PBS | Engineering + Environmental

November 22, 2016

Jeremy Miller
Maintenance Manager
Department of Administrative Services
Enterprise Asset Management Division
1225 Ferry Street SE
Salem, Oregon 97301

Via email: Jeremy.W.MILLER@oregon.gov

Regarding: Drinking Water Sampling for Lead
Ford House
810 D Street
Salem, Oregon 97301
PBS Project #: 25103.003 Phase 0007

Dear Mr. Miller:

On October 11, 2016, PBS Engineering and Environmental Inc. (PBS) performed drinking water sampling at the Ford House located at 810 D Street in Salem, Oregon. The testing was requested by State of Oregon Department of Administrative Services in an effort to ensure that concentrations of lead in drinking water remain below the EPA action level.

Sampling methodology and the interpretation of laboratory results were based on the EPA Lead and Copper Rule (LCR). Following LCR sampling guidelines, PBS collected the first 1000 milliliters (mL) of water from each test location (first draw) early in the morning following an overnight stagnation period. The LCR's stagnation period, and sampling protocol specifying the first 1000 mL samples, is designed to maximize the likelihood that the highest concentrations of lead are identified in water used for consumption. At each sample location, immediately following first draw sampling, a flush sample was collected after the water had been allowed to run for 30 seconds.

The water sampling process was supervised by a certified industrial hygienist (CIH) who is also an Oregon Health Authority certified lead risk assessor.

The action level set by the EPA for lead is 15 parts per billion (ppb). If the action level is exceeded in more than 10 percent of taps sampled, then action must be taken to control plumbing-material corrosion.

One first draw and one flush drinking water samples were collected and delivered under chain of custody to BSK Laboratories in Vancouver, Washington for lead analysis. Only the first draw sample was analyzed. If the first draw sample had exceeded the EPA action level for lead, its associated flush sample would have been analyzed.

The lead concentration in the first draw sample was 3 ppb, indicating that this drinking water sample contained lead at a concentration below the EPA action level of 15 ppb.

The following table presents the first draw sample location and lead concentration in ppb.

4412 SW Corbett Avenue, Portland, OR 97239
503.248.1939 Main
866.727.0140 Fax
888.248.1939 Toll-Free
www.pbsenv.com

Bend | Boise | Coos Bay | Eugene | Portland | Seattle | Tri-Cities | Vancouver | Walla Walla

First Draw Drinking Water Sample Location and Lead Concentration

Sample Number	Sample Location	Lead Concentration (ppb)
SK-FOR-001-FD	Kitchen sink 1st Floor	3

ND: None Detected

Please refer to the attached Chain of Custody form and laboratory data for greater details. It should be noted that quality control (QC) sample results are included at the end of laboratory information. The QC samples are both laboratory blanks and spiked samples used internally by the laboratory to assess accuracy.

Please feel free to contact me at 503.417.7602 or derek.may@pbsenv.com with any questions or comments.

Sincerely,
PBS Engineering and Environmental Inc.

Derek May, Principal

Attachments: Laboratory Results
Chain of Custody Form

DM::bmp

BSK Associates Fresno
1414 Stanislaus St
Fresno, CA 93706
559-497-2888 (Main)
559-485-6935 (FAX)

A6J1819
10/25/2016

Derek May
PBS Environmental
4412 SW Corbett Ave
Portland, OR 97239

RE: Report for A6J1819 Oregon DAS - Lead

Dear Derek May,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 10/13/2016. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

If additional clarification of any information is required, please contact your Project Manager, Debra Karlsson , at 559-497-2888.

Thanks again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Debra Karlsson, Project Coordinator

Accredited in Accordance with NELAP
ORELAP #4021

BSK ASSOCIATES

Case Narrative

Project and Report Details		Invoice Details	
Client:	PBS Environmental	**Invoice To:**	PBS Environmental
Report To:	Derek May	**Invoice Attn:**	Accounts Payable
Project #:	Ford House #25103.003 PH 7	**Project PO#:**	-
Received:	10/13/2016 - 09:00		
Report Due:	10/27/2016		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt ºC: 20.2

Containers Intact
COC/Labels Agree
Received with no thermal preservation.
Sample(s) split after receipt at the laboratory.
Initial receipt at BSK-VAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

None applied

Report Distribution

Recipient(s)	Report Format	CC:
Derek May	FINAL.RPT	

Certificate of Analysis

Sample ID: A6J1819-01
Sampled By: Client
Sample Description: SK-FOR-001-FD // Kitchen sink 1st Floor

Sample Date - Time: 10/11/16 - 00:00
Matrix: Drinking Water
Sample Type: First Draw

BSK Associates Fresno

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Lead	EPA 200.8	**0.0030**	0.0010	mg/L	1	A614384	10/19/16	10/19/16	

BSK Associates Fresno

Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 200.8 - Quality Control											
Batch: A614384										Prepared: 10/19/2016	
Prep Method: EPA 200.2										Analyst: GNG	
Blank (A614384-BLK1)											
Lead	ND	0.0010	mg/L							10/19/16	
Blank Spike (A614384-BS1)											
Lead	0.098	0.0010	mg/L	0.10		98	85-115			10/19/16	
Blank Spike Dup (A614384-BSD1)											
Lead	0.098	0.0010	mg/L	0.10		98	85-115	0	20	10/19/16	
Matrix Spike (A614384-MS1), Source: A6J1785-21											
Lead	0.20	0.0020	mg/L	0.20	0.0029	101	70-130			10/19/16	
Matrix Spike (A614384-MS2), Source: A6J1750-01											
Lead	0.20	0.0020	mg/L	0.20	ND	100	70-130			10/19/16	
Matrix Spike Dup (A614384-MSD1), Source: A6J1785-21											
Lead	0.20	0.0020	mg/L	0.20	0.0029	99	70-130	1	20	10/19/16	
Matrix Spike Dup (A614384-MSD2), Source: A6J1750-01											
Lead	0.20	0.0020	mg/L	0.20	ND	102	70-130	2	20	10/19/16	

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method , all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	Picocuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent Recovered (surrogates)	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno			
State of California - ELAP	1180	State of Hawaii	4021
State of Nevada	CA000792016-1	State of Oregon - NELAP	4021
EPA - UCMR3	CA00079	State of Washington	C997-16
Sacramento			
State of California - ELAP	2435		
San Bernardino			
State of California - ELAP	2993	State of Oregon - NELAP	4119-001
Vancouver			
State of Oregon - NELAP	WA100008-008	State of Washington	C824-16

PBS | Engineering + Environmental

A6J1819
PBSEN1939

10/13/2016
10

OREGON DAS
[redacted]
LEAD IN DRINKING WATER TESTING PROGRAM

25103.003

FACILITY NAME: FORD HOUSE

PROJECT #: [redacted] PH 7

ANALYSIS REQUESTED:

- ☑ LEAD (PB) IN DRINKING WATER
- ☐ COPPER (CU) IN DRINKING WATER

DATE: 10/11/16

RELINQ'D BY/SIGNATURE: Mike Golden / [signature]

DATE/TIME: 10/12/16 1700

20.2° RECEIVED BY/SIGNATURE: Jenea Rangell

DATE/TIME: 10/13/16 0900

EMAIL RESULTS TO: derek.may@pbsenv.com

TURN AROUND TIME: 7-10 days

SAMPLE DATA FORM

LAB	SAMPLE #	BUILDING	ROOM	LOCATION IN ROOM	
1	SK-FOR-001-FD			Kitchen, 1st Floor, Kitchen	
2	SK-FOR-002-FL			Sink	

BSK Associates SR-FL-0002-16

A6J1819 10/13/2016
PBSEN1939 10

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 10°C	Yes No (NA)	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No (NA)	Were there bubbles in the VOA vials? (Volatiles Only)	Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	Yes (No)
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received — "—" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1	2				
Bacti $Na_2S_2O_3$	—	—						
None (P) White Cap	—	—						
Cr6 (P) Lt. Green Label/Blue Cap NH4OH(NH4)2SO4 **DW**	Cl, pH > 8	Y N						
Cr6 (P) Pink Label/Blue Cap NH4OH(NH4)2SO4 **WW**	pH 9.3-9.7	Y N						
Cr6 (P) Black Label/Blue Cap NH4OH(NH4)2SO4 **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	Y N						
HNO_3 (P) ~~Red Cap~~ Brown or HCl (P) Purple Cap/Lt. Blue Label	—	—	IC					
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	Y N						
NaOH (P) Green Cap	Cl, pH >10	Y N						
NaOH + ZnAc (P)	pH > 9	Y N						
Dissolved Oxygen 300ml (g)	—	—						
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—						
HCl (AG) Lt. Blue Label O&G, Diesel	—	—						
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—						
Na_2O_3S 250mL (AG) Neon Green Label 515	—	—						
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—						
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—						
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—						
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	Y N						
NH_4Cl (AG) Purple Label 552	—	—						
EDA (AG) Brown Label DBPs	—	—						
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—						
Buffer pH 4 (CG)	—	—						
H_3PO_4 (CG) Salmon Label	—	—						
Other:								
Asbestos 1Liter Plastic w/ Foil	—	—						
Low Level Hg / Metals Double Baggie	—	—						
Bottled Water	—	—						
Clear Glass 250mL / 500mL / 1 Liter	—	—						
Soil Tube Brass / Steel / Plastic	—	—						
Tedlar Bag / Plastic Bag	—	—						

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
(S) P	250*			S P			
S P				S P			

Comments

* Odd numbers only. RLR

Labeled by: _____ @ _____ Labels checked by: _____ @ _____ RUSH Paged by: _____

A6J1819

10142016

PBSEN1939

Turnaround: Standard
Due Date: 10/27/2016

PBS Environmental

Printed: 10/19/2016 10:55:01AM
Page 1 of 1

BSK Associates SR-FL-0002-16

A6J1819 10/13/2016
PBSEN1939 10

Sample Integrity

BSK Bottles: (Yes) No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 10°C	Yes No (NA)	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No (NA)	Were there bubbles in the VOA vials? (Volatiles Only)	Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	Yes (No)
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received

"|" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?					
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—					
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	Y N					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	Y N					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	Y N					
HNO_3 (P) Red Cap (Preserved) or HCl (P) Purple Cap/Lt. Blue Label	—	—	1C				
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	Y N					
NaOH (P) Green Cap	Cl, pH >10	Y N					
NaOH + ZnAc (P)	pH > 9	Y N					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—					
HCl (AG) Lt. Blue Label O&G, Diesel	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2O_3S 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	Y N					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—					
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Other:							
Asbestos 1Liter Plastic w/ Foil	—	—					
Low Level Hg / Metals Double Baggie	—	—					
Bottled Water	—	—					
Clear Glass 250mL / 500mL / 1 Liter	—	—					
Soil Tube Brass / Steel / Plastic	—	—					
Tedlar Bag / Plastic Bag	—	—					

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
(S) P	250*			S P			
S P				S P			

Comments

* Odd numbers only. RLR
all samples received 10/13/16

Labeled by: _____ @ _____ Labels checked by: _____ @ _____ RUSH Paged by: _____ @ _____