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

TECHNICAL MEMORANDUM No. OFS6-1

City Outfall Basin S-6 Inline Solids Sampling

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

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

COPIES: Jennifer Sutter, DEQ
Kristine Koch, U.S. Environmental Protection Agency (EPA)
Lian Jewell, Vigor Industrial LLC
Julia Fowler, GSI Water Solutions, Inc.

DATE: January 9, 2008

SUBJECT: **Portland Harbor Source Control Investigation**

Introduction

This technical memorandum summarizes the results of the City of Portland BES source control investigation of inline solids in the City Outfall Basin S-6 stormwater conveyance system. The Basin S-6 system conveys stormwater flow mainly from the North Channel Avenue right-of-way and adjacent industrial businesses at the northern end of Swan Island. The objectives of this source control investigation are to determine whether inline solids contain elevated levels of contaminants of interest in the vicinity of Outfall S-6 and if present, to assess whether the spatial distribution of contaminants in inline solids indicates the presence of potential sources within the basin. The investigation results indicate that metals (copper, lead, and zinc), PCBs, and phthalates are being discharged to the Basin S-6 stormwater conveyance system.

Basin S-6 Configuration and Background

Figure 1 provides an overview of the Basin S-6 stormwater conveyance system. Basin S-6 consists of a main line and associated laterals located along the western end of N. Channel Avenue that conveys stormwater to the river through a 36-inch-diameter line at Outfall S-6. The upper portion of the basin extends from a 12-inch-diameter line at the head of the basin (manhole AAP947) to a 21-inch-diameter line at N. Dolphin Street (manhole AAP948). The lower portion of the basin includes the system from N. Dolphin Street to Outfall S-6.

According to the DEQ Environmental Cleanup Site Information (ECSI) database, one DEQ cleanup site, the Swan Island Portland Shipyard (aka Cascade General), is partially located within Basin S-6 at the northwest end of Swan Island (ECSI #271). Contaminants of interest at the site include petroleum hydrocarbons, semivolatile organic compounds (SVOCs), PCBs and metals (DEQ, 2005).

Within Basin S-6, two properties have National Pollutant Discharge Elimination System (NPDES) permits to discharge to the City stormwater conveyance system: Cascade General and AGG Enterprises, Inc. Cascade General is in the process of conducting a stormwater pathway evaluation under DEQ oversight. Preliminary information indicates that the site discharges to Basin S-6 from the vicinity of Building 4 (see Figure 1) via two connections: one at manhole AAM118 and another at manhole AAM122. AGG Enterprises, Inc. discharges to Basin S-6 at manhole AAM125. Both properties are located in the lower portion of the basin.

Basin S-6 was designated as a Priority 4 basin for source investigation based on the City's 2002 sediment sampling results adjacent to City Outfall S-6 (CH2M HILL, 2004). Priority 4 designations were assigned to basins where available sediment data indicated that the basin did not appear to be a significant migration pathway for contaminants from upland sites. In 2005, based on a review of additional sediment data collected by the Lower Willamette Group (Integral, 2005), EPA identified the Swan Island lagoon and vicinity of the shipyard as an area of potential concern (EPA, 2005). Due to its proximity to the shipyard, the EPA area of potential concern included Outfall S-6.

In 2006, the City developed an analytical list for further investigation in the basin based on sediment data collected in the vicinity of Outfall S-6 and EPA's contaminants of interest (COI) for the Swan Island area. Based on this review, three metals (copper, lead, and zinc), phthalates and PCBs were selected as potential COIs.

The Basin S-6 investigation, conducted in June and July 2006, 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.

Field Activities

The City coordinated with DEQ regarding the source control investigation before conducting this work. Inline solids were sampled at two locations on June 20, 2006, and at two locations on July 19, 2006 (see Figure 1). Final sampling locations within the basin were limited by inline solids availability. The intent of this investigation was to collect inline solids samples from the upper and lower portions of the basin, however no inline solids were found at observed locations within the upper basin. The farthest upstream location with sufficient inline solids for sample collection was just above manhole AAM125, in the middle of the lower portion of the basin.

Samples were collected using a stainless steel spoon and bowl, in accordance with BES Field Operations' Standard Operating Procedures. Photographs of the sampling locations and inline solids are included in Attachment A. Field notes recorded during sampling activities are provided in Attachment B. The four sampling locations are described as follows:

Sample Location (Upstream to Downstream)	Sample Date	Sample Location Description
Manhole AAM125	July 19, 2006	Solids were collected just upstream of the manhole, representing contributions from the upper two thirds of the basin. The sample from this location was composed of sands, gravels, and fines and had a slight sheen, but no petroleum odor.
Manhole AAM118 (Upstream)	June 20, 2006	Solids were collected from the main line approximately 3 to 15 feet upstream of manhole AAM118. This sample represents solids entering the conveyance system along N. Channel Avenue upstream of the connection from catch basin ANE475. Solids were composed of fine materials and organic debris and exhibited a slight sheen.
Catch Basin ANE475	July 19, 2006	Solids were collected from the bottom of this catch basin, located in the southeastern portion of the Cascade General facility. A lateral line connects to the catch basin from the Cascade General site. The solids were sandy, approximately 4 inches deep, and had no visible contamination or petroleum odor.
Manhole AAM118 (Downstream)	June 20, 2006	Solids were collected downstream of the manhole, representing the cumulative discharge of the entire basin. A log downstream of the sample location allowed for solids to accumulate. Water had pooled between the log and manhole AAM118 at a depth of 0.3 inches, and was observed to be flowing. A lateral from the Cascade General site discharges to manhole AAM118. There are no known connections between the sampling location and the outfall. Solids were composed of fine silts and organic materials and exhibited a sheen.

Summary of Results

Inline solids samples obtained from the basin were analyzed for copper, lead, zinc, phthalates, PCBs, grain size and total organic carbon[1]. Table 1 summarizes the chemical analytical data results from this investigation. The laboratory analytical results and data validation report for the samples are provided in Attachment C. Detected constituents from this investigation are summarized on Figures 2 and 3.

The chemical data from the Basin S-6 sampling were compared with the Portland Harbor Joint Source Control Strategy (JSCS) screening level values (SLVs) for bioaccumulation and toxicity (DEQ/EPA, 2005, updated 2007). The results of the comparisons are summarized as follows:

- Metals: Concentrations of copper, lead and zinc exceeded the JSCS toxicity SLVs in most samples. The sample from the catch basin at Cascade General (ANE475) had significantly higher concentrations of all three metals than samples from upstream or downstream of the catch basin.
- Phthalates: BEHP and di-n-butyl phthalate were the detected at concentrations greater than JSCS SLVs in most samples. The elevated concentrations of phthalates at manhole

[1] Total organic carbon and grain size analyses were not conducted on the sample collected from the 30-inch line upstream of manhole AAM118, as insufficient solids volumes were available for sampling.

AAM118 indicate that there may be a phthalate source between manholes AAM125 and AAM118.

- PCBs: Low PCB concentrations were detected at all four locations, with the highest concentrations observed in the catch basin sample collected at Cascade General. Aroclor 1260 was detected at all locations. Other detected Aroclors varied slightly by location. JSCS toxicity SLVs were not exceeded at any location. The bioaccumulation SLV for total PCBs was exceeded at all locations.

Conclusions

The results of the Basin S-6 source control investigation indicate that metals (copper, lead, and zinc), PCBs, and phthalates are being discharged to the Basin S-6 stormwater conveyance system in concentrations that exceed JSCS SLVs. The metals and PCB concentrations were the highest in the catch basin sample from the Cascade General site, while the highest phthalate results were found in the sample collected from the main line downstream of lateral connections from AGG Enterprises and Cascade General.

Phthalates were observed at lower concentrations in the sample collected farther up-pipe, though it should be noted that the matrix of the upstream sample differed from the matrices observed in the downstream samples. The upstream sample was dominated by coarse material, while the downstream samples were primarily fine sand and silt. Therefore, the data suggest a spatial pattern for contaminant sources within the basin but are not conclusive (e.g.. the concentrations in the finer-grained materials could be similar in both samples but would be diluted in the upstream sample by the larger-grained solids). Due to relatively low pipe elevations, inline solids downstream of manhole AAM118 also may also be subject to flushing from river back up during high river stages.

The elevated concentrations of metals and PCBs at catch basin ANE475 indicate that contaminants appear to be discharging to the Basin S-6 stormwater system from the Cascade General site. It is unclear from this investigation where additional contaminant sources may be located. In addition, because no solids were available for sampling in the upper portions of the basin (upstream of N. Dolphin Street), the potential contaminant contributions to that portion of the conveyance system are undetermined.

Next Steps

The Cascade General stormwater pathway investigation will include an update to site conveyance system maps as well as the collection and analysis of solids and stormwater samples from site drainage basins discharging to Outfall S-6. To assist with this effort, the City has provided Cascade General access to the City conveyance system to clarify site connections and will collaborate with the site and DEQ to develop an approach to site stormwater characterization and to help identify potential contaminant sources at the site.

BES industrial stormwater inspectors have been conducting inspections of facilities within the basin in an effort to identify other sources that warrant further control. AGG Enterprises recently revised its site Stormwater Pollution Control Plan. Technical assistance is underway at AGG to evaluate potential sources and implications of possible operational changes.

Last, under the approved "*Fall 2007 Stormwater Grab Sampling and Analysis Plan*," the City has been collecting stormwater samples from Basin S-6 to evaluate whether contaminant concentrations in stormwater indicate that further source tracing is necessary within the basin. The City will incorporate the data collected by Cascade General, stormwater data collected in fall 2007 and basin inspection results into the basin conceptual model to determine what additional source investigation is needed within Basin S-6.

References

CH2M HILL. 2000. *Preliminary Evaluation of City Outfalls – Portland Harbor Study Area.* Notebook 1, Eastshore Stormwater and CSO Outfalls. Prepared for the City of Portland, Bureau of Environmental Services, July 2000.

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. 2005. DEQ Site Summary Report – Details for ECSI Site No. 271. DEQ Environmental Cleanup Site Information Database (ECSI), accessed November 2006. www.deq.state.or.us/wmc/ECSI/ecsidetail.asp?seqnbr=271.

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

Table

Table 1 - *Summary of Chemical Analytical Results, Inline Solids Sampling*

Figures

Figure 1 – *Outfall S-6, Overview Map*
Figure 2 – *Outfall S-6, Metals & PCBs*
Figure 3 – *Outfall S-6, Phthalates*

Attachments

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

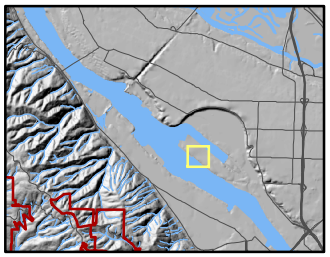
Table 1
Summary of Chemical Analytical Results
Inline Solids Sampling
City Outfall Basin S-6

Class	Analyte	Units	Upstream: Manhole AAM125, 27" line upstream, FO060824, 7/19/2006	Upstream: Manhole AAM118, 30" line upstream, FO060732, 6/20/2006	Downstream: Catch Basin ANE475, FO060823, 7/19/2006	Downstream: Manhole AAM118, 36" line downstream, FO060733, 6/20/2006	JSCS[1] Screening Level Values (SLV): Toxicity	JSCS[1] Screening Level Values (SLV): Bioaccumulation
Total Organic Carbon (EPA 9060MOD)								
	TOC	mg/Kg	11600	NA	63700	45100	--	--
Grain Size (ASTM D421/422)								
	Gravel (>4750 um)	Fract %	30.8	NA	9.7	0.6	--	--
	Coarse Sand (4750-2000 um)	Fract %	24.1	NA	7.8	12.9	--	--
	Medium Sand (2000-425 um)	Fract %	24	NA	22	54.5	--	--
	Fine Sand (425-75 um)	Fract %	19	NA	53.2	27.6	--	--
	Silt (3.2-75 um)*	Fract %	1.5	NA	5.9	4.4	--	--
	Clay (<3.2 um)	Fract %	0.6	NA	1.4	0	--	--
Metals (EPA 6020)								
	Copper	mg/Kg	525	214	1700	349	149	--
	Lead	mg/Kg	**305**	**109**	**740**	**265**	128	17
	Zinc	mg/Kg	1700	592	3180	866	459	--
Polychlorinated Biphenyls (EPA 8082)								
	PCB 1016	µg/Kg	10 U	25 U	10 U	10 U	530	--
	PCB 1221	µg/Kg	20 U	45 U	20 U	20 U	--	--
	PCB 1232	µg/Kg	10 U	25 U	10 U	10 U	--	--
	PCB 1242	µg/Kg	10 U	25 U	10 U	16	--	--
	PCB 1248	µg/Kg	10 U	25 U	65	10 U	1500	--
	PCB 1254	µg/Kg	10 U	25 U	10 U	10 U	300	--
	PCB 1260	µg/Kg	25	20 J	184	29	200	--
	PCB 1262	µg/Kg	10 U	25 U	10 U	10 U		
	PCB 1268	µg/Kg	10 U	25 U	10 U	10 U		
	Total PCBs[2]	µg/Kg	**25**	**20 J**	**249**	**45**	676	0.39
Phthalates (EPA 8270C-SIM)								
	Bis(2-ethylhexyl)phthalate	µg/Kg	**3400**	**30000**	**690**	**5100**	800	330
	Butylbenzylphthalate	µg/Kg	230	180 U	23 U	450	--	--
	Diethylphthalate	µg/Kg	12 U	91 U	11 U	14 U	600	--
	Dimethylphthalate	µg/Kg	36	91	11 U	7.4 J	--	--
	Di-n-butylphthalate	µg/Kg	**120**	**1700**	23	**130**	100	60
	Di-n-octylphthalate	µg/Kg	320	180 U	45	180	--	--

Notes:

NA = Not analyzed due to insufficient sample volume.
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.
All units in micrograms per kilogram (µg/Kg) or milligrams per kilogram (mg/Kg) dry weight.
[1] JSCS - Portland Harbor Joint Source Control Strategy (DEQ/EPA, Final December 2005, as amended July 2007).
[2] Total PCBs - Sum of detected Aroclors.
-- No JSCS screening level available.
* All silt fractions combined into one category.
bold = concentration exceeds JSCS Bioaccumulation SLV
= concentration exceeds JSCS Toxicity SLV

See Attachment C for complete laboratory results.



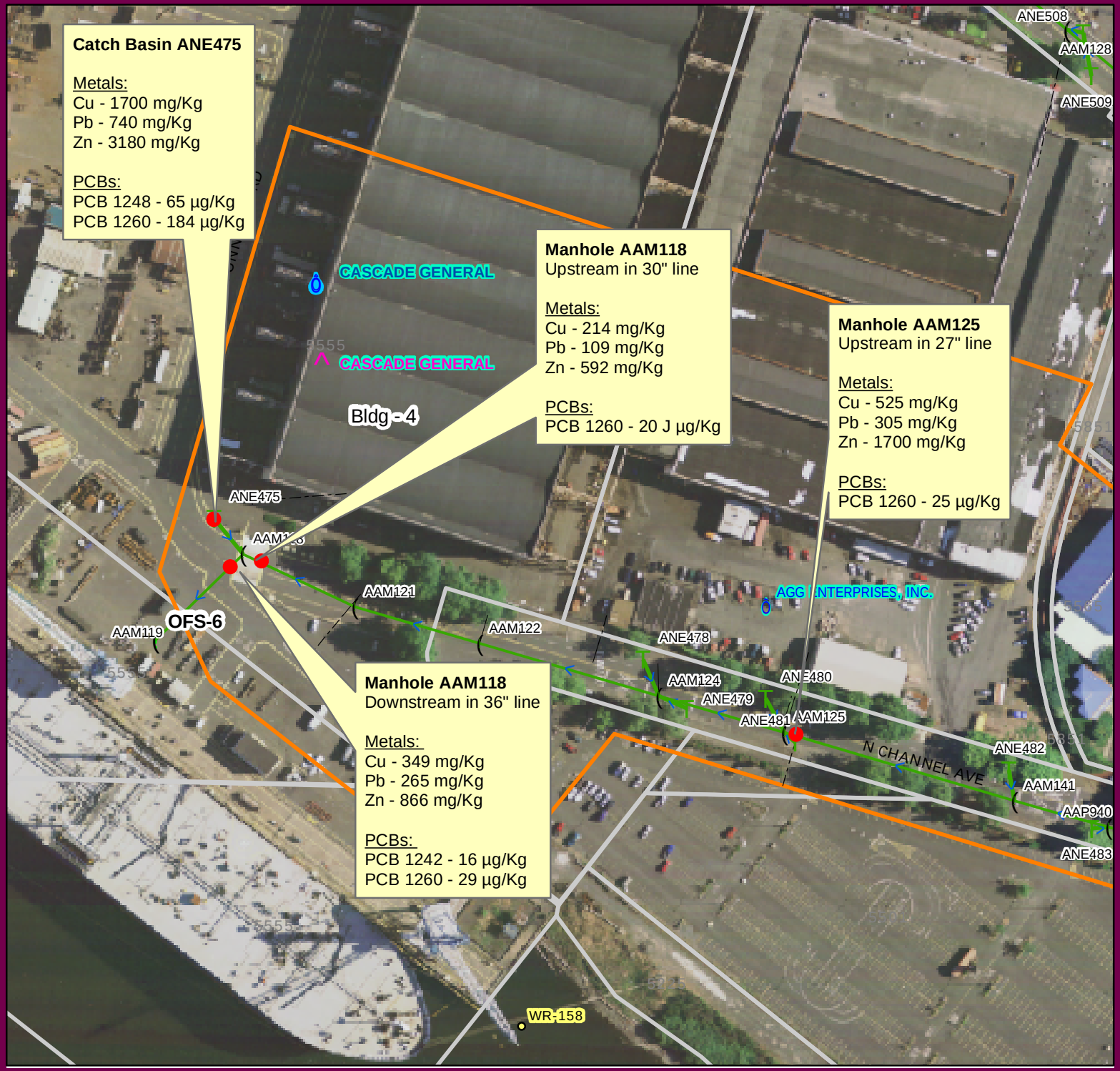
Legend

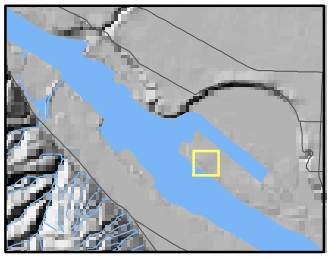
- Storm Pipe
- Inlets
- Manhole
- Taxlots
- S-6 Basin Boundary
- Sample Location
- Industrial Stormwater Permits
- DEQ Environmental Cleanup Site (ECSI)
- City Outfall
- Non-City Outfall

0 50 100 200 Feet

Figure 1
Outfall S-6
Overview Map

Source: City of Portland BES Aerial photo 2006	Environmental Services City of Portland 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912
File Name: s:\gis\outfalls\outfall_S6\ ofS6_figure1_01807_sg.mxd	**Program Manager:** Dawn Sanders Portland Harbor Superfund
Sheet No. 1 OF 1	**Date Printed:** 12/04/2007 **Prepared by:** Sara Gardner





Legend

- Storm Pipe
- Inlets
- Manhole
- Taxlots
- S-6 Basin Boundary
- Sample Location
- Industrial Stormwater Permits
- DEQ Environmental Cleanup Site (ECSI)
- City Outfall
- Non-City Outfall

Note: Only detected constituents are shown.

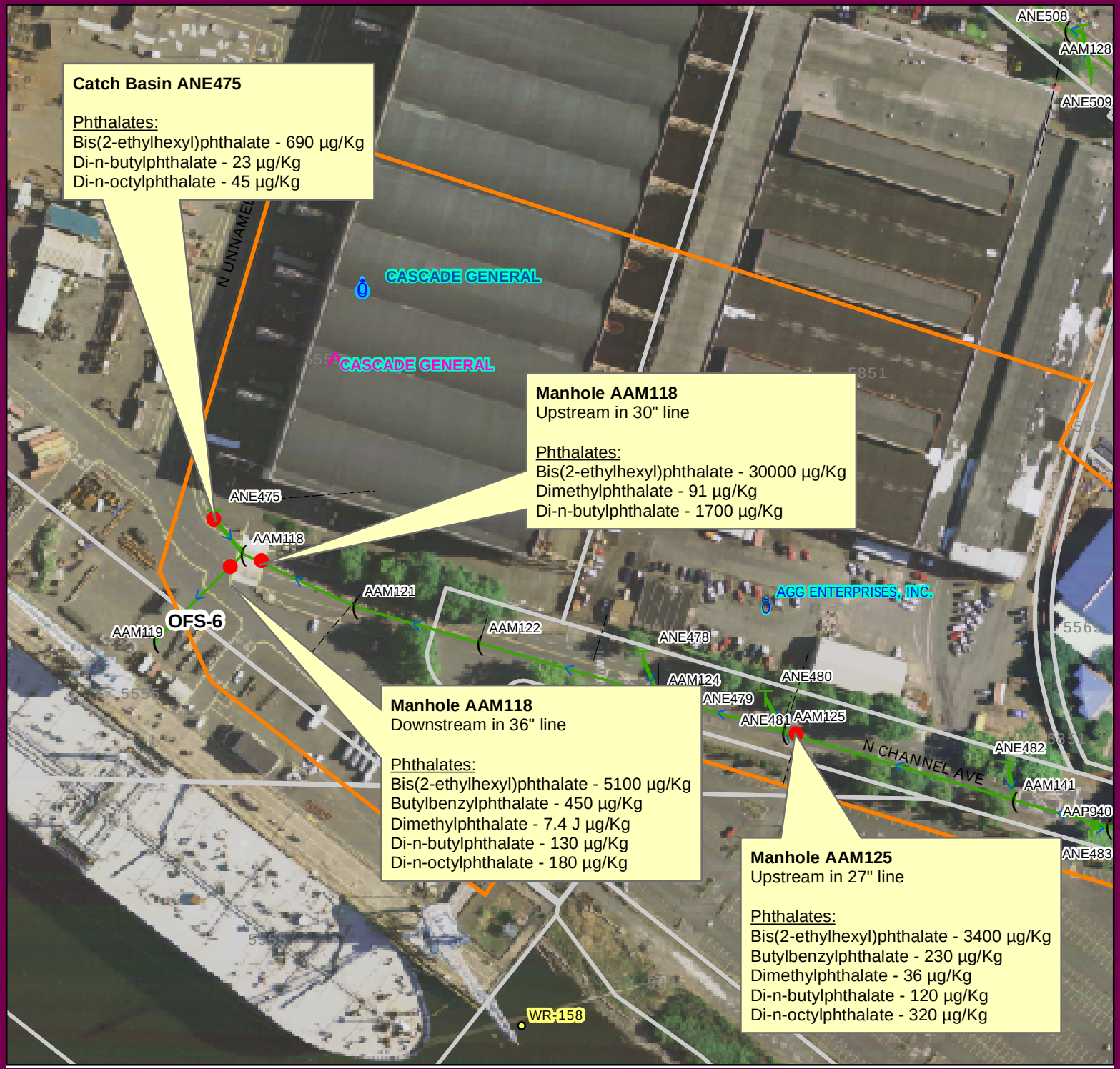
J = The analyte was detected and has been qualified as an estimated quantity.

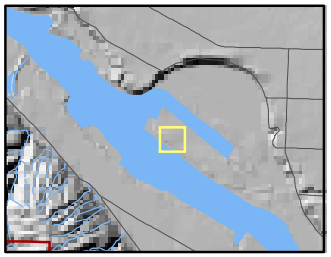
mg/Kg = milligrams per Kilogram dry weight
µg/Kg = micrograms per Kilogram dry weight

Feet
0 25 50 100

Figure 2
Outfall S-6
Metals & PCBs
Sample Dates: 6/20/06 & 7/19/06

Source: City of Portland BES Aerial photo 2006	Environmental Services City of Portland 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912
File Name: s:\gis\outfalls\outfall_S6\ofS6_figure2_01807_sg.mxd	Program Manager: Dawn Sanders Portland Harbor Superfund
Sheet No. 1 OF 1	Date Printed: 10/03/2007 Prepared by: Sara Gardner





Legend

- Storm Pipe
- Inlets
- Manhole
- Taxlots
- S-6 Basin Boundary
- Sample Location
- Industrial Stormwater Permits
- DEQ Environmental Cleanup Site (ECSI)
- City Outfall
- Non-City Outfall

Note: Only detected constituents are shown.

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

µg/Kg = micrograms per Kilogram dry weight

Feet

0 25 50 100

Figure 3
Outfall S-6
Phthalates
Sample Dates: 6/20/06 & 7/19/06

Source: City of Portland BES Aerial photo 2006

Environmental Services City of Portland 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912

File Name: s:\gis\outfalls\outfall_S6\ofS6_figure3_01807_sg.mxd

Program Manager: Dawn Sanders Portland Harbor Superfund

Sheet No. 1 OF 1

Date Printed: 12/04/07

Prepared by: Sara Gardner

Attachment A
Field Photographs

Photo 1 (June 2006). Aboveground location of manhole AAM118, where inline solids were collected. Solids were collected both upstream and downstream of this manhole, which is in the southeast area of the Cascade General site. This is the first manhole upstream from the outfall.

Photo 2 (June 2006). Looking downstream from manhole AAM118. Solids, consisting of fine material and organic matter, were collected 4-5 ft downstream of the manhole. The logjam in the background caused water to back up approximately 30 feet to the manhole.

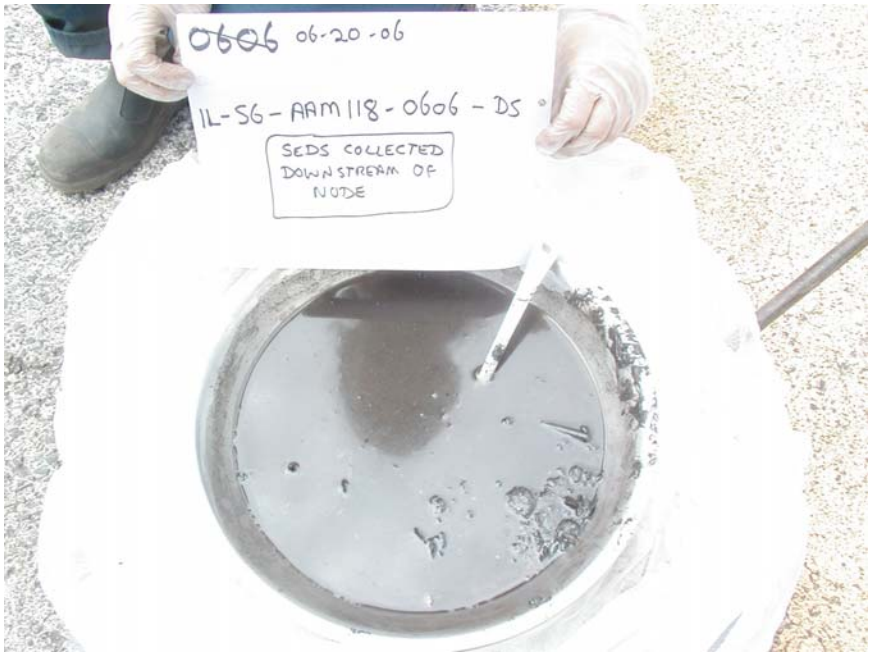


Photo 3 (June 2006). Solids collected downstream from manhole AAM118.

Photo 4 (June 2006). Looking upstream from manhole AAM118. Solids, consisting of fine material and organic matter, were collected 3-15 feet upstream of the manhole.

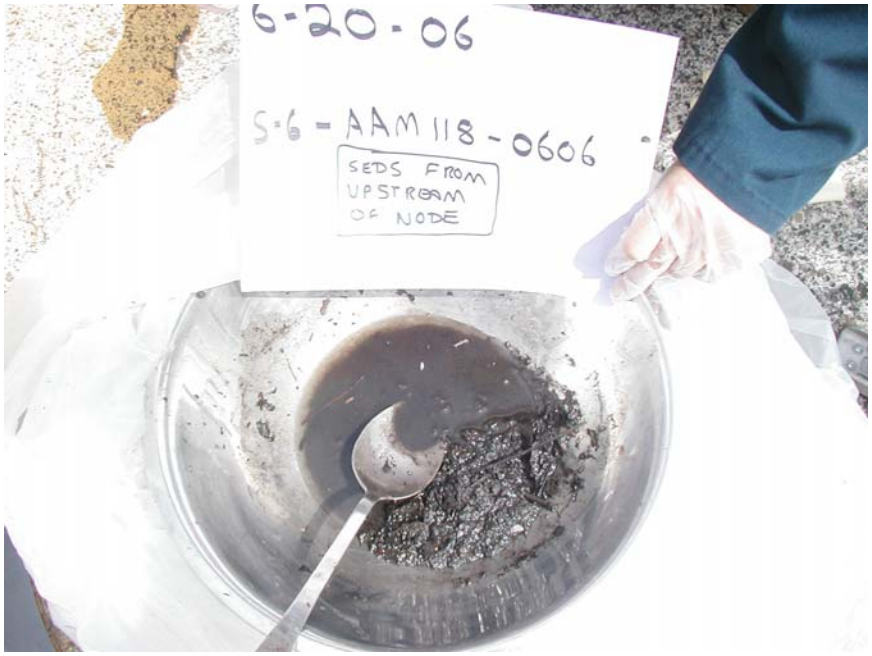


Photo 5 (June 2006). Solids collected from the main line upstream from manhole AAM118.

Photo 6 (July 2006). Aboveground location of catch basin ANE475. Solids were collected from the bottom of this catch basin.

Photo 7 (July 2006). Catch basin ANE475, with an inlet from Cascade General and an outlet to Basin S-6. Solids were collected using a stainless steel spoon and bowl.

Photo 8 (July 2006). Looking upstream from manhole AAM125. Solids, consisting of sand and fine material, were collected from the 27-inch diameter line upstream from the manhole.

Photo 9 (July 2006). Solids collected from the main line upstream of manhole AAM125.

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 LOWER AND INSPECT AAG 776.

0930 AT AAG 776. NO SEDS OBSERVED DOWNSTREAM. SOME SEDS OBSERVED UPSTREAM. ABOUT 1 OZ (3 JARS) DECIDE TO CAPTURE THESE SEDS WHILE WE ARE HERE (EVEN THOUGH) THESE SEDS ARE THE THIRD OPTION ON LINDAS EMAIL.

JUST ENOUGH SEDS TO FILL FOR 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 SEDS AT EITHER UP OR DOWN AT AAG 670

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Project INLINE SED SAMP
Project No. 1020-001
Location
Date 6-20-06
Subject FIELD NOTES
By MJP

1015 THE ~~NEXT~~ RE CAP. WE DID NOT FIND ANY SEDS DOWNSTREAM OF AA6776, 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 ~~RENTERS~~ 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 SED MARKS 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 MP 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.

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 4 of 4

Project IN LINE SED SAMP
Project No. 1020001
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 RM 118 DOWN STREAM. THE PROBLEM IS THIS. LINDA S. WANTS THIS ONE SAMPLE TO BE (A) ANALYZED FOR PCB TOC COC AND (B) THE ADDITIONAL SAMPLE TO BE ARCHIVED 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

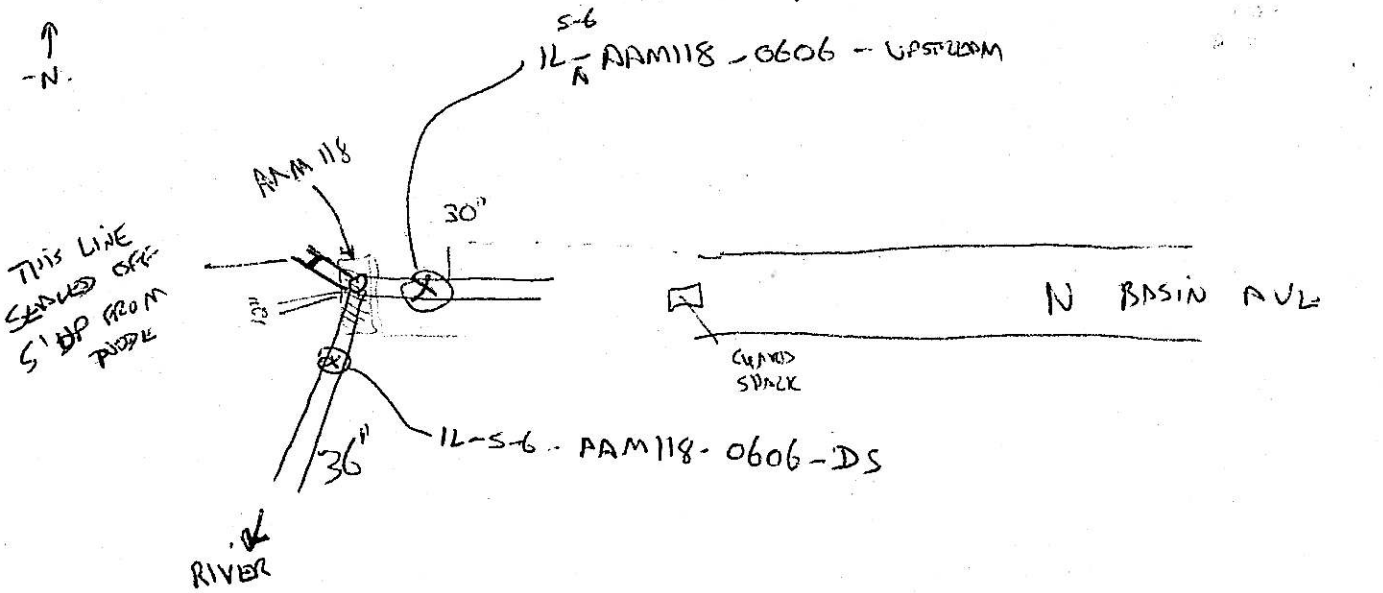
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 6-20-06	Time: 1048	Current Weather conditions: OVERCAST 70's
Sampling Team Present:	MJH/LNP/MJS/ABW	
Basin: S-6	Node: PAM 118	Subbasin:
Sampling Location Description/Address: STORM MH IN PAINTED AREA JUST WEST OF CASCADE GENERAL GUARD SHACK.		

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	FLOWING WATERS OBSERVED ABOUT 0.3" DEEP.
Does river appear to back up to this location? Describe rate/color/odor of flow:	YES IT BACKS UP. LOG IN LINE 30' DOWN.
Are sediments observed in the line?	YES
Are sample-able quantities of sediments present in the line?	YES
Describe lateral extent of sample-able sediments present in the line:	18" UP

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



LARGE LOG IN THE PIPE ABOUT 30' DOWN FROM NODE. IT CREATES A DAM. THAT BACKS UP TO THE NODE BUT NOT PAST IT.

Date: 6-20-06	SECTION 2 - SAMPLE COLLECTION REPORT	Node: AAM 118

Sampling Equipment:	☒ Stainless steel spoon & stainless steel bucket ☐ Other (Describe)	
Equipment Decontamination process:	☒ Per SOP7.01a ☐ Other (Describe)	
Sample date: 6-20-06	Sample time: 1135	1141 FO 060733
Sample Identification: (IL-XX-NNNN	FO 060732 IL-SB-AAM118-0606-US	FO 060734 IL-SB-AAM118-06-06-DS
Sample location description: (number of feet from node of entry)	3' TO 15' UPSTREAM OF LATERAL	4'-5' DOWNSTREAM FROM NODE
Sample collection technique:	SS SPOON INTO BOWL	SS SPOON INTO BOWL
Describe Color of sample:	BLACK	BLACK
Describe Texture/Particle size:	FINES + ORGANIC DEBRIS	FINE SILTS + ORGANICS
Describe visual or olfactory evidence of contamination:	SLIGHT RAINBOW SHEEN	GOOD RAINBOW SHEEN
Desacribe depth of solids in area where sample collected:	1/4"	4"
Describe amount and type of debris in sample:	SOME TWIGS + LEAVES	LEAVES
Compositing notes:	3 JARS	12 4oz JARS 4 8oz JARS

Sample Jars Collected

If not enough sample to fill all of the jars, then fill jars in this order:

12 4-oz JARS

4 8-oz JARS

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
Duplicate sample fictitious identification # on COC:	
Samples placed in chilled cooler? (Y)N	
Samples delivered to lab? Y/N	Lab ID Number: SEE ABOVE
Describe any deviations from standard procedures:	SAMPLE SPLIT

CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

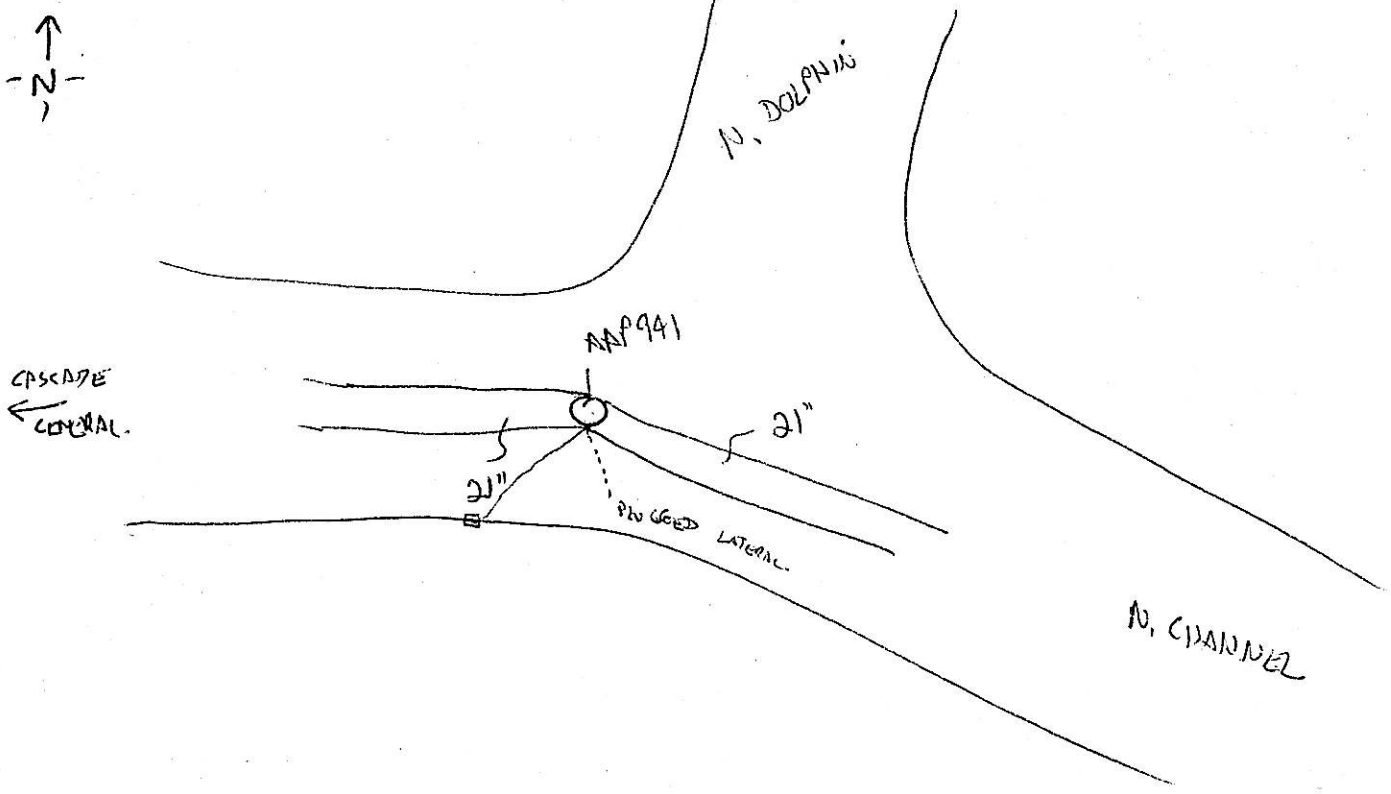
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 6-20-06	Time: 1328	Current Weather conditions:	OVERCAST 70'S
Sampling Team Present:	MJH | LAP | MJS		
Basin: 5-6	Node: AAP 94)	Subbasin:	
Sampling Location Description/Address:	N CHANNEL + N. DOLPHIN		

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	BARELY 1/16" OF FLOW
Does river appear to back up to this location? Describe rate/color/odor of flow:	NO
Are sediments observed in the line?	NO, IN EITHER DIRECTION
Are sample-able quantities of sediments present in the line?	NO
Describe lateral extent of sample-able sediments present in the line:	—

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



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ENVIRONMENTAL SERVICES

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

SEDIMENT SAMPLING FIELD DATA SHEET

Date: 6-20-06	Time: 1340	Current Weather conditions: SUNNY 70's	
Sampling Team Present: MJN/LAP/MJS			
Basin: 5-6	Node: AAP 948	Subbasin:	
Sampling Location Description/Address: N. CHANNEL + N. DOLPHIN			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	RIVER IS WET OTHERWISE NO STANDING
Does river appear to back up to this location? Describe rate/color/odor of flow:	NO
Are sediments observed in the line?	NO
Are sample-able quantities of sediments present in the line?	NO
Describe lateral extent of sample-able sediments present in the line:	—

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

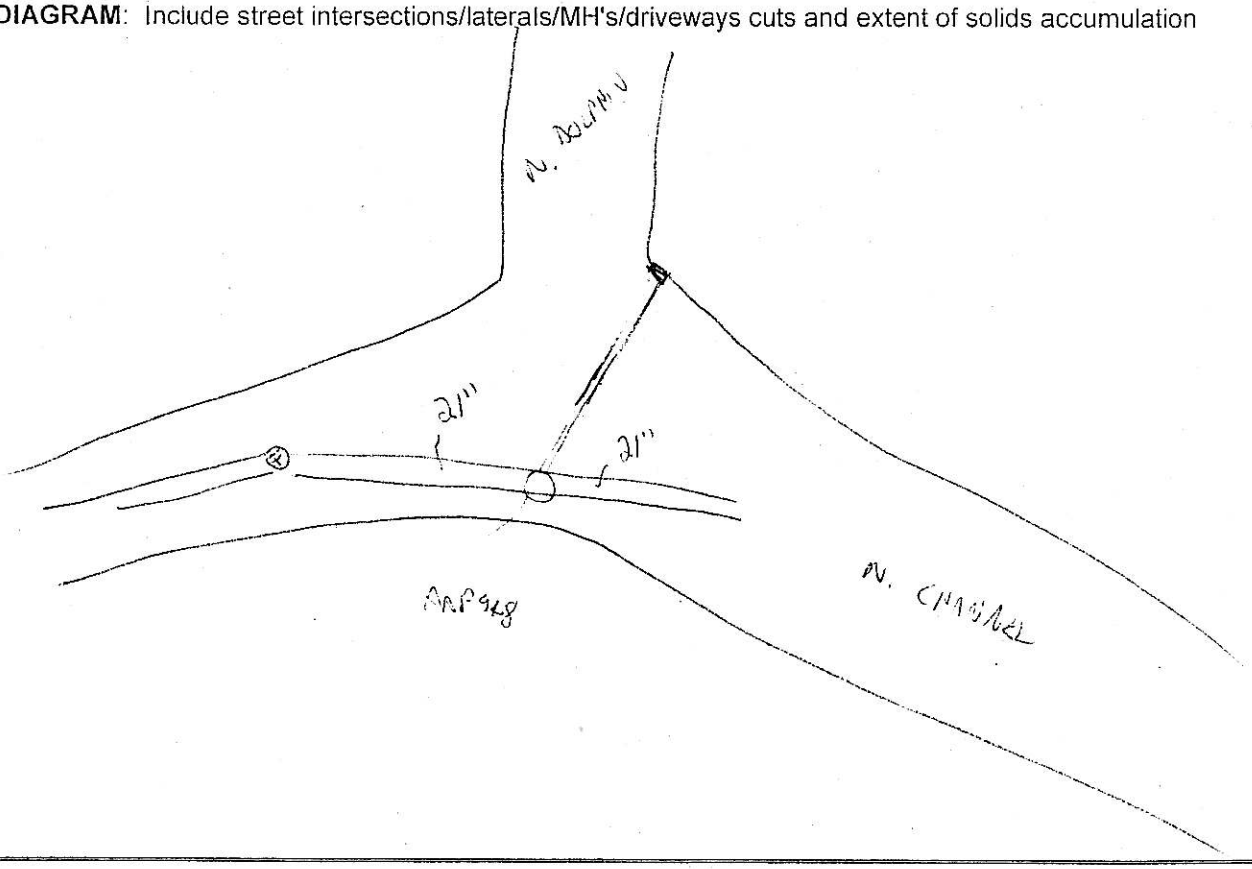


TABLE 1
STEPWISE DECONTAMINATION PROCEDURE
SOP 7.01A – DECONTAMINATION OF SAMPLING EQUIPMENT

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	☐ 1% 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.

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of _____

Project INLINE SED SAMP
Location _____
Subject _____

Project No. 1020.
Date 7.19.06
By MJD

0730 PREP FOR TODAYS SED SAMP WORK IN BASIN 5-6
WE ARE GOING TO SWAN ISLAND TO COLLECT 1
SAMPLE FROM CATCH BASIN ANE 475, AND ONE
FROM STORM LINE JUST UPSTREAM FROM CASCADE
GENERAL

DECON SS SPOONS + BOWLS PER SOP 7.0 | A

0940 ARRIVE AT CASCADE GENERAL PROCEED TO ANE 475'
AT IS A CATCH BASIN WITH A LARGE UNDERGROUND CONDUCT
LOTS OF SEDS ON SIDE OF WALLS
0955 ENTER ANE 475, RANDY COLLECTS SEDS FROM
BOTTOM OF CB. TOT INCHES THE ENTIRE DEPTH
OF SEDS.

0'

0924 MOVING AT AAP940. NO SEDS

0937 ARRIVE AT AAM14. NO SEDS

0946 ARRIVE AT AAM125. SEDS FOUND. SAMPLE COLLECTED

1010 - ALL SAMPLES PUT INTO CHILLED COOLER FOR RETURN TO LAB

1154 SAMPLES SUBMITTED TO WALL LAB UNDER COC

Attachments

CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

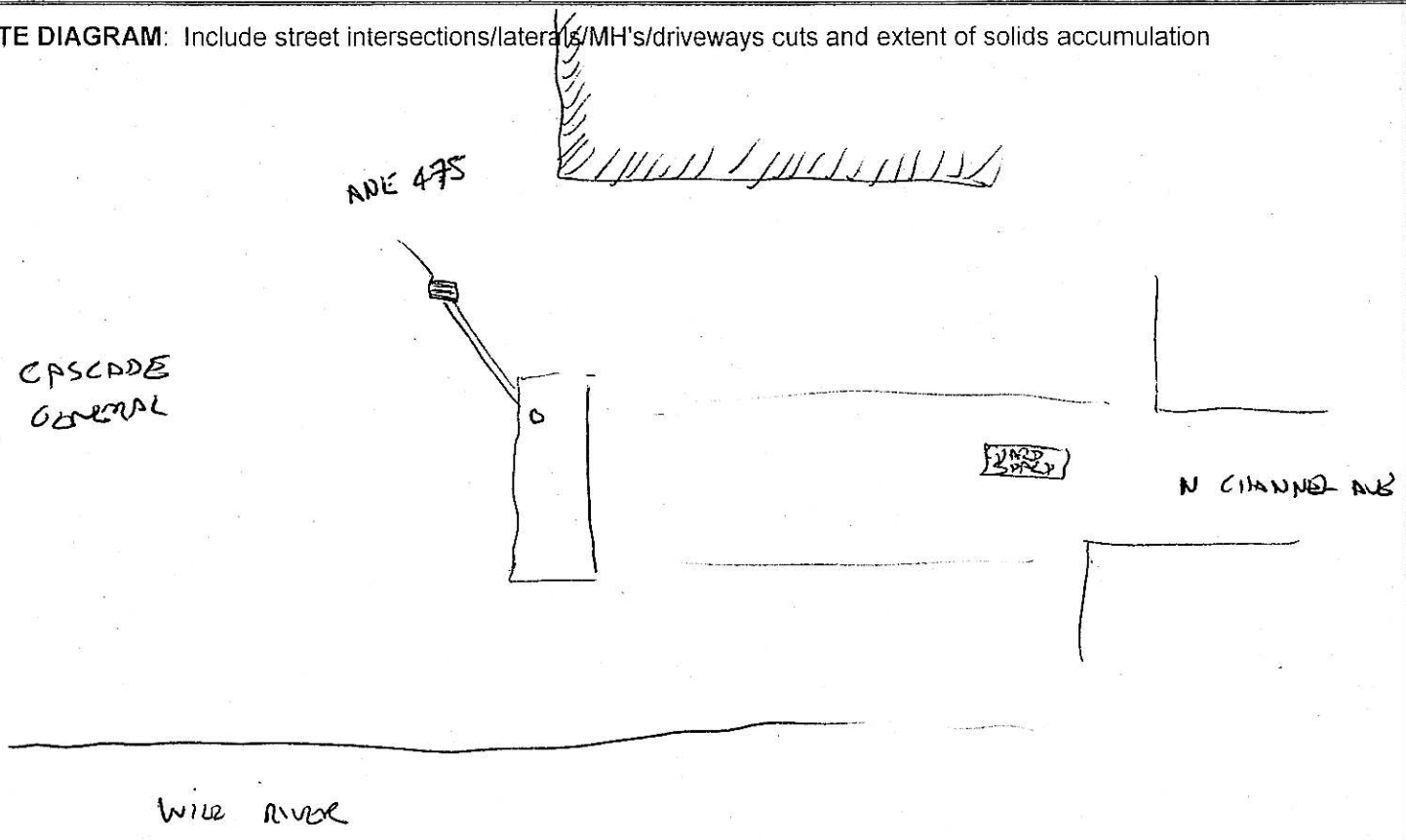
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 7-19-06	Time: 0851	Current Weather conditions: HOT + SUNNY	
Sampling Team Present: MSH / NCB			
Basin: S-6	Node: ANE 475	Subbasin:	
Sampling Location Description/Address: CASCADE GENERAL BY CROSSWALK MEDIAN GUARD SHACK			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

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

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



Date: 7-19-06	SECTION 2 - SAMPLE COLLECTION REPORT	Node: ANE475

Sampling Equipment:	☒ Stainless steel spoon & stainless steel bucket ☐ Other (Describe)
Equipment Decontamination process:	☒ Per SOP7.01a ☐ Other (Describe)
Sample date: 7-19-06	Sample time: 0904
Sample Identification: (IL-XX-NNNNNN-mmyy)	IL-S6-ANE475-0706
Sample location description: (number of feet from node of entry)	AT BOTTOM OF CATCH BASIN
Sample collection technique:	SS SPOON INTO SS BOWL
Describe Color of sample:	BLACK
Describe Texture/Particle size:	SANDY
Describe visual or olfactory evidence of contamination:	NO.
Desacribe depth of solids in area where sample collected:	4" (RANGES FROM 2"-4" IN C.B.
Describe amount and type of debris in sample:	—
Compositing notes:	

Sample Jars Collected 2 8-oz 4 4-oz

If not enough sample to fill all of the jars, then fill jars in this order:				
	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
Duplicate sample fictitious identification # on COC:	
Samples placed in chilled cooler? (Y)/N	
Samples delivered to lab? (Y)/N	Lab ID Number: FO 060823
Describe any deviations from standard procedures:	

CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

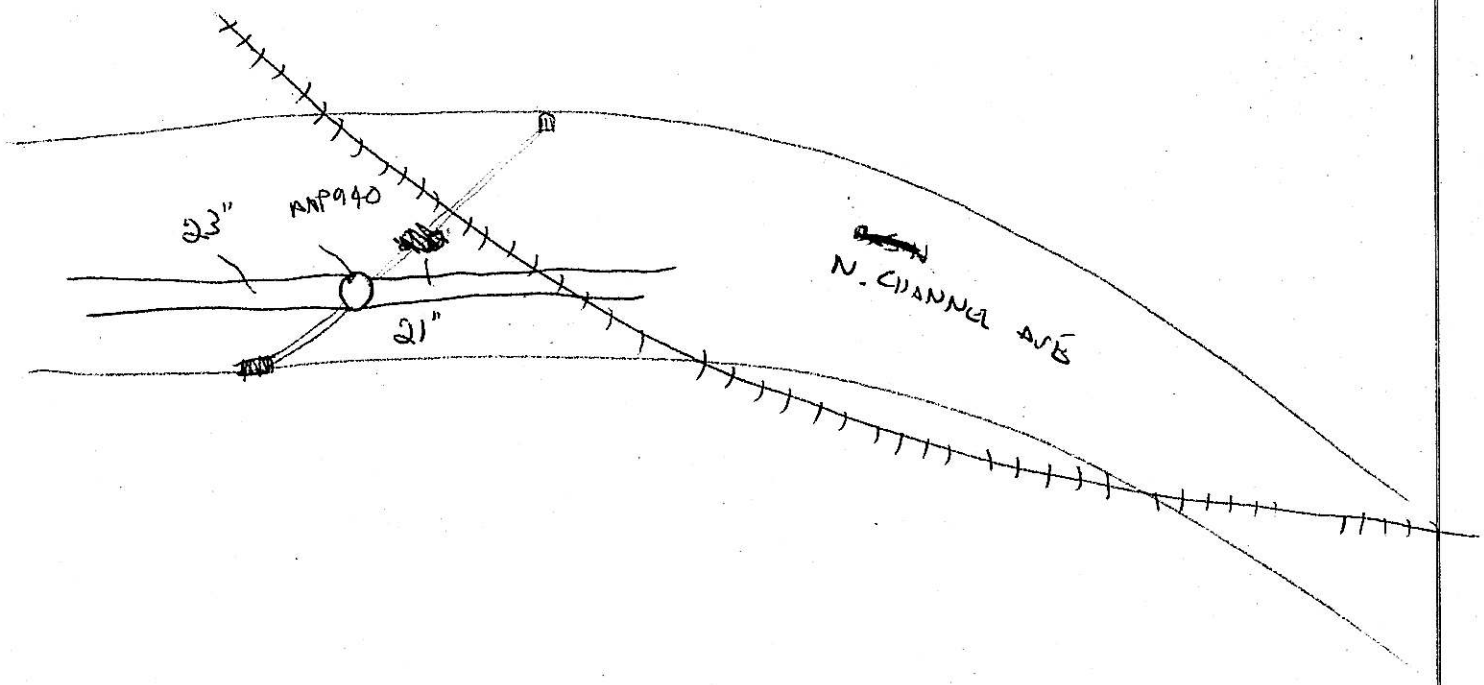
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 7-14-06	Time: 0924	Current Weather conditions: SUNNY HOT
Sampling Team Present: MSP | RCB		
Basin: S-6	Node: APP 940	Subbasin:
Sampling Location Description/Address: BASIN AVE		

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?	NO
Are sample-able quantities of sediments present in the line?	NO
Describe lateral extent of sample-able sediments present in the line:	—

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



CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

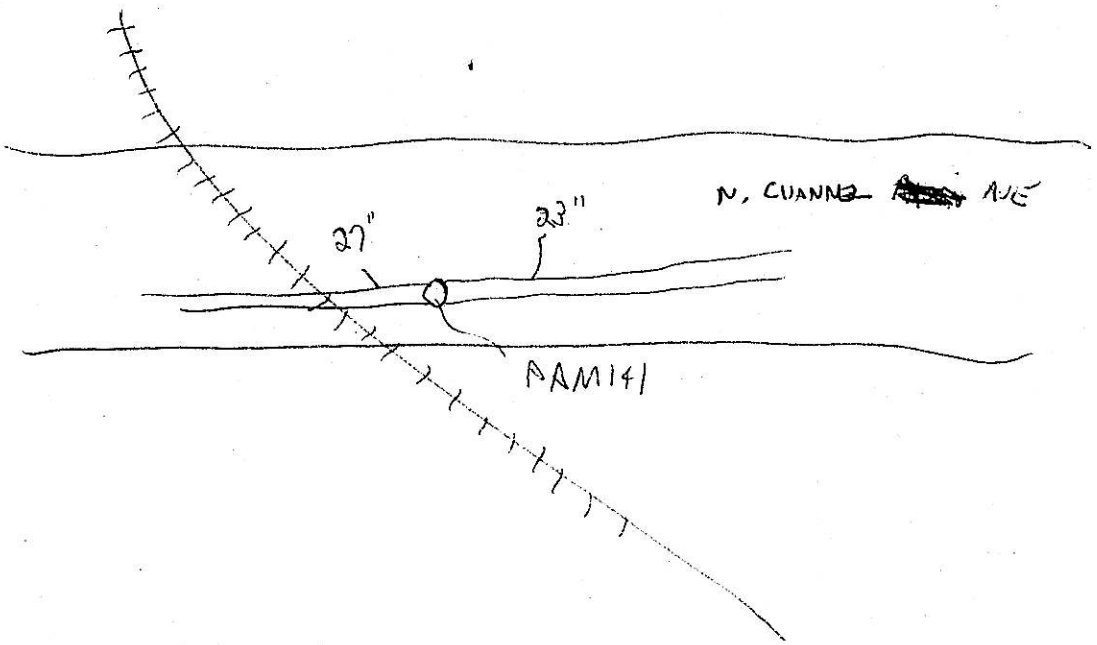
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 7-19-06	Time: 0940	Current Weather conditions: SUNNY HOT
Sampling Team Present: MTJH / RCB		
Basin: S 6	Node: ~~RAM~~ 141	Subbasin:
Sampling Location Description/Address: RAIN NE		

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?	NO
Are sample-able quantities of sediments present in the line?	NO
Describe lateral extent of sample-able sediments present in the line:	—

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



CITY OF PORTLAND

ENVIRONMENTAL SERVICES

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

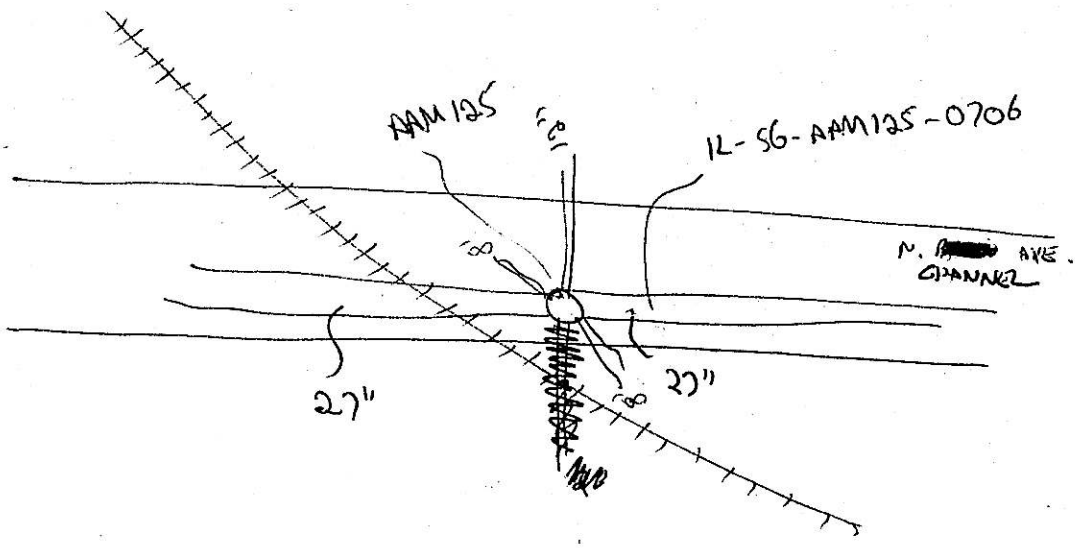
SEDIMENT SAMPLING FIELD DATA SHEET

Date: 7-19-06	Time: ~~2554~~ 0947	Current Weather conditions: SUNNY HOT
Sampling Team Present: MJH | RCB		
Basin: S-6	Node: AAM 125	Subbasin:
Sampling Location Description/Address: BASIN AVE UPSTREAM OF CASCADE GRN.		

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	NONE
Does river appear to back up to this location? Describe rate/color/odor of flow:	NO
Are sediments observed in the line?	YES
Are sample-able quantities of sediments present in the line?	YES
Describe lateral extent of sample-able sediments present in the line:	0'-6' UPSTREAM

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



Date: 7-19-06	SECTION 2 - SAMPLE COLLECTION REPORT	Node: AAM125

Sampling Equipment:	☒ Stainless steel spoon & stainless steel bucket ☐ Other (Describe)
Equipment Decontamination process:	☒ Per SOP7.01a ☐ Other (Describe)
Sample date: 7-19-06	Sample time: 0955
Sample Identification: (IL-XX-NNNNNN-mmyy)	IL-SG-AAM125-0706
Sample location description: (number of feet from node of entry)	UPSTREAM OF NODE IN 27" LINE
Sample collection technique:	SS SPOON INTO BUCKET
Describe Color of sample:	BLACK
Describe Texture/Particle size:	SANDS + GRAVELS + FINES
Describe visual or olfactory evidence of contamination:	SHEEN - NO smell.
Desacribe depth of solids in area where sample collected:	1" DEEP
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:				
	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
Duplicate sample fictitious identification # on COC:	—
Samples placed in chilled cooler? (Y)N	
Samples delivered to lab? (Y)N	Lab ID Number: FO 060824
Describe any deviations from standard procedures:	

Attachment C
Laboratory Results

Groundwater Solutions, Inc.
55 SW Yamhill Street, Suite 400 Portland, Oregon 97204
ph: 503.239.8799 fx: 503.239.8940 e: groundwatersolutions.com

Laboratory Data QA/QC Review
Upland Source Control Investigation
City Outfall Basin S-6

To: File

From: Robyn Cook, GSI

Date: September 13, 2006

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 S-6. This includes two sampling rounds, one in June and one in July. The results of the sampling and analysis are presented in the Technical Memorandum No. OF S-6-1.

The laboratory analysis for these source control program samples were 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)
  - Polychlorinated Biphenyls (EPA Method 8082)
- 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)

Attachment C of the Technical Memorandum No. OF S-6-1 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 for each sampling round below.

June Sampling

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
All samples were extracted and analyzed within the required holding times.

Polychlorinated Biphenyls (PCBs) Analyses
All samples were extracted and analyzed within the required holding times.

Metal Analyses
All samples were extracted and analyzed within the required holding times.

Total Organic Carbon Analyses
Only one sample had sufficient material for this analysis; this sample was analyzed within the required holding times.

Grain Size Analyses
Only one sample had sufficient material for this analysis; there are no required holding times for this analysis.

Method Blanks

Method blanks were processed during the laboratory analysis of SVOCs, PCBs, total organic carbon (TOC) and metals. No chemicals were detected in the method blanks associated with TOC, metals or PCBs. Three analytes (bis(2-Ethylhexyl)phthalate, di-n-butyl phthalate and pyrene) were detected in a method blank associated with the SVOC analysis. Only phthalates are reported for this sampling event. Both samples contained phthalates at concentrations significantly higher than the method blank, therefore the samples are not qualified.

Surrogate Recoveries

Surrogate recoveries were completed during the laboratory analysis of SVOCs and PCBs. All surrogate recoveries were within laboratory control limits for the analysis of PCBs. One of the surrogates analyzed with SVOCs (terphenyl-d14) was outside laboratory control limits due to matrix interference. Only one surrogate was outside laboratory control limits; 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 TOC, 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 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 SVOCs and PCBs. The RPDs between the matrix spike and the matrix spike duplicates were within quality control limits for both analyses.

July Sampling

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
All samples were extracted and analyzed within the required holding times.

Polychlorinated Biphenyls (PCBs) Analyses
All samples were extracted and analyzed within the required holding times.

Metal Analyses
All samples were extracted and analyzed within the required holding times.

Total Organic Carbon Analyses
All samples were 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, PCBs, metals and TOC. No chemicals were detected in the method blanks.

Surrogate Recoveries

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

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 TOC, SVOCs and PCBs. 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 PCBs and SVOCs. The relative percent difference (RPD) between the laboratory blank and the laboratory blank spike duplicates were within quality control limits for the analysis of SVOCs and PCBs.

Matrix Spike Recoveries

Laboratory matrix spikes and matrix spike duplicates were processed during the laboratory analysis of SVOCs and PCBs. The RPDs between the matrix spike and the matrix spike duplicates associated with phthalate and PCB analysis were within quality control limits. The RPDs for the matrix spike and matrix spike duplicate associated with several SVOCs exceeded quality control limits. Because these constituents are not included in the final lab report no action was taken.

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 S-6

*STL will perform phthaltes 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 (no suffix per PHA 7/14/06)	Point Code	Sample Date	Sample Time	Sample Type	General: PCBs	General: Phthaltes*	General: Total Organic Carbon	General: Grain Size (ASTM)	Metals: Total Metals (Cu, Zn)	Field Comments
FO 060732	IL-S6-AAM118-0606-us upstream of node	S6_1	6-20-06	1135	G	●	●	●**	●**	●	
FO 060733	IL-S6-AAM118-0606-ds downstream of node	S6_2	6-20-06	1141	G	●	●	●	●	●	PLEASE NOTE: FO 060733 AND FO 060734 ARE THE SAME SAMPLE, COLLECTED AT THE SAME TIME FROM THE SAME LOCATION. THE SAMPLE HAS BEEN SPLIT SO THAT ANALYSIS CAN BE COMPLETED ON A PORTION WHILE THE REST OF THE SAMPLE IS HELD BY THE WPCL LAB UNTIL FURTHER INSTRUCTIONS FROM LINDA SCHEFFLER ARE GIVEN. -MJH
FO 060734	IL-S6-AAM118-0606-ds downstream of node	S6_3	6-20-06	1141	G		HOLD				
	7/14/06 - OK to discard this sample - not needed. - RJC per MJH via PHA										
	**Not enough sample to perform TOC & grain size.										

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1555	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: MICHAEL HANSEN 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: 1555	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Rina Klueh 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: **FO060732** **Sample Collected:** 6/20/2006 11:35 **Sample Received:** 06/20/06 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-S6-AAM118-0606
UPSTREAM OF NODE
Sample Point Code: S6_1
Sample Type: GRAB
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1
System ID: AK05431
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. LAB: The calculated value for Aroclor 1260 is an estimate because it is below the calculated MRL, but the Aroclor was positively identified by pattern match. NOTE: Sample amount not sufficient for Grain Size and TOC analysis.

Test Parameter	Result	Units	MRL	Method	Analysis Date
METALS					
COPPER	214	mg/Kg dry wt	0.25	EPA 6020	06/22/06
LEAD	109	mg/Kg dry wt	0.10	EPA 6020	06/22/06
ZINC	592	mg/Kg dry wt	0.50	EPA 6020	06/22/06
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
PCB 1016	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1221	<45	µg/Kg dry wt	45	EPA 8082	06/23/06
PCB 1232	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1242	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1248	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1254	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1260	EST 20	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1262	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
PCB 1268	<25	µg/Kg dry wt	25	EPA 8082	06/23/06
OUTSIDE ANALYSIS					
SEMI-VOLATILE ORGANICS, CUSTOM - STL					
Bis(2-ethylhexyl) phthalate	30000	µg/Kg dry wt	180	EPA 8270-SIM	06/28/06
Butylbenzylphthalate	<180	µg/Kg dry wt	180	EPA 8270-SIM	06/28/06
Diethyl phthalate	<91	µg/Kg dry wt	91	EPA 8270-SIM	06/28/06
Dimethyl phthalate	91	µg/Kg dry wt	91	EPA 8270-SIM	06/28/06
Di-n-butyl phthalate	1700	µg/Kg dry wt	180	EPA 8270-SIM	06/28/06
Di-n-octyl phthalate	<180	µg/Kg dry wt	180	EPA 8270-SIM	06/28/06

End of Report for Sample ID: FO060732

Report Date: 08/24/06 **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: **FO060733** **Sample Collected:** 6/20/2006 11:41 **Sample Received:** 06/20/06 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-S6-AAM118-0606
DOWNSTREAM OF NODE
Sample Point Code: S6_2
Sample Type: GRAB
Sample Matrix: SEDIMENT

System ID: AK05432
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					
COPPER	349	mg/Kg dry wt	0.25	EPA 6020	06/22/06
LEAD	265	mg/Kg dry wt	0.10	EPA 6020	06/22/06
ZINC	866	mg/Kg dry wt	0.50	EPA 6020	06/22/06
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
PCB 1016	<10	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1221	<20	µg/Kg dry wt	20	EPA 8082	06/23/06
PCB 1232	<10	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1242	16	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1248	<10	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1254	<10	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1260	29	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1262	<10	µg/Kg dry wt	10	EPA 8082	06/23/06
PCB 1268	<10	µg/Kg dry wt	10	EPA 8082	06/23/06
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	45100	mg/Kg dry wt	700	EPA 9060 MOD	06/26/06
GRAIN SIZE BY ASTM - ARI					
Coarse Sand (4750-2000 µm)	12.9	Fract %		ASTM D421/422	07/05/06
Fine Sand (425-75 µm)	27.6	Fract %		ASTM D421/422	07/05/06
Gravel (>4750 µm)	0.6	Fract %		ASTM D421/422	07/05/06
Medium Sand (2000-425 µm)	54.5	Fract %		ASTM D421/422	07/05/06
Silt (13-9 µm)	1.7	Fract %		ASTM D421/422	07/05/06
Silt (22-13 µm)	0.4	Fract %		ASTM D421/422	07/05/06
Silt (32-22 µm)	0.9	Fract %		ASTM D421/422	07/05/06
Silt (7-3.2 µm)	0.9	Fract %		ASTM D421/422	07/05/06
Silt (75-32 µm)	0.5	Fract %		ASTM D421/422	07/05/06
SEMI-VOLATILE ORGANICS, CUSTOM - STL					
Bis(2-ethylhexyl) phthalate	5100	µg/Kg dry wt	27	EPA 8270-SIM	06/28/06
Butylbenzylphthalate	450	µg/Kg dry wt	27	EPA 8270-SIM	06/28/06
Diethyl phthalate	<14	µg/Kg dry wt	14	EPA 8270-SIM	06/28/06
Dimethyl phthalate	EST 7.4	µg/Kg dry wt	14	EPA 8270-SIM	06/28/06
Di-n-butyl phthalate	130	µg/Kg dry wt	27	EPA 8270-SIM	06/28/06

Report Date: 08/24/06 **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:	**FO060733**	**Sample Collected:**	6/20/2006 11:41	**Sample Status:**	**COMPLETE AND VALIDATED**
		Sample Received:	06/20/06		

Proj./Company Name:	PORTLAND HARBOR INLINE SAMP	**Report Page:**	Page 2 of 2
Address/Location:	IL-S6-AAM118-0606		
	DOWNSTREAM OF NODE	**System ID:**	AK05432
Sample Point Code:	S6_2	**EID File # :**	1020.001
Sample Type:	GRAB	**LocCode:**	PORTHARI
Sample Matrix:	SEDIMENT	**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
Di-n-octyl phthalate	180	µg/Kg dry wt	27	EPA 8270-SIM	06/28/06

End of Report for Sample ID: FO060733

Report Date: 08/24/06 **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

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

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
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

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.

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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	07/20/06 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: [illegible]
Time: 12 35
Initials: [illegible]

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

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

Cooler ID: 307 (____ of ___)

Work Order No. PPF0890
Client: City of Portland
Project: Port. Harbor Inline 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 __________
X Loose Ice
____ None/Other __________
____ None

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 (circled)

Trip Blank? Y or N or NA (circled)

Sample Containers:		ID
Intact?	Y (circled) or N	
Provided by NCA?	Y (circled) or N	
Correct Type?	Y (circled) or N	
#Containers match COC?	Y (circled) or N	
IDs/time/date match COC?	Y (circled) or N	
Hold Times in hold?	Y (circled) or N	

		ID
Metals Preserved?	Y or N or NA (circled)	
Client QAPP Preserved?	Y or N or NA (circled)	
Adequate Volume? (for tests requested)	Y (circled) or N	
Water VOAs: Headspace?	Y or N or NA (circled)	

Comments: ____________

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

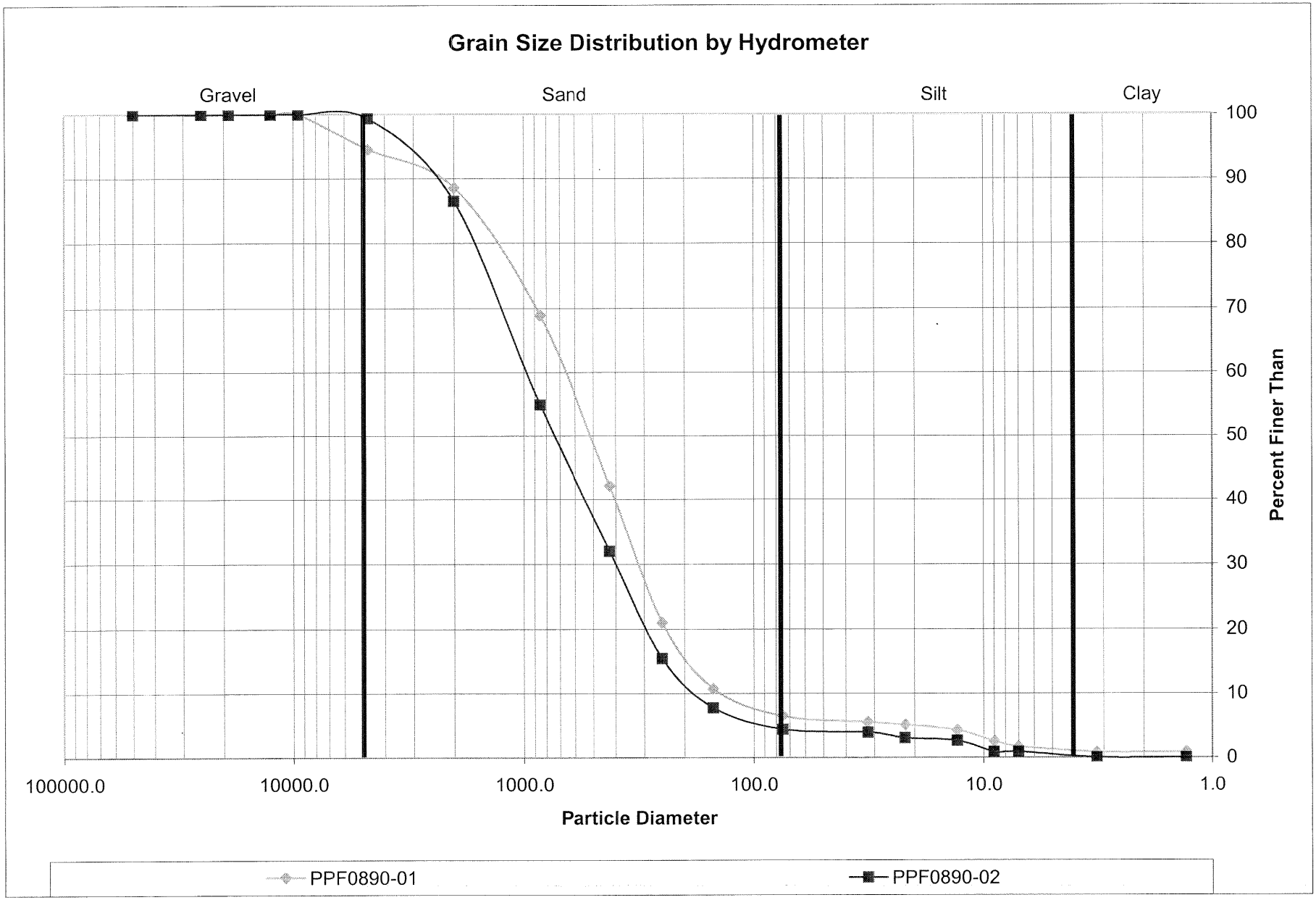
Test America
PPF0890

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: **PPF0890-02**

Lab Sample ID: 580-2920-2 | Date Sampled: 06/20/2006 1135
Client Matrix: Solid | % Moisture: 79.0 | 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: HP01911.D
Dilution: 1.0 | Initial Weight/Volume: 10.4381 g
Date Analyzed: 06/30/2006 1251 | Final Weight/Volume: 20 mL
Date Prepared: 06/28/2006 1021 | Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate		30000	B	26	180
Butyl benzyl phthalate		ND		59	180
Diethyl phthalate		ND		91	91
Dimethyl phthalate		91	J	11	91
Di-n-butyl phthalate		1700	B	17	180
Di-n-octyl phthalate		ND		9.8	180

Surrogate	%Rec		Acceptance Limits
2-Fluorobiphenyl	89		42 - 140
Nitrobenzene-d5	98		38 - 141
Terphenyl-d14	183	I	42 - 151

Client: City of Portland BES

Job Number: 580-2920-1

Client Sample ID: **PPF0890-03**

Lab Sample ID: 580-2920-3
Client Matrix: Solid
% Moisture: 27.4

Date Sampled: 06/20/2006 1141
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 1314
Date Prepared: 06/28/2006 1021

Analysis Batch: 580-8548
Prep Batch: 580-8413

Instrument ID: SEA023
Lab File ID: HP01912.D
Initial Weight/Volume: 20.2321 g
Final Weight/Volume: 20 mL
Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate		5100	B	3.9	27
Butyl benzyl phthalate		450		8.8	27
Diethyl phthalate		ND		14	14
Dimethyl phthalate		7.4	J	1.6	14
Di-n-butyl phthalate		130	B	2.5	27
Di-n-octyl phthalate		180		1.5	27

Surrogate	%Rec	Acceptance Limits
2-Fluorobiphenyl	76	42 - 140
Nitrobenzene-d5	83	38 - 141
Terphenyl-d14	110	42 - 151

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:	

	% Rec.						
Analyte	MS	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	Analysis Batch: 580-8801	Instrument ID: SEA034
Client Matrix:	Solid	Prep Batch: 580-8497	Lab File ID: PCB1839.D
Dilution:	1.0	Units: mg/Kg	Initial Weight/Volume: 10 g
Date Analyzed:	07/06/2006 1951		Final Weight/Volume: 10 mL
Date Prepared:	06/29/2006 1247		Injection Volume:
			Column ID: PRIMARY

LCSD Lab Sample ID:	LCSD 580-8497/3-A	Analysis Batch: 580-8801	Instrument ID: SEA034
Client Matrix:	Solid	Prep Batch: 580-8497	Lab File ID: PCB1840.D
Dilution:	1.0	Units: mg/Kg	Initial Weight/Volume: 10 g
Date Analyzed:	07/06/2006 2015		Final Weight/Volume: 10 mL
Date Prepared:	06/29/2006 1247		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	

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: 7-19-06
Page: 1 of 1
Collected By: MSH | RCB

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

OUTFALL S-6

*STL will perform phthalates 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: PCBs	General: Phthaltes*	General: Total Organic Carbon	General: Grain Size (ASTM)	General:	General:	General:	Metals: Total Metals (Cu, Zn)	Metals:	Metals:	Field Comments
FO 060823	IL-S6-ANE475-0706 in catch basinb	S6_4	19-Jul-06	0904	G	●	●	●	●				●			
FO 060824	IL-S6-AAM125-0706 up from node in 27" line	S6_5	19-Jul-06	0955	G	●	●	●	●				●			
	SF 7/19/06 per RCB															
4																
5																
6																
7																
8																
9																
10																

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1159	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: MICHAEL HANSEN Date: 7-19-06	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1159	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Rona Kluch Date: 7/19/06	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: **FO060823** **Sample Collected:** 7/19/2006 09:04 **Sample Received:** 07/19/06 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-S6-ANE475-0706
IN CATCH BASIN B
Sample Point Code: S6_4
Sample Type: GRAB
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2
System ID: AK06323
EID File # : 1020.001
LocCode: PORTHARI
Collected By: MJH/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. LAB: PCB quantified as Aroclor 1248 appears to be heavily weathered, making the pattern match and quantitation approximate.

Test Parameter	Result	Units	MRL	Method	Analysis Date
METALS					
COPPER	1700	mg/Kg dry wt	0.25	EPA 6020	07/28/06
LEAD	740	mg/Kg dry wt	0.10	EPA 6020	07/28/06
ZINC	3180	mg/Kg dry wt	0.50	EPA 6020	07/28/06
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
PCB 1016	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1221	<20	µg/Kg dry wt	20	EPA 8082	07/31/06
PCB 1232	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1242	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1248	65	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1254	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1260	184	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1262	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1268	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	63700	mg/Kg dry wt	50	EPA 9060 MOD	07/31/06
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	1.4	Fract %	0.1	ASTM D421/422	07/29/06
Coarse Sand (4750-2000 µm)	7.8	Fract %	0.1	ASTM D421/422	07/29/06
Fine Sand (425-75 µm)	53.2	Fract %	0.1	ASTM D421/422	07/29/06
Gravel (>4750 µm)	9.7	Fract %	0.1	ASTM D421/422	07/29/06
Medium Sand (2000-425 µm)	22.0	Fract %	0.1	ASTM D421/422	07/29/06
Silt (13-9 µm)	0.7	Fract %	0.1	ASTM D421/422	07/29/06
Silt (22-13 µm)	1.1	Fract %	0.1	ASTM D421/422	07/29/06
Silt (32-22 µm)	0.7	Fract %	0.1	ASTM D421/422	07/29/06
Silt (7-3.2 µm)	0.7	Fract %	0.1	ASTM D421/422	07/29/06
Silt (75-32 µm)	2.2	Fract %	0.1	ASTM D421/422	07/29/06
Silt (9-7 µm)	0.4	Fract %	0.1	ASTM D421/422	07/29/06
SEMI-VOLATILE ORGANICS, CUSTOM - STL					
Bis(2-ethylhexyl) phthalate	690	µg/Kg dry wt	23	EPA 8270-SIM	07/26/06
Butylbenzylphthalate	<23	µg/Kg dry wt	23	EPA 8270-SIM	07/26/06
Diethyl phthalate	<11	µg/Kg dry wt	11	EPA 8270-SIM	07/26/06

Report Date: 09/06/06 **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:	**FO060823**	**Sample Collected:**	7/19/2006 09:04	**Sample Status:**	**COMPLETE AND VALIDATED**
		Sample Received:	07/19/06		

Proj./Company Name:	PORTLAND HARBOR INLINE SAMP	**Report Page:**	Page 2 of 2
Address/Location:	IL-S6-ANE475-0706 IN CATCH BASIN B	**System ID:**	AK06323
Sample Point Code:	S6_4	**EID File # :**	1020.001
Sample Type:	GRAB	**LocCode:**	PORTHARI
Sample Matrix:	SEDIMENT	**Collected By:**	MJH/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. LAB: PCB quantified as Aroclor 1248 appears to be heavily weathered, making the pattern match and quantitation approximate.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dimethyl phthalate	<11	µg/Kg dry wt	11	EPA 8270-SIM	07/26/06
Di-n-butyl phthalate	23	µg/Kg dry wt	23	EPA 8270-SIM	07/26/06
Di-n-octyl phthalate	45	µg/Kg dry wt	23	EPA 8270-SIM	07/26/06

End of Report for Sample ID: FO060823

Report Date: 09/06/06 **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: **FO060824** **Sample Collected:** 7/19/2006 09:55 **Sample Received:** 07/19/06 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-S6-AAM125-0706
UP FROM NODE IN 27 INCH LINE
Sample Point Code: S6_5
Sample Type: GRAB
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2
System ID: AK06324
EID File # : 1020.001
LocCode: PORTHARI
Collected By: MJH/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
METALS					
COPPER	525	mg/Kg dry wt	0.25	EPA 6020	07/28/06
LEAD	305	mg/Kg dry wt	0.10	EPA 6020	07/28/06
ZINC	1700	mg/Kg dry wt	0.50	EPA 6020	07/28/06
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
PCB 1016	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1221	<20	µg/Kg dry wt	20	EPA 8082	07/31/06
PCB 1232	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1242	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1248	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1254	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1260	25	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1262	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
PCB 1268	<10	µg/Kg dry wt	10	EPA 8082	07/31/06
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	11600	mg/Kg dry wt	50	EPA 9060 MOD	07/31/06
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	0.6	Fract %	0.1	ASTM D421/422	07/29/06
Coarse Sand (4750-2000 µm)	24.1	Fract %	0.1	ASTM D421/422	07/29/06
Fine Sand (425-75 µm)	19.0	Fract %	0.1	ASTM D421/422	07/29/06
Gravel (>4750 µm)	30.8	Fract %	0.1	ASTM D421/422	07/29/06
Medium Sand (2000-425 µm)	24.0	Fract %	0.1	ASTM D421/422	07/29/06
Silt (13-9 µm)	0.4	Fract %	0.1	ASTM D421/422	07/29/06
Silt (22-13 µm)	0.2	Fract %	0.1	ASTM D421/422	07/29/06
Silt (32-22 µm)	0.2	Fract %	0.1	ASTM D421/422	07/29/06
Silt (7-3.2 µm)	0.4	Fract %	0.1	ASTM D421/422	07/29/06
Silt (75-32 µm)	0.1	Fract %	0.1	ASTM D421/422	07/29/06
Silt (9-7 µm)	0.4	Fract %	0.1	ASTM D421/422	07/29/06
SEMI-VOLATILE ORGANICS, CUSTOM - STL					
Bis(2-ethylhexyl) phthalate	3400	µg/Kg dry wt	24	EPA 8270-SIM	07/26/06
Butylbenzylphthalate	320	µg/Kg dry wt	24	EPA 8270-SIM	07/26/06
Diethyl phthalate	<12	µg/Kg dry wt	12	EPA 8270-SIM	07/26/06
Dimethyl phthalate	36	µg/Kg dry wt	12	EPA 8270-SIM	07/26/06

Report Date: 09/06/06 **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: **FO060824** **Sample Collected:** 7/19/2006 09:55 **Sample Received:** 07/19/06 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name:	PORTLAND HARBOR INLINE SAMP	**Report Page:**	Page 2 of 2
Address/Location:	IL-S6-AAM125-0706		
	UP FROM NODE IN 27 INCH LINE	**System ID:**	AK06324
Sample Point Code:	S6_5	**EID File # :**	1020.001
Sample Type:	GRAB	**LocCode:**	PORTHARI
Sample Matrix:	SEDIMENT	**Collected By:**	MJH/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
Di-n-butyl phthalate	120	µg/Kg dry wt	24	EPA 8270-SIM	07/26/06
Di-n-octyl phthalate	320	µg/Kg dry wt	24	EPA 8270-SIM	07/26/06

End of Report for Sample ID: FO060824

Report Date: 09/06/06 **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

September 01, 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 07/19/06 15:50. The following list is a summary of the Work Orders contained in this report, generated on 09/01/06 08:07.

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

Work Order	Project	ProjectNumber
PPG0749	Portland Harbor	36238

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	09/01/06 08:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 060823	PPG0749-01	Soil	07/19/06 09:04	07/19/06 15:50
FO 060824	PPG0749-02	Soil	07/19/06 09:55	07/19/06 15:50

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	09/01/06 08:07

General Chemistry Parameters

TestAmerica - Nashville, TN

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPG0749-01 (FO 060823)		**Soil**				**Sampled: 07/19/06 09:04**				
Total Organic Carbon	SW846 9060M	**63700**	-----	1000	mg/Kg dry	1x	6075616	07/31/06 10:14	07/31/06 14:05	
PPG0749-02 (FO 060824)		**Soil**				**Sampled: 07/19/06 09:55**				
Total Organic Carbon	SW846 9060M	**11600**	-----	1000	mg/Kg dry	1x	6075616	07/31/06 10:14	07/31/06 14:05	

TestAmerica - Portland, OR

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.

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	09/01/06 08:07

General Chemistry Parameters - Laboratory Quality Control Results

TestAmerica - Nashville, TN

QC Batch: 6075616 **Soil Preparation Method: NO PREP**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (6075616-BLK1)								**Extracted: 07/31/06 10:14**						
Total Organic Carbon	SW846 9060M	ND	---	1000	mg/Kg dry	1x	--	--	--	--	--	--	07/31/06 14:05	
LCS (6075616-BS1)								**Extracted: 07/31/06 10:14**						
Total Organic Carbon	SW846 9060M	32500	---	1000	mg/Kg dry	1x	--	29900	109%	(90-110)	--	--	07/31/06 14:05	
Duplicate (6075616-DUP1)							**QC Source: PPG0749-02**		**Extracted: 07/31/06 10:14**					
Total Organic Carbon	SW846 9060M	11200	---	1000	mg/Kg dry	1x	11600	--	--	--	4%	(20)	07/31/06 14:05	

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.

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	09/01/06 08:07

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

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 #: PPG0749

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: Inline 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	REQUESTED ANALYSES: Phthalates (Low Level) only 8270-SIM	REQUESTED ANALYSES: TOC	REQUESTED ANALYSES: Grain Size	MATRIX (W, S, O)	# OF CONT	LOCATION COMMENTS	TA WO ID
1	FO 060823	7/19/06 0904		X	X	X	S	4		
2	FO 060824	7/19/06 0955		X	X	X	S	4		
3										
4										
5										
6										
7										
8										
9										
10										

RELEASED BY: Rona Kluch — DATE: 7/19/06
PRINT NAME: Rona Kluch — FIRM: City of Portland — TIME: 1550
RECEIVED BY: Bob — DATE: 7/19/06
PRINT NAME: Bob — FIRM: TAP — TIME: 15:50
RELEASED BY: — DATE:
PRINT NAME: — FIRM: — TIME:
RECEIVED BY: — DATE: lab
PRINT NAME: — FIRM: — TIME: 1645

ADDITIONAL REMARKS: (*) Send Low-level phthalates to STL.
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.

5.5

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: 7/11/06
Time: 15:50
Initials: BK

Logged-in By:
Date: 7/19
Initials: SM

Unpacked/Labeled By:
Date: 7/19
Initials: SM

Cooler ID: ____ (___ of ___)
Work Order No: PPG0749
Client: C of Portland
Project: Portland Harbor

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
Y Loose Ice
___ None/Other ____

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

Cooler Temperature (*IR*): 5.5 °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 29, 2006

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

Subject: Project No.: PPF0749;
ARI Project No.: JQ22

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 JQ22

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Test America	Project No.: JQ22
Client Project: PPG0749	

Case Narrative

1. The samples were submitted for grain size analysis according to ASTM methodology. A full sieve and hydrometer analysis was run on both samples for consistency.
2. The data is provided in summary tables and plots.
3. There were no other noted anomalies in this project.

Approved by: Todd Bennett Date: 7/28/06
Title: Geotechnical Division Manager

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

SUBCONTRACT ORDER

TestAmerica - Portland, OR

PPG0749

5.6°C 1 cooler

JQ22

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:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone :(206) 621-6490
Fax: 206-621-7523

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: PPG0749-01	**Soil**	**Sampled:07/19/06 09:04**		
Grain Size (ASTM) - SUB	08/01/06 23:59	01/15/07 09:04		
Containers Supplied:				
8 oz. jar (A)	8 oz. jar (B)			
Sample ID: PPG0749-02	**Soil**	**Sampled:07/19/06 09:55**		
Grain Size (ASTM) - SUB	08/01/06 23:59	01/15/07 09:55		
Containers Supplied:				
8 oz. jar (A)	8 oz. jar (B)			

Released By	Date	Received By	Date
[signature]	7/20/06	[signature]	7/21/06 1015

Cooler Receipt Form

ANALYTICAL RESOURCES INCORPORATED

RI Client: Test America Project Name: _____

OC NO.: _____ Delivered By: UPS

racking NO.: _____ Date: _____

RI Job No.: _____ Lims NO.: _____

reliminary Examination Phase:

1. Were intact, properly signed and dated custody seals attached
   To the outside of the cooler? ..... YES (NO)
2. Were custody papers included with the cooler ..... (YES) NO
3. Were custody papers properly filled out (ink, signed etc.)? ..... (YES) NO
4. Complete custody forms and attach all shipping documents ..... (OK) NA

ooler Accepted BY: B. Date: 7/21/06 Time: 1015

og-IN Phase:

5. Was a temperature blank include in the cooler? ..... YES NO
6. Record Cooler Temperature..... 5.6 °C
7. What kind of packing material was used? ..... _____
8. Was sufficient ice used (if appropriate)? ..... (YES) NO
9. Were all bottles sealed in separate plastic bags? ..... (YES) NO
10. Did all bottles arrive in good condition (unbroken)? ..... (YES) NO
11. Were all bottle labels complete and legible? ..... (YES) NO
12. Did all bottle labels and tags agree with custody papers? ..... (YES) NO
13. Were all bottles used correct for the requested analyses? ..... (YES) NO
14. Do any of the analyses (bottles) require preservative?
    (If so, Preservation checklist must be attached) ..... YES (NO)
15. Were all VOA vials free of air bubbles? ..... (YES) NO
16. Was sufficient amount of sample sent in each bottle? ..... (YES) NO
17. Notify Project Manager of any discrepancies or concerns..... (OK) NA

oler Opened By: B. Date: 7/21/06 Time 1015

plain any discrepancies or negative responses:

ANALYTICAL RESOURCES INCORPORATED

Test America
PPG0749

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
PPG0749-01	100.0	100.0	100.0	100.0	95.9	90.3	82.5	75.5	60.4	38.9	19.7	7.2	5.0	4.2	3.2	2.5	2.1	1.4	0.7
PPG0749-02	100.0	100.0	100.0	96.6	90.8	69.2	45.2	31.7	21.2	11.0	4.5	2.2	2.1	1.9	1.7	1.3	0.9	0.6	0.6

Testing performed according to ASTM D421/D422

JQ22

ANALYTICAL RESOURCES INCORPORATED

Test America
PPG0749

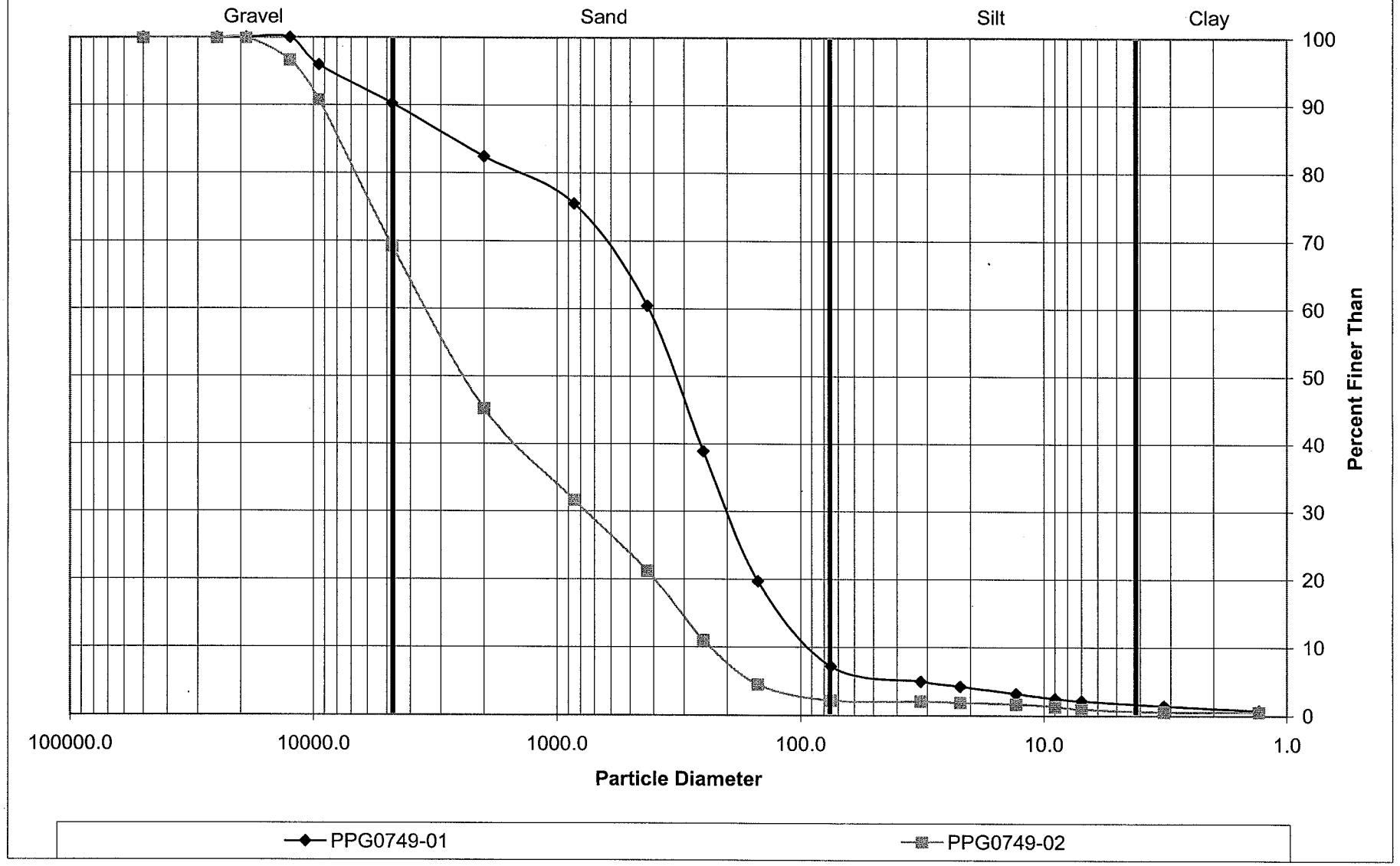
Percent Retained in Each Size Fraction

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
PPG0749-01	9.7	7.8	22.0	53.2	2.2	0.7	1.1	0.7	0.4	0.7	1.4
PPG0749-02	30.8	24.1	24.0	19.0	0.1	0.2	0.2	0.4	0.4	0.4	0.6

JQ22

ANALYTICAL RESOURCES INCORPORATED

Grain Size Distribution by Hydrometer



ANALYTICAL REPORT

Job Number: 580-3116-1

Job Description: PPG0749

For:
TestAmerica Analytical Testing Corp.
9405 SW Nimbus Ave
Beaverton, OR 97008

Attention: Howard Holmes

Tom Coyner
Project Manager I
tcoyner@stl-inc.com
07/27/2006

Project Manager: Tom Coyner

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

SAMPLE SUMMARY

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-3116-1	PPG0749-01	Solid	07/19/2006 0904	07/21/2006 1100
580-3116-2	PPG0749-02	Solid	07/19/2006 0955	07/21/2006 1100

SAMPLE RESULTS

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Client Sample ID: PPG0749-01

Lab Sample ID: 580-3116-1 Date Sampled: 07/19/2006 0904
Client Matrix: Solid % Moisture: 12.7 Date Received: 07/21/2006 1100

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

Method: 8270C Analysis Batch: 580-8355 Instrument ID: SEA023
Preparation: 3550B Prep Batch: 580-9255 Lab File ID: HP01970.D
Dilution: 1.0 Initial Weight/Volume: 20.0148 g
Date Analyzed: 07/26/2006 1245 Final Weight/Volume: 20 mL
Date Prepared: 07/26/2006 0726 Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Naphthalene		ND		5.7
2-Methylnaphthalene		9.9		5.7
1-Methylnaphthalene		ND		5.7
Acenaphthylene		ND		5.7
Acenaphthene		ND		5.7
Fluorene		5.9		5.7
Phenanthrene		44		5.7
Anthracene		6.2		5.7
Fluoranthene		66		5.7
Pyrene		68		5.7
Benzo[a]anthracene		40		5.7
Chrysene		72		5.7
Benzofluoranthene		59		11
Benzo[a]pyrene		48		5.7
Indeno[1,2,3-cd]pyrene		41		5.7
Dibenz(a,h)anthracene		11		5.7
Benzo[g,h,i]perylene		38		5.7
Bis(2-ethylhexyl) phthalate		690		23
Butyl benzyl phthalate		ND		23
Diethyl phthalate		ND		11
Dimethyl phthalate		ND		11
Di-n-butyl phthalate		23		23
Di-n-octyl phthalate		45		23

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	96	38 - 141
2-Fluorobiphenyl	96	42 - 140
Terphenyl-d14	85	42 - 151

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Client Sample ID: PPG0749-02

Lab Sample ID: 580-3116-2 Date Sampled: 07/19/2006 0955
Client Matrix: Solid % Moisture: 19.5 Date Received: 07/21/2006 1100

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

Method: 8270C Analysis Batch: 580-8355 Instrument ID: SEA023
Preparation: 3550B Prep Batch: 580-9255 Lab File ID: HP01973.D
Dilution: 1.0 Initial Weight/Volume: 20.4900 g
Date Analyzed: 07/26/2006 1354 Final Weight/Volume: 20 mL
Date Prepared: 07/26/2006 0726 Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Naphthalene		62		6.1
2-Methylnaphthalene		48		6.1
1-Methylnaphthalene		30		6.1
Acenaphthylene		11		6.1
Acenaphthene		73		6.1
Fluorene		88		6.1
Phenanthrene		700		6.1
Anthracene		110		6.1
Fluoranthene		740		6.1
Pyrene		680		6.1
Benzo[a]anthracene		390		6.1
Chrysene		570		6.1
Benzofluoranthene		450		12
Benzo[a]pyrene		490		6.1
Indeno[1,2,3-cd]pyrene		310		6.1
Dibenz(a,h)anthracene		87		6.1
Benzo[g,h,i]perylene		230		6.1
Bis(2-ethylhexyl) phthalate		3400		24
Butyl benzyl phthalate		320		24
Diethyl phthalate		ND		12
Dimethyl phthalate		36		12
Di-n-butyl phthalate		120		24
Di-n-octyl phthalate		320		24

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	93	38 - 141
2-Fluorobiphenyl	91	42 - 140
Terphenyl-d14	96	42 - 151

General Chemistry

Client Sample ID: PPG0749-01

Lab Sample ID: 580-3116-1 Date Sampled: 07/19/2006 0904
Client Matrix: Solid Date Received: 07/21/2006 1100

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Solids	87		%	0.10	1.0	PercentMoisture
	Anly Batch: 580-9232	Date Analyzed	07/25/2006 1356			
Percent Moisture	13		%	0.10	1.0	PercentMoisture
	Anly Batch: 580-9232	Date Analyzed	07/25/2006 1356			

Client Sample ID: PPG0749-02

Lab Sample ID: 580-3116-2 Date Sampled: 07/19/2006 0955
Client Matrix: Solid Date Received: 07/21/2006 1100

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Solids	81		%	0.10	1.0	PercentMoisture
	Anly Batch: 580-9232	Date Analyzed	07/25/2006 1356			
Percent Moisture	19		%	0.10	1.0	PercentMoisture
	Anly Batch: 580-9232	Date Analyzed	07/25/2006 1356			

DATA REPORTING QUALIFIERS

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Lab Section	Qualifier	Description
GC/MS Semi VOA		
	F	MS or MSD exceeds the control limits

QUALITY CONTROL RESULTS

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS Semi VOA				
Prep Batch: 580-9255				
LCS 580-9255/2-A	Lab Control Spike	Solid	3550B	
LCSD 580-9255/3-A	Lab Control Spike Duplicate	Solid	3550B	
MB 580-9255/1-A	Method Blank	Solid	3550B	
580-3116-1	PPG0749-01	Solid	3550B	
580-3116-1MS	Matrix Spike	Solid	3550B	
580-3116-1MSD	Matrix Spike Duplicate	Solid	3550B	
580-3116-2	PPG0749-02	Solid	3550B	
Analysis Batch:580-8355				
LCS 580-9255/2-A	Lab Control Spike	Solid	8270C	580-9255
LCSD 580-9255/3-A	Lab Control Spike Duplicate	Solid	8270C	580-9255
MB 580-9255/1-A	Method Blank	Solid	8270C	580-9255
580-3116-1	PPG0749-01	Solid	8270C	580-9255
580-3116-1MS	Matrix Spike	Solid	8270C	580-9255
580-3116-1MSD	Matrix Spike Duplicate	Solid	8270C	580-9255
580-3116-2	PPG0749-02	Solid	8270C	580-9255
General Chemistry				
Analysis Batch:580-9232				
580-3116-1	PPG0749-01	Solid	PercentMoisture	
580-3116-2	PPG0749-02	Solid	PercentMoisture	

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Method Blank - Batch: 580-9255

Method: 8270C
Preparation: 3550B

Lab Sample ID: MB 580-9255/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/26/2006 1051
Date Prepared: 07/26/2006 0726

Analysis Batch: 580-8355
Prep Batch: 580-9255
Units: ug/Kg

Instrument ID: SEA023
Lab File ID: HP01964.D
Initial Weight/Volume: 20 g
Final Weight/Volume: 20 mL
Injection Volume:

Analyte	Result	Qual	RL
Naphthalene	ND		5.0
2-Methylnaphthalene	ND		5.0
1-Methylnaphthalene	ND		5.0
Acenaphthylene	ND		5.0
Acenaphthene	ND		5.0
Fluorene	ND		5.0
Phenanthrene	ND		5.0
Anthracene	ND		5.0
Fluoranthene	ND		5.0
Pyrene	ND		5.0
Benzo[a]anthracene	ND		5.0
Chrysene	ND		5.0
Benzofluoranthene	ND		10
Benzo[a]pyrene	ND		5.0
Indeno[1,2,3-cd]pyrene	ND		5.0
Dibenz(a,h)anthracene	ND		5.0
Benzo[g,h,i]perylene	ND		5.0
Bis(2-ethylhexyl) phthalate	ND		20
Butyl benzyl phthalate	ND		20
Diethyl phthalate	ND		10
Dimethyl phthalate	ND		10
Di-n-butyl phthalate	ND		20
Di-n-octyl phthalate	ND		20

Surrogate	% Rec	Acceptance Limits
Nitrobenzene-d5	92	38 - 141
2-Fluorobiphenyl	97	42 - 140
Terphenyl-d14	116	42 - 151

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

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 580-9255

Method: 8270C
Preparation: 3550B

LCS Lab Sample ID: LCS 580-9255/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/26/2006 1005
Date Prepared: 07/26/2006 0726

Analysis Batch: 580-8355
Prep Batch: 580-9255
Units: ug/Kg

Instrument ID: SEA023
Lab File ID: HP01962.D
Initial Weight/Volume: 20 g
Final Weight/Volume: 20 mL
Injection Volume:

LCSD Lab Sample ID: LCSD 580-9255/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/26/2006 1028
Date Prepared: 07/26/2006 0726

Analysis Batch: 580-8355
Prep Batch: 580-9255
Units: ug/Kg

Instrument ID: SEA023
Lab File ID: HP01963.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	107	104	54 - 131	3	26		
2-Methylnaphthalene	98	97	51 - 138	2	27		
1-Methylnaphthalene	107	105	50 - 150	2	30		
Acenaphthylene	103	101	52 - 130	2	28		
Acenaphthene	104	102	50 - 144	2	27		
Fluorene	103	102	50 - 134	1	31		
Phenanthrene	106	106	55 - 133	0	28		
Anthracene	98	98	52 - 135	0	27		
Fluoranthene	97	97	54 - 135	1	36		
Pyrene	98	96	47 - 152	2	31		
Benzo[a]anthracene	101	104	55 - 135	3	27		
Chrysene	106	108	59 - 133	2	26		
Benzofluoranthene	49	51	43 - 154	4	31		
Benzo[a]pyrene	103	106	54 - 138	3	30		
Indeno[1,2,3-cd]pyrene	115	108	45 - 153	6	29		
Dibenz(a,h)anthracene	111	108	50 - 150	3	30		
Benzo[g,h,i]perylene	105	100	54 - 142	5	28		
Bis(2-ethylhexyl) phthalate	107	106	23 - 154	1	60		
Butyl benzyl phthalate	98	100	44 - 147	2	60		
Diethyl phthalate	72	68	51 - 135	5	26		
Dimethyl phthalate	98	98	52 - 133	0	60		
Di-n-butyl phthalate	95	94	43 - 144	0	60		
Di-n-octyl phthalate	100	101	40 - 148	1	31		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
Nitrobenzene-d5	98	96	38 - 141
2-Fluorobiphenyl	99	98	42 - 140
Terphenyl-d14	105	103	42 - 151

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

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-9255

Method: 8270C
Preparation: 3550B

MS Lab Sample ID:	580-3116-1	Analysis Batch:	580-8355	Instrument ID:	SEA023
Client Matrix:	Solid	Prep Batch:	580-9255	Lab File ID:	HP01971.D
Dilution:	1.0			Initial Weight/Volume:	20.2013 g
Date Analyzed:	07/26/2006 1308			Final Weight/Volume:	20 mL
Date Prepared:	07/26/2006 0726			Injection Volume:	

MSD Lab Sample ID:	580-3116-1	Analysis Batch:	580-8355	Instrument ID:	SEA023
Client Matrix:	Solid	Prep Batch:	580-9255	Lab File ID:	HP01972.D
Dilution:	1.0			Initial Weight/Volume:	20.3748 g
Date Analyzed:	07/26/2006 1331			Final Weight/Volume:	20 mL
Date Prepared:	07/26/2006 0726			Injection Volume:	

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Naphthalene	104	103	54 - 131	2	26		
2-Methylnaphthalene	99	97	51 - 138	3	27		
1-Methylnaphthalene	106	104	50 - 150	3	30		
Acenaphthylene	100	100	52 - 130	1	28		
Acenaphthene	109	100	50 - 144	9	27		
Fluorene	109	100	50 - 134	9	31		
Phenanthrene	164	107	55 - 133	40	28	F	F
Anthracene	86	94	52 - 135	7	27		
Fluoranthene	144	94	54 - 135	39	36	F	F
Pyrene	130	92	47 - 152	32	31		F
Benzo[a]anthracene	132	103	55 - 135	24	27		
Chrysene	133	100	59 - 133	26	26		
Benzofluoranthene	60	47	43 - 154	22	31		
Benzo[a]pyrene	130	99	54 - 138	25	30		
Indeno[1,2,3-cd]pyrene	107	87	45 - 153	21	29		
Dibenz(a,h)anthracene	96	87	50 - 150	11	30		
Benzo[g,h,i]perylene	88	75	54 - 142	16	28		
Bis(2-ethylhexyl) phthalate	95	101	23 - 154	2	60		
Butyl benzyl phthalate	104	108	44 - 147	3	60		
Diethyl phthalate	64	66	51 - 135	1	26		
Dimethyl phthalate	97	97	52 - 133	1	60		
Di-n-butyl phthalate	80	87	44 - 144	8	60		
Di-n-octyl phthalate	108	116	40 - 148	6	31		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Nitrobenzene-d5	97	95	38 - 141
2-Fluorobiphenyl	94	95	42 - 140
Terphenyl-d14	97	97	42 - 151

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

LOGIN SAMPLE RECEIPT CHECK LIST

Client: TestAmerica Analytical Testing Corp. Job Number: 580-3116-1

Login Number: 3116

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	