



ANALYTICAL REPORT

For:

OMI - Farmington - Animas River - Post plume

ASL Report #: P2904

Project ID: 402544.A6.16.00.00

Attn: Monica Peterson/FAR

cc:

Ron Rosen/FAR

Authorized and Released By:

Laboratory Project Manager

Doug Hardy

(541) 758-0235 ext.23107

August 24, 2015

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.



Accredited in accordance with NELAP:
Oregon (100022)
Louisiana (05031)

ASL Report #: P2904

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
P290401	APS#2 - 20150820-1	08/20/15 10:12	08/21/15
P290402	APS#2 - 20150820-2	08/20/15 10:23	08/21/15
P290403	APS#2 - 20150820-3	08/20/15 10:13	08/21/15

CASE NARRATIVE METALS ANALYSIS

Lab Name: CH2M HILL ASL

ASL SDG#: P2904

Project: OMI - Farmington

Project #: 402544.A6.16.00.00

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):

E200.7: E200.2, FLDFLT

E200.8: E200.2, FLDFLT

E245.1

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Client Sample ID: APS#2 - 20150820-1				Lab Sample ID: P290401			
Project Name: OMI - Farmington				Date Received: 08/21/15			
Sample Date: 08/20/15				Report Revision No: 0			
Sample Time: 10:12							
Type: Grab							
Matrix: Water							

Analyte	Dilution Factor	DL	RL	Result	Qual	Units	Analysis Method	Prep Method	Date Analyzed
Metals									
Antimony	1	0.031	0.50	0.34	J	ug/L	E200.8	E200.2	08/21/15
Arsenic	1	0.030	0.50	0.88		ug/L	E200.8	E200.2	08/21/15
Barium	1	0.25	2.00	82.2		ug/L	E200.8	E200.2	08/21/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	E200.2	08/24/15
Cadmium	1	0.030	0.50	0.064	J	ug/L	E200.8	E200.2	08/21/15
Chromium	1	0.10	1.00	0.48	J	ug/L	E200.8	E200.2	08/21/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	E200.2	08/21/15
Lead	1	0.041	0.50	3.09		ug/L	E200.8	E200.2	08/21/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	METHOD	08/21/15
Selenium	1	0.069	0.50	0.75		ug/L	E200.8	E200.2	08/21/15
Thallium	1	0.025	0.20	0.040	J	ug/L	E200.8	E200.2	08/21/15

U=Not detected at specified reporting limit
 J=Estimated value below reporting limit
 E=Estimated value above calibration range
 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Client Sample ID: APS#2 - 20150820-2				Lab Sample ID: P290402F			
Project Name: OMI - Farmington				Date Received: 08/21/15			
Sample Date: 08/20/15				Report Revision No: 0			
Sample Time: 10:23							
Type: Grab							
Matrix: Water							

Analyte	Dilution Factor	DL	RL	Result	Qual	Units	Analysis Method	Prep Method	Date Analyzed
Dissolved Metals									
Antimony	1	0.031	0.50	0.23	J	ug/L	E200.8	FLDFLT	08/21/15
Arsenic	1	0.030	0.50	0.77		ug/L	E200.8	FLDFLT	08/21/15
Barium	1	0.25	2.00	70.0		ug/L	E200.8	FLDFLT	08/21/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	FLDFLT	08/24/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/21/15
Chromium	1	0.10	1.00	0.26	J	ug/L	E200.8	FLDFLT	08/21/15
Copper	1	0.50	2.00	2.31		ug/L	E200.8	FLDFLT	08/21/15
Lead	1	0.041	0.50	0.13	J	ug/L	E200.8	FLDFLT	08/21/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	FLDFLT	08/21/15
Selenium	1	0.069	0.50	0.70		ug/L	E200.8	FLDFLT	08/21/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	FLDFLT	08/21/15

U=Not detected at specified reporting limit
 J=Estimated value below reporting limit
 E=Estimated value above calibration range
 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Method Blank ID: WB1-0821			
Sample Date: N/A				Date Received: N/A			
Sample Time: N/A				Report Revision No: 0			
Type: QC							
Matrix: Water							

Analyte	Dilution Factor	DL	RL	Result	Qual	Units	Analysis Method	Prep Method	Date Analyzed
Metals									
Antimony	1	0.031	0.50	0.50	U	ug/L	E200.8	E200.2	08/21/15
Arsenic	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/21/15
Barium	1	0.25	2.00	2.00	U	ug/L	E200.8	E200.2	08/21/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	E200.2	08/24/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/21/15
Chromium	1	0.10	1.00	1.00	U	ug/L	E200.8	E200.2	08/21/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	E200.2	08/21/15
Lead	1	0.041	0.50	0.50	U	ug/L	E200.8	E200.2	08/21/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	METHOD	08/21/15
Selenium	1	0.069	0.50	0.50	U	ug/L	E200.8	E200.2	08/21/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	E200.2	08/21/15

U=Not detected at specified reporting limit
 J=Estimated value below reporting limit
 E=Estimated value above calibration range
 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information		Lab Information	
Project Name: OMI - Farmington		Method Blank ID: WB10-0821	
Sample Date: N/A		Date Received: N/A	
Sample Time: N/A		Report Revision No: 0	
Type: QC			
Matrix: Water			

Analyte	Dilution Factor	DL	RL	Result	Qual	Units	Analysis Method	Prep Method	Date Analyzed
Dissolved Metals									
Antimony	1	0.031	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/21/15
Arsenic	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/21/15
Barium	1	0.25	2.00	0.30	J	ug/L	E200.8	FLDFLT	08/21/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/21/15
Chromium	1	0.10	1.00	1.00	U	ug/L	E200.8	FLDFLT	08/21/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	FLDFLT	08/21/15
Lead	1	0.041	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/21/15
Selenium	1	0.069	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/21/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	FLDFLT	08/21/15

U=Not detected at specified reporting limit
 J=Estimated value below reporting limit
 E=Estimated value above calibration range
 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information					Lab Information				
Project Name: OMI - Farmington					Method Blank ID: WB10-0824				
Sample Date: N/A					Date Received: N/A				
Sample Time: N/A					Report Revision No: 0				
Type: QC									
Matrix: Water									

Analyte	Dilution Factor	DL	RL	Result	Qual	Units	Analysis Method	Prep Method	Date Analyzed
Metals									
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	E200.2	08/24/15

U=Not detected at specified reporting limit
 J=Estimated value below reporting limit
 E=Estimated value above calibration range
 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Blank Spike ID: BS10W0821			
Type: QC				Report Revision No: 0			
Matrix: Water				Dilution Factor: 1			

Analyte	Spike Amount	Result	Units	%Recovery	Analysis Method	Prep Method	Date Analyzed
Metals							
Antimony	20.0	19.8	ug/L	99	E200.8	FLDFLT	08/21/15
Arsenic	20.0	19.3	ug/L	97	E200.8	FLDFLT	08/21/15
Barium	20.0	19.8	ug/L	99	E200.8	FLDFLT	08/21/15
Cadmium	20.0	19.6	ug/L	98	E200.8	FLDFLT	08/21/15
Chromium	20.0	19.8	ug/L	99	E200.8	FLDFLT	08/21/15
Copper	20.0	19.2	ug/L	96	E200.8	FLDFLT	08/21/15
Lead	20.0	19.7	ug/L	99	E200.8	FLDFLT	08/21/15
Selenium	20.0	19.5	ug/L	98	E200.8	FLDFLT	08/21/15
Thallium	20.0	19.7	ug/L	99	E200.8	FLDFLT	08/21/15

*=See case narrative

U=Not detected at specified reporting limit

E=Estimated value above calibration range

J=Estimated value below reporting limit

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information	Lab Information
Project Name: OMI - Farmington Type: QC Matrix: Water	Blank Spike ID: BS10W0824 Report Revision No: 0 Dilution Factor: 1

Analyte	Spike Amount	Result	Units	%Recovery	Analysis Method	Prep Method	Date Analyzed
Metals							
Beryllium	1000	1010	ug/L	101	E200.7	E200.2	08/24/15

*=See case narrative

U=Not detected at specified reporting limit

E=Estimated value above calibration range

J=Estimated value below reporting limit

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Blank Spike ID: BS1W0821			
Type: QC				Report Revision No: 0			
Matrix: Water				Dilution Factor: 1			

Analyte	Spike Amount	Result	Units	%Recovery	Analysis Method	Prep Method	Date Analyzed
Metals							
Antimony	50.0	48.3	ug/L	97	E200.8	E200.2	08/21/15
Arsenic	50.0	49.4	ug/L	99	E200.8	E200.2	08/21/15
Barium	50.0	48.8	ug/L	98	E200.8	E200.2	08/21/15
Beryllium	500	519	ug/L	104	E200.7	E200.2	08/24/15
Cadmium	50.0	50.0	ug/L	100	E200.8	E200.2	08/21/15
Chromium	50.0	50.1	ug/L	100	E200.8	E200.2	08/21/15
Copper	50.0	45.2	ug/L	90	E200.8	E200.2	08/21/15
Lead	50.0	49.0	ug/L	98	E200.8	E200.2	08/21/15
Mercury	1.00	0.91	ug/L	91	E245.1	METHOD	08/21/15
Selenium	50.0	49.7	ug/L	99	E200.8	E200.2	08/21/15
Thallium	50.0	50.3	ug/L	101	E200.8	E200.2	08/21/15

*=See case narrative

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E=Estimated value above calibration range

J=Estimated value below reporting limit

CASE NARRATIVE GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL

ASL SDG#: P2904

Project: OMI - Farmington

Project #: 402544.A6.16.00.00

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Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

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Method(s):

E335.4

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Lab Batch ID: P2904			
Date Received: 08/21/15				Analysis Method: E335.4			
Type: See C.O.C.				Units: mg/L			
Matrix: Water				Report Revision No.: 0			

Client Sample ID	Lab Sample ID	Dilution Factor	DL	Cyanide, Total RL	Result	Qualifier	Date Analyzed
General Chemistry							
APS#2 - 20150820-3	P290403	1	0.0015	0.0050	0.0050	U	08/24/15
WB1-082415	WB1-082415	1	0.0015	0.0050	0.0050	U	08/24/15

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 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Lab Batch ID: P2904			
Type: QC				Report Revision No.: 0			
Matrix: Water							

LCS ID	Analyte	Spike Amount	Sample Result	Units	% Recovery	Analysis Method	Date Analyzed
General Chemistry							
BS1W0824	Cyanide, Total	0.10	0.093	mg/L	93	E335.4	08/24/15

*=See case narrative

U=Not detected at specified reporting limit

E=Estimated value above calibration range

J=Estimated value below reporting limit



SDG ID: P2904

Date Received: 8/21/2015

Client/Project: OMI Farmington

Received By: PC

Were custody seals intact and on the outside of the cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Shipping Record:	<input type="checkbox"/> Hand Delivered	<input checked="" type="checkbox"/> On File	<input type="checkbox"/> COC
Radiological Screening for DoD	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Packing Material:	<input type="checkbox"/> Hand Delivered	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice <input type="checkbox"/> Box
Temp OK? (<6C) Therm ID: TH173 Exp. 10/15	3.5 °C	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Was a Chain of Custody (CoC) Provided?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Was the CoC correctly filled out (If No, document below)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Did sample labels agree with COC? (If No, document below)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Did the CoC list a correct bottle count and the preservative types (No=Correct on CoC)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Were the sample containers in good condition (broken or leaking)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Was enough sample volume provided for analysis? (If No, document below)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Containers supplied by ASL?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Any sample with < 1/2 holding time remaining? If so contact LPM	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Samples have multi-phase? If yes, document on SRER	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
All water VOCs free of air bubbles? No, document on SRER	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
pH of all samples met criteria on receipt? If "No", preserve and document below.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Dissolved/Soluble metals filtered in the field?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Dissolved/Soluble metals have sediment in bottom of container? If so document below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A

Preservation Adjustment

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials/Time	24 hour pH check Initials/Time

Did pH of all metals samples preserved upon receipt meet criteria 24 hours after preservation? Yes No

Sample Exception Report (The following exceptions were noted)

Client was notified on: _____ Client contact: _____
<u>Resolution to Exception:</u>