



ANALYTICAL REPORT

For:
OMI - Farmington

ASL Report #: P2864
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 19, 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 #: P2864

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
P286401	APS#2 - 20150817-1	08/17/15 12:41	08/18/15
P286402	APS#2 - 20150817-2	08/17/15 12:49	08/18/15
P286403	APS#2 - 20150817-3	08/17/15 12:43	08/18/15

CASE NARRATIVE METALS ANALYSIS

Lab Name: CH2M HILL ASL

ASL SDG#: P2864

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):

E200.8: E200.2, FLDFLT

E245.1

E200.7: E200.2, FLDFLT

Matrix Spike/Matrix Spike Duplicate(s):

E200.8: MS recovery of barium (57%) in sample APS#2 - 20150817-2 (P286402F) did not meet acceptance criteria of 70-130%.

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Client Sample ID: APS#2 - 20150817-1				Lab Sample ID: P286401			
Project Name: OMI - Farmington				Date Received: 08/18/15			
Sample Date: 08/17/15				Report Revision No: 0			
Sample Time: 12:41							
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	0.33	J	ug/L	E200.8	E200.2	08/18/15
Arsenic	1	0.030	0.50	0.73		ug/L	E200.8	E200.2	08/18/15
Barium	1	0.25	2.00	83.8		ug/L	E200.8	E200.2	08/18/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	E200.2	08/18/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Chromium	1	0.10	1.00	0.27	J	ug/L	E200.8	E200.2	08/18/15
Copper	1	0.50	2.00	0.90	J	ug/L	E200.8	E200.2	08/18/15
Lead	1	0.041	0.50	3.01		ug/L	E200.8	E200.2	08/18/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	METHOD	08/18/15
Selenium	1	0.069	0.50	0.65		ug/L	E200.8	E200.2	08/18/15
Thallium	1	0.025	0.20	0.027	J	ug/L	E200.8	E200.2	08/18/15

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 - 20150817-2				Lab Sample ID: P286402F			
Project Name: OMI - Farmington				Date Received: 08/18/15			
Sample Date: 08/17/15				Report Revision No: 0			
Sample Time: 12:49							
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	0.21	J	ug/L	E200.8	FLDFLT	08/18/15
Arsenic	1	0.030	0.50	0.56		ug/L	E200.8	FLDFLT	08/18/15
Barium	1	0.25	2.00	81.2		ug/L	E200.8	FLDFLT	08/18/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	FLDFLT	08/18/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	08/18/15
Chromium	1	0.10	1.00	0.15	J	ug/L	E200.8	FLDFLT	08/18/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	FLDFLT	08/18/15
Lead	1	0.041	0.50	0.18	J	ug/L	E200.8	FLDFLT	08/18/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	FLDFLT	08/18/15
Selenium	1	0.069	0.50	0.68		ug/L	E200.8	FLDFLT	08/18/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	FLDFLT	08/18/15

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 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: WB1-0818			
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	08/18/15
Arsenic	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Barium	1	0.25	2.00	2.00	U	ug/L	E200.8	E200.2	08/18/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	E200.2	08/18/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Chromium	1	0.10	1.00	1.00	U	ug/L	E200.8	E200.2	08/18/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	E200.2	08/18/15
Lead	1	0.041	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	METHOD	08/18/15
Selenium	1	0.069	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	E200.2	08/18/15

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 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: WB10-0818			
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	0.21	J	ug/L	E200.8	E200.2	08/18/15
Arsenic	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Barium	1	0.25	2.00	2.00	U	ug/L	E200.8	E200.2	08/18/15
Beryllium	1	0.50	4.00	4.00	U	ug/L	E200.7	E200.2	08/18/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Chromium	1	0.10	1.00	1.00	U	ug/L	E200.8	E200.2	08/18/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	E200.2	08/18/15
Lead	1	0.041	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Selenium	1	0.069	0.50	0.50	U	ug/L	E200.8	E200.2	08/18/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	E200.2	08/18/15

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 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: BS10W0818			
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	18.8	ug/L	94	E200.8	E200.2	08/18/15
Arsenic	20.0	18.8	ug/L	94	E200.8	E200.2	08/18/15
Barium	20.0	18.6	ug/L	93	E200.8	E200.2	08/18/15
Beryllium	1000	1040	ug/L	104	E200.7	E200.2	08/18/15
Cadmium	20.0	18.6	ug/L	93	E200.8	E200.2	08/18/15
Chromium	20.0	18.8	ug/L	94	E200.8	E200.2	08/18/15
Copper	20.0	18.5	ug/L	93	E200.8	E200.2	08/18/15
Lead	20.0	19.4	ug/L	97	E200.8	E200.2	08/18/15
Selenium	20.0	19.1	ug/L	96	E200.8	E200.2	08/18/15
Thallium	20.0	19.0	ug/L	95	E200.8	E200.2	08/18/15

*=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: BS1W0818			
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	45.7	ug/L	91	E200.8	E200.2	08/18/15
Arsenic	50.0	48.7	ug/L	97	E200.8	E200.2	08/18/15
Barium	50.0	48.9	ug/L	98	E200.8	E200.2	08/18/15
Beryllium	286	303	ug/L	106	E200.7	E200.2	08/18/15
Cadmium	50.0	48.6	ug/L	97	E200.8	E200.2	08/18/15
Chromium	50.0	49.3	ug/L	99	E200.8	E200.2	08/18/15
Copper	50.0	45.3	ug/L	91	E200.8	E200.2	08/18/15
Lead	50.0	48.6	ug/L	97	E200.8	E200.2	08/18/15
Mercury	1.00	1.00	ug/L	100	E245.1	METHOD	08/18/15
Selenium	50.0	49.0	ug/L	98	E200.8	E200.2	08/18/15
Thallium	50.0	50.2	ug/L	100	E200.8	E200.2	08/18/15

*=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#: P2864

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.

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Method(s):

E335.4

Matrix Spike/Matrix Spike Duplicate(s):

E335.4: No MS/MSD performed.

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Lab Batch ID: P2864			
Date Received: 08/18/15				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 - 20150817-3	P286403	1	0.0015	0.0050	0.0022	J	08/19/15
WB1-081915	WB1-081915	1	0.0015	0.0050	0.0050	U	08/19/15

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CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Lab Batch ID: P2864			
Type: QC				Report Revision No.: 0			
Matrix: Water							

LCS ID	Analyte	Spike Amount	Sample Result	Units	% Recovery	Analysis Method	Date Analyzed
General Chemistry							
BS1W0819	Cyanide, Total	0.10	0.10	mg/L	102	E335.4	08/19/15

*=See case narrative
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 J=Estimated value below reporting limit

Chain of Custody Record

1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330
(541) 768-3120

Client Contact		Preservation Used				Analysis Turnaround Time			Analysis Requested			For Lab Use Only:		
Project Name: Animas River - Post plume Project # or PO #: 402644 Company Name: CH2M - Farmington Address: 615 S. Carlton Ave. City/State/Zip: Farmington, NM 87401 Project Manager: Monica Peterson Phone #: 505-325-6963 - 505-793-0040 Report to email: Monica.Peterson@ch2m.com		1, 4	1, 4	1, 5		TAT is Calendar days TAT if different from below <input type="checkbox"/> 21 days (STD) <input type="checkbox"/> 14 days * <input type="checkbox"/> 7 days * <input type="checkbox"/> 5 days * <input checked="" type="checkbox"/> 3 day * <input type="checkbox"/> 2 days * <input type="checkbox"/> 1 day * *(Surcharges will apply)			Total Metals: Be, Cr, Pb, Se, Tl, Hg, Cu Dissolved Metals: Be, Sp, As, Ba, Cd, Cr, Pb, Se, Tl, Hg, Cu	Sample Specific Notes: Lab ID:		Custody Seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hand delivered? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Cooler Temp: 1.10°C Therm ID No: 173 Therm Exp: 1/15 Packing Material: Circle Below <input checked="" type="checkbox"/> Ice Blue Ice Box Bubble Wrap Radiological Screen? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
APS#2, Upstream Boat Access - 20150817-1 APS#2, Upstream Boat Access - 20150817-2 APS#2, Upstream Boat Access - 20150817-3	Sample Date 8/17/2015 8/17/15 8/17/15	Sample Time 1241 1249 1243	Sample Type (C=Comp, G=Grab) G G G	Matrix (Water, Soil, Air) Water Water Water	Total # of Cont. 1 1 1									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are samples hazardous? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, select hazard(s): <input type="checkbox"/> Listed <input type="checkbox"/> Ignitable <input type="checkbox"/> Corrosive <input type="checkbox"/> Reactive <input type="checkbox"/> Toxic If YES or NO is not checked above, samples will be assumed hazardous and hazardous disposal fees will be applied.														
Sampled By: Marsha Englehart Received by:		Date/Time: 8-17-15 @ 1249 Date/Time:		Relinquished by: Marsha Englehart Relinquished by:		Date/Time: 8-17-15 @ 1600 Date/Time:		Shipped Via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> Fed-Ex <input type="checkbox"/> USPS <input type="checkbox"/> Other Tracking #: 7811 6882 5659		Sample Disposal (A fee may be added if samples are retained longer than 30 day per client request, samples are returned to client, or classified as hazardous.) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for 1 months				



SDG ID: P2864

Date Received: 8/18/2015

Client/Project: OMI Farmington

Received By: PC

Were custody seals intact and on the outside of the cooler? Yes No N/A

Shipping Record: Hand Delivered On File COC

Radiological Screening for DoD Yes No N/A

Packing Material: Hand Delivered Ice Blue Ice Box

Temp OK? (<6C) Therm ID: TH173 Exp. 1.6 °C Yes No N/A

Was a Chain of Custody (CoC) Provided? Yes No N/A

Was the CoC correctly filled out (If No, document below) Yes No N/A

Did sample labels agree with COC? (If No, document below) Yes No N/A

Did the CoC list a correct bottle count and the preservative types (No=Correct on CoC) Yes No N/A

Were the sample containers in good condition (broken or leaking)? Yes No N/A

Was enough sample volume provided for analysis? (If No, document below) Yes No N/A

Containers supplied by ASL? Yes No N/A

Any sample with < 1/2 holding time remaining? If so contact LPM Yes No N/A

Samples have multi-phase? If yes, document on SRER Yes No N/A

All water VOCs free of air bubbles? No, document on SRER Yes No N/A

pH of all samples met criteria on receipt? If "No", preserve and document below. Yes No N/A

Dissolved/Soluble metals filtered in the field? Yes No N/A

Dissolved/Soluble metals have sediment in bottom of container? If so document below. Yes No 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: _____

Resolution to Exception: