



ANALYTICAL REPORT

For:

OMI - Farmington - Farmer's Ditch - Post plume

ASL Report #: P2996

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

September 03, 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 #: P2996

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
P299601	Farmer's Ditch	09/01/15 11:14	09/02/15
P299602	Farmer's Ditch	09/01/15 11:13	09/02/15

CASE NARRATIVE METALS ANALYSIS

Lab Name: CH2M HILL ASL

ASL SDG#: P2996

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

Matrix Spike/Matrix Spike Duplicate(s):

E200.8: MS/MSD recovery of total antimony (43%/44%) in sample Farmer's Ditch (P299601) did not meet acceptance criteria of 70-130%.

Analytical Exception(s):

E200.8: The pH of dissolved sample Farmer's Ditch (P299601F) was found to be greater than two upon receipt; the pH of the sample was adjusted to less than two following ASL SOP MET12. In order to meet client requested TAT, digestion and analysis of the sample proceeded before the 24 hour holding time had expired.

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Client Sample ID: Farmer's Ditch				Lab Sample ID: P299601			
Project Name: OMI - Farmington				Date Received: 09/02/15			
Sample Date: 09/01/15				Report Revision No: 0			
Sample Time: 11:14							
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	0.37	J	ug/L	E200.8	E200.2	09/02/15
Arsenic	1	0.030	0.50	2.27		ug/L	E200.8	E200.2	09/02/15
Barium	1	0.25	2.00	201		ug/L	E200.8	E200.2	09/02/15
Beryllium	1	0.025	0.50	0.37	J	ug/L	E200.8	E200.2	09/02/15
Cadmium	1	0.030	0.50	0.27	J	ug/L	E200.8	E200.2	09/02/15
Chromium	1	0.10	1.00	3.91		ug/L	E200.8	E200.2	09/02/15
Copper	1	0.50	2.00	7.76		ug/L	E200.8	E200.2	09/02/15
Lead	1	0.041	0.50	13.7		ug/L	E200.8	E200.2	09/02/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	METHOD	09/02/15
Selenium	1	0.069	0.50	0.83		ug/L	E200.8	E200.2	09/02/15
Thallium	1	0.025	0.20	0.12	J	ug/L	E200.8	E200.2	09/02/15

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: Farmer's Ditch				Lab Sample ID: P299601F			
Project Name: OMI - Farmington				Date Received: 09/02/15			
Sample Date: 09/01/15				Report Revision No: 0			
Sample Time: 11:14							
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	0.34	J	ug/L	E200.8	FLDFLT	09/02/15
Arsenic	1	0.030	0.50	0.93		ug/L	E200.8	FLDFLT	09/02/15
Barium	1	0.25	2.00	111		ug/L	E200.8	FLDFLT	09/02/15
Beryllium	1	0.025	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Chromium	1	0.10	1.00	0.51	J	ug/L	E200.8	FLDFLT	09/02/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	FLDFLT	09/02/15
Lead	1	0.041	0.50	0.28	J	ug/L	E200.8	FLDFLT	09/02/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	FLDFLT	09/02/15
Selenium	1	0.069	0.50	0.63		ug/L	E200.8	FLDFLT	09/02/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	FLDFLT	09/02/15

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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				Method Blank ID: WB1-0902			
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	0.044	J	ug/L	E200.8	E200.2	09/02/15
Arsenic	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	09/02/15
Barium	1	0.25	2.00	2.00	U	ug/L	E200.8	E200.2	09/02/15
Beryllium	1	0.025	0.50	0.50	U	ug/L	E200.8	E200.2	09/02/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	E200.2	09/02/15
Chromium	1	0.10	1.00	1.00	U	ug/L	E200.8	E200.2	09/02/15
Copper	1	0.50	2.00	0.60	J	ug/L	E200.8	E200.2	09/02/15
Lead	1	0.041	0.50	0.50	U	ug/L	E200.8	E200.2	09/02/15
Mercury	1	0.045	0.10	0.10	U	ug/L	E245.1	METHOD	09/02/15
Selenium	1	0.069	0.50	0.50	U	ug/L	E200.8	E200.2	09/02/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	E200.2	09/02/15

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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: WB10-0902			
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	0.19	J	ug/L	E200.8	FLDFLT	09/02/15
Arsenic	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Barium	1	0.25	2.00	2.00	U	ug/L	E200.8	FLDFLT	09/02/15
Beryllium	1	0.025	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Cadmium	1	0.030	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Chromium	1	0.10	1.00	1.00	U	ug/L	E200.8	FLDFLT	09/02/15
Copper	1	0.50	2.00	2.00	U	ug/L	E200.8	FLDFLT	09/02/15
Lead	1	0.041	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Selenium	1	0.069	0.50	0.50	U	ug/L	E200.8	FLDFLT	09/02/15
Thallium	1	0.025	0.20	0.20	U	ug/L	E200.8	FLDFLT	09/02/15

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 *=See case narrative

CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Blank Spike ID: BS10W0902			
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	20.0	ug/L	100	E200.8	FLDFLT	09/02/15
Arsenic	20.0	20.0	ug/L	100	E200.8	FLDFLT	09/02/15
Barium	20.0	20.4	ug/L	102	E200.8	FLDFLT	09/02/15
Beryllium	20.0	20.2	ug/L	101	E200.8	FLDFLT	09/02/15
Cadmium	20.0	20.2	ug/L	101	E200.8	FLDFLT	09/02/15
Chromium	20.0	20.0	ug/L	100	E200.8	FLDFLT	09/02/15
Copper	20.0	19.9	ug/L	100	E200.8	FLDFLT	09/02/15
Lead	20.0	20.1	ug/L	100	E200.8	FLDFLT	09/02/15
Selenium	20.0	20.2	ug/L	101	E200.8	FLDFLT	09/02/15
Thallium	20.0	20.3	ug/L	101	E200.8	FLDFLT	09/02/15

*=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: BS1W0902			
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	47.6	ug/L	95	E200.8	E200.2	09/02/15
Arsenic	50.0	50.3	ug/L	101	E200.8	E200.2	09/02/15
Barium	50.0	51.7	ug/L	103	E200.8	E200.2	09/02/15
Beryllium	50.0	50.4	ug/L	101	E200.8	E200.2	09/02/15
Cadmium	50.0	50.3	ug/L	101	E200.8	E200.2	09/02/15
Chromium	50.0	50.7	ug/L	101	E200.8	E200.2	09/02/15
Copper	50.0	48.0	ug/L	96	E200.8	E200.2	09/02/15
Lead	50.0	50.1	ug/L	100	E200.8	E200.2	09/02/15
Mercury	1.00	0.98	ug/L	98	E245.1	METHOD	09/02/15
Selenium	50.0	50.2	ug/L	100	E200.8	E200.2	09/02/15
Thallium	50.0	51.8	ug/L	104	E200.8	E200.2	09/02/15

*=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#: P2996

Project: OMI - Farmington

Project #: 402544.A6.16.00.00

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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: P2996			
Date Received: 09/02/15				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							
Farmer's Ditch	P299602	1	0.0015	0.0050	0.0050	U	09/03/15
WB1-090215	WB1-090215	1	0.0015	0.0050	0.0050	U	09/03/15

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CH2M HILL Applied Sciences Laboratory (ASL)

Client Information				Lab Information			
Project Name: OMI - Farmington				Lab Batch ID: P2996			
Type: QC				Report Revision No.: 0			
Matrix: Water							

LCS ID	Analyte	Spike Amount	Sample Result	Units	% Recovery	Analysis Method	Date Analyzed
General Chemistry							
BS1W0902	Cyanide, Total	0.10	0.10	mg/L	102	E335.4	09/03/15

*=See case narrative

U=Not detected at specified reporting limit

E=Estimated value above calibration range

J=Estimated value below reporting limit



SDG ID: P2996

Date Received: 9/2/2015

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	1.0°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 type="checkbox"/> Yes	<input checked="" 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 type="checkbox"/> Yes	<input checked="" 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
Sample -01dMET1	HNO3	15037D/E5/15/20	250ul	JVP/1113	

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)

1. Sample -01dMET1 taken before 24hr pH check due to 1 day TAT.

Client was notified on: _____ Client contact: _____

Resolution to Exception: