSPL003R08	**71.4**	-----	1.00	%	1x	6F30047	06/30/06 15:08	07/03/06 00:00	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

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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	07/20/06 13:23

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

TestAmerica - Seattle, WA

QC Batch: 6G05040 **Soil Preparation Method: General Preparation**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (6G05040-BLK1)								**Extracted: 07/03/06 10:00**						
Total Organic Carbon	EPA 9060 mod.	ND	---	500	mg/kg wet	1x	--	--	--	--	--	--	07/03/06 15:30	
LCS (6G05040-BS1)								**Extracted: 06/12/06 12:00**						
Total Organic Carbon	EPA 9060 mod.	26400	---	500	mg/kg wet	1x	--	29900	88.3%	(72-130)	--	--	07/03/06 15:30	
Duplicate (6G05040-DUP1)							**QC Source: BPF0670-02**		**Extracted: 06/27/06 12:00**					
Total Organic Carbon	EPA 9060 mod.	5920	---	514	mg/kg dry	1x	ND	--	--	--	180%	(35)	07/03/06 15:30	Q-14
Duplicate (6G05040-DUP2)							**QC Source: PPF0890-01**		**Extracted: 06/26/06 12:00**					
Total Organic Carbon	EPA 9060 mod.	5710	---	508	mg/kg dry	1x	21100	--	--	--	115%	(35)	07/03/06 15:30	Q-14
Duplicate (6G05040-DUP3)							**QC Source: BPF0738-03**		**Extracted: 06/30/06 12:00**					
Total Organic Carbon	EPA 9060 mod.	77300	---	669	mg/kg dry	1x	47800	--	--	--	47.2%	(35)	07/03/06 15:30	Q-14
Matrix Spike (6G05040-MS1)							**QC Source: BPF0670-02**		**Extracted: 06/27/06 12:00**					
Total Organic Carbon	EPA 9060 mod.	2360	---	514	mg/kg dry	1x	319	1880	109%	(40-160)	--	--	07/03/06 15:30	

TestAmerica - Portland, OR

Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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	07/20/06 13:23

Physical Parameters by APHA/ASTM/EPA Methods - Laboratory Quality Control Results

TestAmerica - Seattle, WA

QC Batch: 6F30047 **Soil Preparation Method: Dry Weight**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (6F30047-BLK1)													**Extracted: 06/30/06 15:08**	
Dry Weight	BSOPSPL003R08	99.9	---	1.00	%	1x	--	--	--	--	--	--	07/03/06 00:00	

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	07/20/06 13:23

Notes and Definitions

Report Specific Notes:

Q-14 - Visual examination indicates the RPD and/or matrix spike recovery is outside the control limit due to a non-homogeneous sample matrix.

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.

Howard Holmes, Project Manager

307

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 #: PPF0890

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: Inline 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	Pesticides/PCBs EPA 8081 Low Level	PAH 8270-SIM Low Level	Phthalates only 8270-SIM Low Level	TOC	Grain Size	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1	FO 060731	6/20/06 0941		X	X		X	X	S	4		
2	FO 060732	1135				X			S	1		
3	FO 060733	1141				X	X	X	S	3		
4												
5												
6												
7												
8												
9												
10												

RELEASED BY: Rona Kluch — FIRM: City of Portland — DATE: 6/21/06 — TIME: 1235
PRINT NAME:

RECEIVED BY: Bob — FIRM: TAP — DATE: 6/21/06 — TIME: 12:35
PRINT NAME: Bob

RELEASED BY: — FIRM: — DATE: — TIME:
PRINT NAME:

RECEIVED BY: — FIRM: — DATE: lab — TIME: 14:10
PRINT NAME:

ADDITIONAL REMARKS: * Send Low-Level Pesticides/PCBs, Low-level PAH and Low-level Phthalates to STL.

TEMP:

COC REV 09/2004

PAGE 1 OF 1

TAT: _____

Non-Conformances?
Circle Y or N
(If Y, see other side)

TEST AMERICA SAMPLE RECEIPT CHECKLIST

Received By: (applies to temp at receipt)
Date: 6/20/08
Time: 12 35
Initials: BM

Logged-in By:
Date: 6/21/08
Initials: SM

Unpacked/Labeled By:
Date: 6/21/08
Initials: SM

Cooler ID: 30 1 (___ of ___)
Work Order No. PPF0890
Client: Cal Portland
Project: Port Hueneme Jetline Sample

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

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

Packing Material
___ Bubble Bags ___ Styrofoam
___ Foam Packs
X None/Other Other _____

Refrigerant:
___ Gel Ice Pack _____ ___ None
X Loose Ice
___ None/Other _____

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

Cooler Temperature (*IR*): 1.7 °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		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)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 5, 2006

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

Subject: Project No.: PPF0890;
ARI Project No.: JN39

Dear Mr. Holmes;

The following pages provide the information you requested. The report consists of tables, plots and a narrative describing the testing methods. Please call me to discuss any questions, or comments you may have on the data or its presentation.

Best Regards,
Analytical Resources Incorporated

Harold Benny
Geotechnical Division Manager
206-695-6246
haroldb@arilabs.com

Enclosures

cc: File JN39

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Test America, Portland	ARI Project No.: JN39
Client Project: PPF0890	

Case Narrative

1. Two samples were received on June 23, 2006, and were in good condition.
2. The samples were submitted for grain size distribution according to ASTM D-422. The samples were prepared using the dry prep method, ASTM D-421.
3. A specific gravity of 2.65 was assumed for the calculations. This appeared to be a reasonable assumption.
4. A "milkshake" mixer was used to disperse the hydrometer portion of the sample.
5. There were no perceived anomalies to the samples or testing.

Approved by: Queena Smith Date: 7/5/06
Title: Lead Technician

ANALYTICAL RESOURCES INCORPORATED

Test America
PPF0890

Percent Finer (Passing) Than the Indicated Size

Sieve Size (microns)	2"	1"	3/4"	1/2"	3/8"	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3
PPF0890-01	100.0	100.0	100.0	100.0	100.0	94.6	88.6	68.9	42.1	21.0	10.7	6.4	5.5	5.1	4.2	2.5	1.7	0.8	0.8
PPF0890-02	100.0	100.0	100.0	100.0	100.0	99.4	86.5	54.8	32.0	15.4	7.8	4.4	3.9	3.0	2.6	0.9	0.9	0.0	0.0

Testing performed according to ASTM D421/D422

JN39

ANALYTICAL RESOURCES INCORPORATED

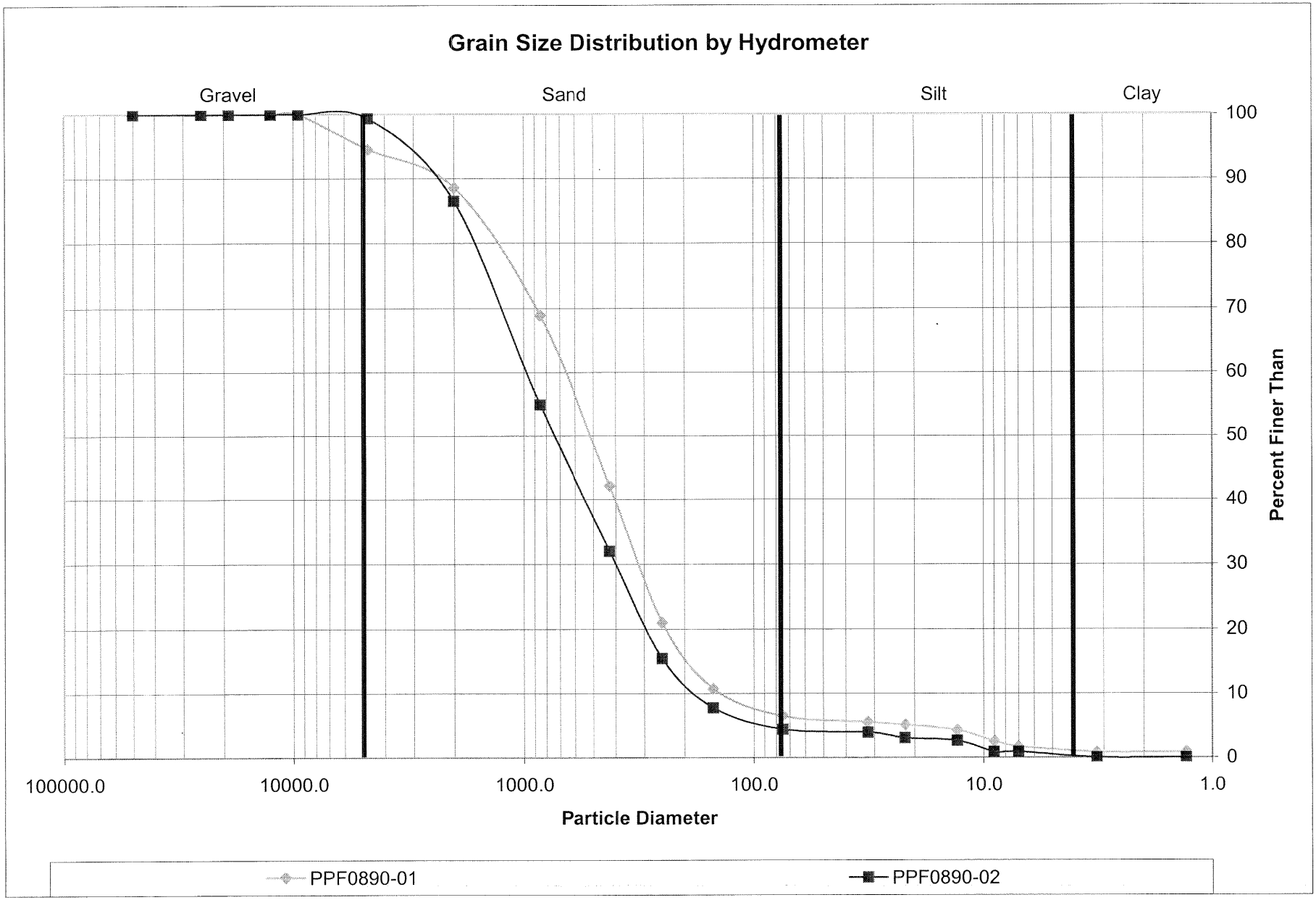
Test America
PPF0890

Percent Retained in Each Size Fraction

Description	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Very Coarse Silt	% Coarse Silt	% Medium Silt	% Fine Silt	% Fine Silt	% Very Fine Silt	% Clay
Particle Size (microns)	> 4750	4750-2000	2000-425	425-75	75-32	32-22	22-13	13-9	9-7	7-3.2	<3.2
PPF0890-01	5.4	6.0	46.5	35.6	0.9	0.4	0.8	1.7	0.8	0.8	0.8
PPF0890-02	0.6	12.9	54.5	27.6	0.5	0.9	0.4	1.7	0.0	0.9	0.0

JN39

ANALYTICAL RESOURCES INCORPORATED



SUBCONTRACT ORDER

TestAmerica - Portland, OR

8.6° Ice-gas **PPF0890** JN39

SENDING LABORATORY:

TestAmerica - Portland, OR
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Rosa Environmental & Geotechnical Laboratory/ARI
4611 S. 134th Place Suite 100
Tukwila, WA 98168
Phone :(206) 695-6200
Fax: (206) 695-6201

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: PPF0890-01	**Soil**	**Sampled:06/20/06 09:41**	A	
Grain Size (ASTM) - SUB	07/05/06 23:59	12/17/06 09:41		
Containers Supplied:				
8 oz. jar (A)				
Sample ID: PPF0890-03	**Soil**	**Sampled:06/20/06 11:41**	B	
Grain Size (ASTM) - SUB	07/05/06 23:59	12/17/06 11:41		
Containers Supplied:				
8 oz. jar (A)				

Released By	Date	Received By	Date
[signature]	6/22/06	[signature]	6/23/06 1020
Released By	Date	Received By	Date

307

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 #: PPF0890

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: Inline 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: Low Level	REQUESTED ANALYSES: Pesticides/PCBs EPA 8081 (*)	PAH 8270-SIM (*)	Phthalates only 8270-SIM (*)	TOC	Grain Size	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1 FO 060731	6/20/06 0941		X	X		X	X	S	4		
2 FO 060732	↓ 1135				X			S	1		
3 FO 060733	↓ 1141				X	X	X	S	3		
4											
5											
6											
7											
8											
9											
10											

RELEASED BY: Rona Knuch
PRINT NAME: Rona Knuch FIRM: City of Portland DATE: 6/21/06 TIME: 1235

RECEIVED BY: Bob K
PRINT NAME: Bob K FIRM: TAP DATE: 6/21/06 TIME: 12:35

RELEASED BY:
PRINT NAME: FIRM: DATE: TIME:

RECEIVED BY:
PRINT NAME: FIRM: DATE: lab TIME: 14:10

ADDITIONAL REMARKS: (*) Send Low-Level Pesticides/PCBs, Low-level PAH and Low-level Phthalates to STL.

TEMP:

COC REV 09/2004

PAGE 1 OF 1

ANALYTICAL REPORT

Job Number: 580-2920-1

Job Description: Portland Harbor Inline Samp-Phthalate li

For:
City of Portland BES
6543 N. Burlington Ave
Portland, OR 97203

Attention: Jennifer Shackelford

Tom Coyner
Project Manager I
tcoyner@stl-inc.com
07/13/2006
Revision: 1

cc: Peter Abrams

Project Manager: Tom Coyner

STL Seattle is a part of Severn Trent Laboratories, Inc.

Case Narrative for Workorder: 580-2920

CHLORINATED PESTICIDES

Sample 580-2920-1 was analyzed for chlorinated pesticides in accordance with EPA SW-846 Method 8081A. The samples were prepared on 06/30/2006 and analyzed on 07/11/2006, which was within the method required holding time.

----LCS 580-8523/2-A-----

Tetrachloro-m-xylene had a recovery of 139%, which failed the LCS recovery criteria of 49 - 123%.

Tetrachloro-m-xylene had a recovery of 125%, which failed the LCS recovery criteria of 49 - 123%.

No difficulties were encountered during the chlorinated pesticides analysis.

POLYCHLORINATED BIPHENYLS (PCB'S)

Sample 580-2920-1 was analyzed for polychlorinated biphenyls (PCB's) in accordance with EPA SW-846 Method 8082. The samples were prepared on 06/29/2006 and analyzed on 07/06/2006, which was within the method required holding time. No difficulties were encountered during the PCB analysis.

SEMIVOLATILE ORGANICS

Samples 580-2920-1 through 580-2920-3 were analyzed for semivolatile organics in accordance with EPA SW-846 Method 8270C. The samples were prepared on 06/28/2006 and analyzed on 06/30/2006, which was within the method required holding time. Bis(2-ethylhexyl) phthalate and Pyrene were detected in method blank MB 580-8413/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged "J". The associated sample results have been flagged "B".

Di-n-butyl phthalate was detected in method blank MB 580-8413/1-A at a level exceeding the reporting limit. The associated sample results have been flagged "B".

PERCENT SOLIDS

Samples 580-2920-1 through 580-2920-3 were analyzed for percent solids in accordance with EPA Method 160.3 Modified. The samples were analyzed on 06/28/2006, which was within the required method holding time. No difficulties were encountered during the percent solids analyses.

METHOD SUMMARY

Client: City of Portland BES Job Number: 580-2920-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Semivolatile Organic Compounds by GC/MS (Selective Ion Monitoring)	STL-SEA	SW846 8270C	
Ultrasonic Extraction (Low Level)	STL-SEA		SW846 3550B
Organochlorine Pesticides by Gas Chromatography	STL-SEA	SW846 8081A	
Ultrasonic Extraction (Low Level)	STL-SEA		SW846 3550B
Polychlorinated Biphenyls (PCBs) by Gas Chromatography	STL-SEA	SW846 8082	
Ultrasonic Extraction (Low Level)	STL-SEA		SW846 3550B
Percent Moisture	STL-SEA	EPA PercentMoisture	

LAB REFERENCES:

STL-SEA = STL-Seattle

METHOD REFERENCES:

EPA - US Environmental Protection Agency

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: City of Portland BES

Job Number: 580-2920-1

Method	Analyst	Analyst ID
SW846 8270C	Frans, Ben	BF
SW846 8081A	Loague, Steve	SL
SW846 8082	Marfiak, Steve T	STM
EPA PercentMoisture	Durrant, Stephanie	SD

SAMPLE SUMMARY

Client: City of Portland BES

Job Number: 580-2920-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-2920-1	PPF0890-01	Solid	06/20/2006 0941	06/23/2006 1000
580-2920-2	PPF0890-02	Solid	06/20/2006 1135	06/23/2006 1000
580-2920-3	PPF0890-03	Solid	06/20/2006 1141	06/23/2006 1000

SAMPLE RESULTS

Client: City of Portland BES

Job Number: 580-2920-1

Client Sample ID: **PPF0890-01**

Lab Sample ID: 580-2920-1
Client Matrix: Solid
% Moisture: 1.2
Date Sampled: 06/20/2006 0941
Date Received: 06/23/2006 1000

8270C Semivolatile Organic Compounds by GC/MS (Selective Ion Monitoring)

Method: 8270C
Preparation: 3550B
Dilution: 1.0
Date Analyzed: 06/30/2006 1143
Date Prepared: 06/28/2006 1021
Analysis Batch: 580-8548
Prep Batch: 580-8413
Instrument ID: SEA023
Lab File ID: HP01908.D
Initial Weight/Volume: 20.1928 g
Final Weight/Volume: 20 mL
Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate		150	B	2.9	20
Butyl benzyl phthalate		25		6.5	20
Diethyl phthalate		ND		10	10
Dimethyl phthalate		2.1	J	1.2	10
Di-n-butyl phthalate		30	B	1.9	20
Di-n-octyl phthalate		ND		1.1	20

Surrogate	%Rec	Acceptance Limits
2-Fluorobiphenyl	99	42 - 140
Nitrobenzene-d5	97	38 - 141
Terphenyl-d14	89	42 - 151

Client: City of Portland BES | Job Number: 580-2920-1

Client Sample ID: **PPF0890-01**

Lab Sample ID: 580-2920-1 | Date Sampled: 06/20/2006 0941
Client Matrix: Solid | % Moisture: 1.2 | Date Received: 06/23/2006 1000

8270C Semivolatile Organic Compounds by GC/MS (Selective Ion Monitoring)

Method: 8270C | Analysis Batch: 580-8548 | Instrument ID: SEA023
Preparation: 3550B | Prep Batch: 580-8413 | Lab File ID: HP01908.D
Dilution: 1.0 | Initial Weight/Volume: 20.1928 g
Date Analyzed: 06/30/2006 1143 | Final Weight/Volume: 20 mL
Date Prepared: 06/28/2006 1021 | Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		13		0.55	5.0
2-Methylnaphthalene		12		0.59	5.0
1-Methylnaphthalene		4.3	J	0.73	5.0
Acenaphthylene		1.5	J	0.56	5.0
Acenaphthene		4.4	J	0.56	5.0
Fluorene		3.9	J	0.59	5.0
Phenanthrene		56		0.70	5.0
Anthracene		6.4		0.49	5.0
Fluoranthene		72		0.46	5.0
Pyrene		67	B	0.48	5.0
Benzo[a]anthracene		31		0.75	5.0
Chrysene		49		0.54	5.0
Benzofluoranthene		34		1.3	10
Benzo[a]pyrene		29		0.52	5.0
Indeno[1,2,3-cd]pyrene		19		1.4	5.0
Dibenz(a,h)anthracene		8.1		1.4	5.0
Benzo[g,h,i]perylene		20		1.6	5.0

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	97	38 - 141
2-Fluorobiphenyl	99	42 - 140
Terphenyl-d14	89	42 - 151

Client: City of Portland BES | Job Number: 580-2920-1

Client Sample ID: **PPF0890-01**

Lab Sample ID: 580-2920-1 | Date Sampled: 06/20/2006 0941
Client Matrix: Solid | % Moisture: 1.2 | Date Received: 06/23/2006 1000

8081A Organochlorine Pesticides by Gas Chromatography

Method: 8081A | Analysis Batch: 580-8811 | Instrument ID: SEA035
Preparation: 3550B | Prep Batch: 580-8523 | Lab File ID: ECD20228.D
Dilution: 1.0 | Initial Weight/Volume: 10.8953 g
Date Analyzed: 07/11/2006 1314 | Final Weight/Volume: 10 mL
Date Prepared: 06/30/2006 0858 | Injection Volume:
Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aldrin		1.1		0.10	0.93
alpha-BHC		1.7		0.10	0.93
beta-BHC		ND		0.12	0.93
delta-BHC		ND		0.11	0.93
gamma-BHC (Lindane)		ND		0.11	0.93
4,4'-DDD		ND		0.25	1.9
4,4'-DDE		0.36	J	0.21	1.9
4,4'-DDT		12		0.25	1.9
Dieldrin		ND		0.21	1.9
Endosulfan I		ND		0.11	0.93
Endosulfan II		ND		0.25	1.9
Endosulfan sulfate		ND		0.32	1.9
Endrin		0.53	J	0.39	1.9
Endrin aldehyde		ND		0.23	1.9
Heptachlor		ND		0.13	0.93
Heptachlor epoxide		ND		0.12	0.93
Methoxychlor		ND		1.2	9.3
Endrin ketone		ND		0.23	1.9
Toxaphene		ND		9.3	93
alpha-Chlordane		ND		0.11	0.93
gamma-Chlordane		ND		0.11	0.93

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	69	49 - 123
DCB Decachlorobiphenyl	65	40 - 158

Client: City of Portland BES | Job Number: 580-2920-1

Client Sample ID: **PPF0890-01**

Lab Sample ID: 580-2920-1 | Date Sampled: 06/20/2006 0941
Client Matrix: Solid | % Moisture: 1.2 | Date Received: 06/23/2006 1000

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082 | Analysis Batch: 580-8801 | Instrument ID: SEA034
Preparation: 3550B | Prep Batch: 580-8497 | Lab File ID: PCB1841.D
Dilution: 1.0 | Initial Weight/Volume: 10.9988 g
Date Analyzed: 07/06/2006 2038 | Final Weight/Volume: 10 mL
Date Prepared: 06/29/2006 1247 | Injection Volume:
Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0053	0.0092
PCB-1221		ND		0.0053	0.0092
PCB-1232		ND		0.0053	0.0092
PCB-1242		ND		0.0053	0.0092
PCB-1248		ND		0.0053	0.0092
PCB-1254		0.039		0.0014	0.0092
PCB-1260		ND		0.0014	0.0092

Surrogate	%Rec	Acceptance Limits
Tetrachloro-m-xylene	101	60 - 123
DCB Decachlorobiphenyl	93	65 - 126

General Chemistry

Client Sample ID: PPF0890-01

Lab Sample ID: 580-2920-1 Date Sampled: 06/20/2006 0941
Client Matrix: Solid Date Received: 06/23/2006 1000

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	99	H	%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-8402	Date Analyzed	06/28/2006 0841					
Percent Moisture	1.2	H	%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-8402	Date Analyzed	06/28/2006 0841					

Client Sample ID: PPF0890-02

Lab Sample ID: 580-2920-2 Date Sampled: 06/20/2006 1135
Client Matrix: Solid Date Received: 06/23/2006 1000

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	21	H	%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-8402	Date Analyzed	06/28/2006 0841					
Percent Moisture	79	H	%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-8402	Date Analyzed	06/28/2006 0841					

Client Sample ID: PPF0890-03

Lab Sample ID: 580-2920-3 Date Sampled: 06/20/2006 1141
Client Matrix: Solid Date Received: 06/23/2006 1000

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	73	H	%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-8402	Date Analyzed	06/28/2006 0841					
Percent Moisture	27	H	%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-8402	Date Analyzed	06/28/2006 0841					

DATA REPORTING QUALIFIERS

Client: City of Portland BES Job Number: 580-2920-1

Lab Section	Qualifier	Description
GC/MS Semi VOA		
	B	Compound was found in the blank and sample.
	I	Indicates the presence of an interference, recovery is not calculated.
	F	MS or MSD exceeds the control limits
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
GC Semi VOA		
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
	X	Surrogate exceeds the control limits
General Chemistry		
	H	Sample was prepped or analyzed beyond the specified holding time

QUALITY CONTROL RESULTS

Client: City of Portland BES

Job Number: 580-2920-1

Method Blank - Batch: 580-8413

Method: 8270C
Preparation: 3550B

Lab Sample ID: MB 580-8413/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/30/2006 1034
Date Prepared: 06/28/2006 1021

Analysis Batch: 580-8548
Prep Batch: 580-8413
Units: ug/Kg

Instrument ID: SEA023
Lab File ID: HP01905.D
Initial Weight/Volume: 20 g
Final Weight/Volume: 20 mL
Injection Volume:

Analyte	Result	Qual	MDL	RL
Naphthalene	ND		0.54	5.0
2-Methylnaphthalene	ND		0.59	5.0
1-Methylnaphthalene	ND		0.73	5.0
Acenaphthylene	ND		0.56	5.0
Acenaphthene	ND		0.56	5.0
Fluorene	ND		0.58	5.0
Phenanthrene	ND		0.70	5.0
Anthracene	ND		0.49	5.0
Fluoranthene	ND		0.46	5.0
Pyrene	0.67	J	0.48	5.0
Benzo[a]anthracene	ND		0.75	5.0
Chrysene	ND		0.54	5.0
Benzofluoranthene	ND		1.3	10
Benzo[a]pyrene	ND		0.52	5.0
Indeno[1,2,3-cd]pyrene	ND		1.4	5.0
Dibenz(a,h)anthracene	ND		1.4	5.0
Benzo[g,h,i]perylene	ND		1.6	5.0
Bis(2-ethylhexyl) phthalate	15	J	2.9	20
Butyl benzyl phthalate	ND		6.5	20
Diethyl phthalate	ND		10	10
Dimethyl phthalate	ND		1.2	10
Di-n-butyl phthalate	5.3	J	1.9	20
Di-n-octyl phthalate	ND		1.1	20

Surrogate	% Rec	Acceptance Limits
Nitrobenzene-d5	100	38 - 141
2-Fluorobiphenyl	100	42 - 140
Nitrobenzene-d5	100	38 - 141
2-Fluorobiphenyl	100	42 - 140
Terphenyl-d14	108	42 - 151
Terphenyl-d14	108	42 - 151

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 580-8413

Method: 8270C
Preparation: 3550B

LCS Lab Sample ID: LCS 580-8413/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/30/2006 1057
Date Prepared: 06/28/2006 1021

Analysis Batch: 580-8548
Prep Batch: 580-8413
Units: ug/Kg

Instrument ID: SEA023
Lab File ID: HP01906.D
Initial Weight/Volume: 20 g
Final Weight/Volume: 20 mL
Injection Volume:

LCSD Lab Sample ID: LCSD 580-8413/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/30/2006 1120
Date Prepared: 06/28/2006 1021

Analysis Batch: 580-8548
Prep Batch: 580-8413
Units: ug/Kg

Instrument ID: SEA023
Lab File ID: HP01907.D
Initial Weight/Volume: 20 g
Final Weight/Volume: 20 mL
Injection Volume:

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Naphthalene	115	116	54 - 131	1	26		
2-Methylnaphthalene	104	104	51 - 138	0	27		
1-Methylnaphthalene	128	131	50 - 150	2	30		
Acenaphthylene	120	119	52 - 130	1	28		
Acenaphthene	119	118	50 - 144	1	27		
Fluorene	122	124	50 - 134	2	31		
Phenanthrene	118	117	55 - 133	1	28		
Anthracene	120	122	52 - 135	1	27		
Fluoranthene	111	112	54 - 135	1	36		
Pyrene	115	116	47 - 152	1	31		
Benzo[a]anthracene	101	101	55 - 135	1	27		
Chrysene	109	112	59 - 133	3	26		
Benzofluoranthene	61	62	43 - 154	1	31		
Benzo[a]pyrene	123	124	54 - 138	0	30		
Indeno[1,2,3-cd]pyrene	98	96	45 - 153	2	29		
Dibenz(a,h)anthracene	104	111	50 - 150	7	30		
Benzo[g,h,i]perylene	122	123	54 - 142	1	28		
Bis(2-ethylhexyl) phthalate	109	111	23 - 154	2	60		
Butyl benzyl phthalate	113	116	44 - 147	3	60		
Dimethyl phthalate	123	126	52 - 133	2	60		
Di-n-butyl phthalate	114	114	43 - 144	0	60		
Di-n-octyl phthalate	101	103	40 - 148	2	31		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
2-Fluorobiphenyl	103	105	42 - 140
Nitrobenzene-d5	101	100	38 - 141
Terphenyl-d14	98	98	42 - 151

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-8413

Method: 8270C
Preparation: 3550B

MS Lab Sample ID:	580-2920-1	Analysis Batch: 580-8548	Instrument ID: SEA023
Client Matrix:	Solid	Prep Batch: 580-8413	Lab File ID: HP01909.D
Dilution:	1.0		Initial Weight/Volume: 20.3526 g
Date Analyzed:	06/30/2006 1206		Final Weight/Volume: 20 mL
Date Prepared:	06/28/2006 1021		Injection Volume:

MSD Lab Sample ID:	580-2920-1	Analysis Batch: 580-8548	Instrument ID: SEA023
Client Matrix:	Solid	Prep Batch: 580-8413	Lab File ID: HP01910.D
Dilution:	1.0		Initial Weight/Volume: 20.4524 g
Date Analyzed:	06/30/2006 1229		Final Weight/Volume: 20 mL
Date Prepared:	06/28/2006 1021		Injection Volume:

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Naphthalene	115	113	54 - 131	2	26		
2-Methylnaphthalene	104	103	51 - 138	2	27		
1-Methylnaphthalene	131	130	50 - 150	1	30		
Acenaphthylene	118	121	52 - 130	2	28		
Acenaphthene	114	114	50 - 144	1	27		
Fluorene	122	123	50 - 134	0	31		
Phenanthrene	113	124	55 - 133	8	28		
Anthracene	116	115	52 - 135	1	27		
Fluoranthene	112	132	54 - 135	14	36		
Pyrene	116	130	47 - 152	11	31		
Benzo[a]anthracene	108	120	55 - 135	10	27		
Chrysene	102	114	59 - 133	10	26		
Benzofluoranthene	57	61	43 - 154	6	31		
Benzo[a]pyrene	109	119	54 - 138	8	30		
Indeno[1,2,3-cd]pyrene	91	102	45 - 153	10	29		
Dibenz(a,h)anthracene	91	96	50 - 150	5	30		
Benzo[g,h,i]perylene	83	87	54 - 142	4	28		
Bis(2-ethylhexyl) phthalate	122	132	23 - 154	6	60		
Butyl benzyl phthalate	133	137	44 - 147	2	60		
Dimethyl phthalate	120	121	52 - 133	0	60		
Di-n-butyl phthalate	122	112	44 - 144	9	60		
Di-n-octyl phthalate	146	150	40 - 148	3	31		F

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2-Fluorobiphenyl	96	98	42 - 140
Nitrobenzene-d5	104	104	38 - 141
Terphenyl-d14	96	97	42 - 151

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Method Blank - Batch: 580-8523

Method: 8081A
Preparation: 3550B

Lab Sample ID: MB 580-8523/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/11/2006 1048
Date Prepared: 06/30/2006 0858

Analysis Batch: 580-8811
Prep Batch: 580-8523
Units: ug/Kg

Instrument ID: SEA035
Lab File ID: ECD20222.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	MDL	RL
Aldrin	ND		0.11	1.0
alpha-BHC	ND		0.11	1.0
beta-BHC	ND		0.13	1.0
delta-BHC	ND		0.12	1.0
gamma-BHC (Lindane)	ND		0.12	1.0
4,4'-DDD	ND		0.27	2.0
4,4'-DDE	ND		0.23	2.0
4,4'-DDT	ND		0.27	2.0
Dieldrin	ND		0.22	2.0
Endosulfan I	ND		0.12	1.0
Endosulfan II	ND		0.27	2.0
Endosulfan sulfate	ND		0.34	2.0
Endrin	ND		0.42	2.0
Endrin aldehyde	ND		0.25	2.0
Heptachlor	ND		0.14	1.0
Heptachlor epoxide	ND		0.13	1.0
Methoxychlor	ND		1.3	10
Endrin ketone	ND		0.25	2.0
Toxaphene	ND		10	100
alpha-Chlordane	ND		0.12	1.0
gamma-Chlordane	ND		0.12	1.0

Surrogate	% Rec		Acceptance Limits
Tetrachloro-m-xylene	126	X	49 - 123
DCB Decachlorobiphenyl	129		40 - 158

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 580-8523

Method: 8081A
Preparation: 3550B

LCS Lab Sample ID: LCS 580-8523/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/11/2006 1108
Date Prepared: 06/30/2006 0858

Analysis Batch: 580-8811
Prep Batch: 580-8523
Units: ug/Kg

Instrument ID: SEA035
Lab File ID: ECD20223.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 580-8523/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/11/2006 1127
Date Prepared: 06/30/2006 0858

Analysis Batch: 580-8811
Prep Batch: 580-8523
Units: ug/Kg

Instrument ID: SEA035
Lab File ID: ECD20224.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Aldrin	95	87	53 - 126	9	24		
alpha-BHC	80	71	41 - 128	12	28		
beta-BHC	95	84	48 - 121	13	32		
delta-BHC	86	78	22 - 153	9	36		
gamma-BHC (Lindane)	87	78	50 - 127	11	29		
4,4'-DDD	78	79	44 - 141	1	41		
4,4'-DDE	76	75	47 - 140	1	40		
4,4'-DDT	75	80	34 - 159	6	47		
Dieldrin	75	73	53 - 134	3	32		
Endosulfan I	79	76	52 - 122	5	31		
Endosulfan II	96	96	53 - 132	0	36		
Endosulfan sulfate	73	74	42 - 128	1	43		
Endrin	69	74	46 - 138	6	36		
Endrin aldehyde	98	97	12 - 179	2	47		
Heptachlor	90	81	50 - 130	11	31		
Heptachlor epoxide	83	77	49 - 123	7	31		
Methoxychlor	73	77	46 - 154	6	46		
Endrin ketone	74	74	45 - 127	0	45		
alpha-Chlordane	78	75	46 - 118	4	33		
gamma-Chlordane	81	77	49 - 122	5	32		

Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits
Tetrachloro-m-xylene	139	X	125	X	49 - 123
DCB Decachlorobiphenyl	120		120		40 - 158

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-8523

Method: 8081A
Preparation: 3550B

MS Lab Sample ID:	580-2920-1	Analysis Batch: 580-8811	Instrument ID: SEA035
Client Matrix:	Solid	Prep Batch: 580-8523	Lab File ID: ECD20226.D
Dilution:	1.0		Initial Weight/Volume: 10.3220 g
Date Analyzed:	07/11/2006 1218		Final Weight/Volume: 10 mL
Date Prepared:	06/30/2006 0858		Injection Volume:
			Column ID: PRIMARY

MSD Lab Sample ID:	580-2920-1	Analysis Batch: 580-8811	Instrument ID: SEA035
Client Matrix:	Solid	Prep Batch: 580-8523	Lab File ID: ECD20227.D
Dilution:	1.0		Initial Weight/Volume: 10.0258 g
Date Analyzed:	07/11/2006 1239		Final Weight/Volume: 10 mL
Date Prepared:	06/30/2006 0858		Injection Volume:
			Column ID: PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aldrin	95	78	53 - 126	16	24		
alpha-BHC	82	63	41 - 128	21	28		
beta-BHC	84	76	48 - 121	7	32		
delta-BHC	85	83	22 - 153	0	36		
gamma-BHC (Lindane)	95	83	50 - 127	10	29		
4,4'-DDD	75	65	44 - 141	12	41		
4,4'-DDE	82	67	47 - 140	17	40		
4,4'-DDT	89	52	34 - 159	27	47		
Dieldrin	78	64	53 - 134	18	32		
Endosulfan I	88	76	52 - 122	12	31		
Endosulfan II	89	80	53 - 132	9	36		
Endosulfan sulfate	74	62	42 - 128	15	43		
Endrin	118	97	46 - 138	16	36		
Endrin aldehyde	39	43	12 - 179	12	47		
Heptachlor	106	85	50 - 130	19	31		
Heptachlor epoxide	85	69	49 - 123	19	31		
Methoxychlor	52	78	46 - 154	43	46		
Endrin ketone	62	58	45 - 127	2	45		
alpha-Chlordane	78	63	46 - 118	19	33		
gamma-Chlordane	81	65	49 - 122	20	32		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Tetrachloro-m-xylene	109	93	49 - 123
DCB Decachlorobiphenyl	122	99	40 - 158

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Method Blank - Batch: 580-8497

Method: 8082
Preparation: 3550B

Lab Sample ID: MB 580-8497/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/06/2006 1927
Date Prepared: 06/29/2006 1247

Analysis Batch: 580-8801
Prep Batch: 580-8497
Units: mg/Kg

Instrument ID: SEA034
Lab File ID: PCB1838.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	MDL	RL
PCB-1016	ND		0.0058	0.010
PCB-1221	ND		0.0058	0.010
PCB-1232	ND		0.0058	0.010
PCB-1242	ND		0.0058	0.010
PCB-1248	ND		0.0058	0.010
PCB-1254	ND		0.0015	0.010
PCB-1260	ND		0.0015	0.010

Surrogate	% Rec	Acceptance Limits
Tetrachloro-m-xylene	104	60 - 123
DCB Decachlorobiphenyl	97	65 - 126

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 580-8497

Method: 8082
Preparation: 3550B

LCS Lab Sample ID: LCS 580-8497/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/06/2006 1951
Date Prepared: 06/29/2006 1247

Analysis Batch: 580-8801
Prep Batch: 580-8497
Units: mg/Kg

Instrument ID: SEA034
Lab File ID: PCB1839.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 580-8497/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/06/2006 2015
Date Prepared: 06/29/2006 1247

Analysis Batch: 580-8801
Prep Batch: 580-8497
Units: mg/Kg

Instrument ID: SEA034
Lab File ID: PCB1840.D
Initial Weight/Volume: 10 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
PCB-1016	104	99	57 - 128	4	8		
PCB-1260	104	98	65 - 132	5	8		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
Tetrachloro-m-xylene	111	104	60 - 123
DCB Decachlorobiphenyl	107	100	65 - 126

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: City of Portland BES

Job Number: 580-2920-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-8497

Method: 8082
Preparation: 3550B

MS Lab Sample ID:	580-2920-1	Analysis Batch: 580-8801	Instrument ID: SEA034
Client Matrix:	Solid	Prep Batch: 580-8497	Lab File ID: PCB1842.D
Dilution:	1.0		Initial Weight/Volume: 10.3719 g
Date Analyzed:	07/06/2006 2102		Final Weight/Volume: 10 mL
Date Prepared:	06/29/2006 1247		Injection Volume:
			Column ID: PRIMARY
MSD Lab Sample ID:	580-2920-1	Analysis Batch: 580-8801	Instrument ID: SEA034
Client Matrix:	Solid	Prep Batch: 580-8497	Lab File ID: PCB1843.D
Dilution:	1.0		Initial Weight/Volume: 10.7155 g
Date Analyzed:	07/06/2006 2125		Final Weight/Volume: 10 mL
Date Prepared:	06/29/2006 1247		Injection Volume:
			Column ID: PRIMARY

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
PCB-1016	84	87	57 - 128	1	8		
PCB-1260	82	84	65 - 132	2	8		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Tetrachloro-m-xylene	101	106	60 - 123
DCB Decachlorobiphenyl	90	92	65 - 126

Calculations are performed before rounding to avoid round-off errors in calculated results.

5,7

#2920

SUBCONTRACT ORDER

TestAmerica - Portland, OR

PPF0890

SENDING LABORATORY:

TestAmerica - Portland, OR
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Severn Trent Laboratories - Tacoma
5755 8th Street East
Tacoma, WA 98424
Phone :253-922-2310
Fax: 253-922-5047

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: PPF0890-01	**Soil**	**Sampled:06/20/06 09:41**		
8270SIM Phthalates	07/05/06 23:59	07/04/06 09:41		Low Level
8270 SIM PAH	07/05/06 23:59	07/04/06 09:41		Low Level
8081A/8082 Pest/PCB	07/05/06 23:59	07/04/06 09:41		Low Level
Containers Supplied:				
4 oz. jar (C)	4 oz. jar (D)			
Sample ID: PPF0890-02	**Soil**	**Sampled:06/20/06 11:35**		
8270SIM Phthalates	07/05/06 23:59	07/04/06 11:35		Low Level
Solids, Dry Weight	06/28/06 23:59	07/18/06 11:35		
Containers Supplied:				
4 oz. jar (A)				
Sample ID: PPF0890-03	**Soil**	**Sampled:06/20/06 11:41**		
8270SIM Phthalates	07/05/06 23:59	07/04/06 11:41		Low Level
Containers Supplied:				
4 oz. jar (B)				

Released By	Date	Received By	Date
	6/22/06		6/23/06
Released By	Date	Received By	Date

307

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 #: PPF0890

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: Inline 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.

PRESERVATIVE

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	Pesticides/PCBs EPA 8081 (Low Level)	PAH 8270-SIM	Phthalates only 8270-SIM	TOC	Grain Size	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1	FO 060731	6/20/06 0941	X	X		X	X	S	4		
2	FO 060732	1135			X			S	1		
3	FO 060733	1141			X	X	X	S	3		
4											
5											
6											
7											
8											
9											
10											

RELEASED BY: Rona Kluch DATE: 6/21/06
PRINT NAME: Rona Kluch FIRM: City of Portland TIME: 1235
RECEIVED BY: Bob T DATE: 6/21/06
PRINT NAME: Bob T FIRM: TAP TIME: 12:35

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE: lab
PRINT NAME: FIRM: TIME: 14:10

ADDITIONAL REMARKS: * Send Low-Level Pesticides/PCBs, Low-level PAH and Low level Phthalates to STL.

TEMP:

COC REV 09/2004

PAGE 1 OF 1

LOGIN SAMPLE RECEIPT CHECK LIST

Client: City of Portland BES

Job Number: 580-2920-1

Login Number: 2920

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	NA	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	