Investigation of Arsenic in Sediment and Biota of Waiakea Pond, Hilo, Hawaii

(Appendices E-H: Laboratory Reports)

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Prepared by:

John Peard and Roger Brewer

Hazard Evaluation and Emergency Response Office

Hawaii Department of Health

Forward

This document presents sediment and biota data collected in association with arsenic contamination in Waiakea Pond in Hilo, Hawaii, by the Department of Health between 2013 and 2015. This document will be updated as additional assessment of the data is carried out in the future.

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
99-193 Aiea Heights Drive, Suite 121
Aiea, HI 96701
Tel: 808-486-5227

TestAmerica Job ID: HWH0120
Client Project/Site: [none]
Client Project Description: Waiakea Pond

For:
Department of Health, HEER Office
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814

Attn: John Peard

Authorized for release by:
9/23/2013 2:58:34 PM

Kristie Reilly, Project Manager
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Qualifiers

TTAC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Job ID: HWH0120

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was 3 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Laboratory: TestAmerica Seattle

Narrative

Receipt
The samples were received on 9/3/2013 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperatures of the 2 coolers at receipt time were 4.3º C and 5.6º C.

Metals - Method 6010B:
The matrix duplicate %RPD for As associated with analysis batch 145469 was outside the control limits due to non homogeneity of the sample. The result has been "F" qualified and reported.
No other analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Sample Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWH0120-01	WP-DU1 (0-4)	Solid/Soil	08/28/13 18:00	08/30/13 12:15
HWH0120-02	WP-DU1 (4-8)	Solid/Soil	08/28/13 18:00	08/30/13 12:15
HWH0120-03	WP-DU1 (8-12)	Solid/Soil	08/28/13 18:00	08/30/13 12:15
HWH0120-04	WP-DU2 (0-4)	Solid/Soil	08/27/13 18:00	08/30/13 12:15
HWH0120-05	WP-DU2 (4-8)	Solid/Soil	08/27/13 18:00	08/30/13 12:15
HWH0120-06	WP-DU2 (8-12)	Solid/Soil	08/27/13 18:00	08/30/13 12:15
HWH0120-07	WP-DU5 (0-4)	Solid/Soil	08/23/13 18:00	08/30/13 12:15
HWH0120-08	WP-DU5 (4-8)	Solid/Soil	08/23/13 18:00	08/30/13 12:15
HWH0120-09	WP-DU5 (8-12)	Solid/Soil	08/23/13 18:00	08/30/13 12:15

Detection Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Client Sample ID: WP-DU1 (0-4) — Lab Sample ID: HWH0120-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	240		12		mg/Kg	20		6010B	Total
Iron	35000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU1 (4-8) — Lab Sample ID: HWH0120-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	290		12		mg/Kg	20		6010B	Total
Iron	39000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU1 (8-12) — Lab Sample ID: HWH0120-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	210		11		mg/Kg	20		6010B	Total
Iron	37000		38		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU2 (0-4) — Lab Sample ID: HWH0120-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	870		12		mg/Kg	20		6010B	Total
Iron	32000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU2 (4-8) — Lab Sample ID: HWH0120-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	380		11		mg/Kg	20		6010B	Total
Iron	38000		38		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU2 (8-12) — Lab Sample ID: HWH0120-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	350		12		mg/Kg	20		6010B	Total
Iron	43000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU5 (0-4) — Lab Sample ID: HWH0120-07

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	50		12		mg/Kg	20		6010B	Total
Iron	44000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU5 (4-8) — Lab Sample ID: HWH0120-08

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	170		11		mg/Kg	20		6010B	Total
Iron	43000		38		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU5 (8-12) — Lab Sample ID: HWH0120-09

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	300		11		mg/Kg	20		6010B	Total
Iron	41000		36		mg/Kg	20		6010B	Total

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Client Sample ID: WP-DU1 (0-4)

Lab Sample ID: HWH0120-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	240		12		mg/Kg		09/19/13 15:40	09/20/13 09:08	20
Iron	35000		39		mg/Kg		09/19/13 15:40	09/20/13 09:08	20

Client Sample ID: WP-DU1 (4-8)

Lab Sample ID: HWH0120-02
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	290		12		mg/Kg		09/19/13 15:40	09/20/13 10:32	20
Iron	39000		39		mg/Kg		09/19/13 15:40	09/20/13 10:32	20

Client Sample ID: WP-DU1 (8-12)

Lab Sample ID: HWH0120-03
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	210		11		mg/Kg		09/19/13 15:40	09/20/13 10:36	20
Iron	37000		38		mg/Kg		09/19/13 15:40	09/20/13 10:36	20

Client Sample ID: WP-DU2 (0-4)

Lab Sample ID: HWH0120-04
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	870		12		mg/Kg		09/19/13 15:40	09/20/13 10:39	20
Iron	32000		39		mg/Kg		09/19/13 15:40	09/20/13 10:39	20

Client Sample ID: WP-DU2 (4-8)

Lab Sample ID: HWH0120-05
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	380		11		mg/Kg		09/19/13 15:40	09/20/13 10:42	20
Iron	38000		38		mg/Kg		09/19/13 15:40	09/20/13 10:42	20

Client Sample ID: WP-DU2 (8-12)

Lab Sample ID: HWH0120-06
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	350		12		mg/Kg		09/19/13 15:40	09/20/13 10:46	20
Iron	43000		39		mg/Kg		09/19/13 15:40	09/20/13 10:46	20

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Client Sample ID: WP-DU5 (0-4)

Lab Sample ID: HWH0120-07
Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	50		12		mg/Kg		09/19/13 15:40	09/20/13 10:49	20
Iron	44000		39		mg/Kg		09/19/13 15:40	09/20/13 10:49	20

Client Sample ID: WP-DU5 (4-8)

Lab Sample ID: HWH0120-08
Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	170		11		mg/Kg		09/19/13 15:40	09/20/13 10:52	20
Iron	43000		38		mg/Kg		09/19/13 15:40	09/20/13 10:52	20

Client Sample ID: WP-DU5 (8-12)

Lab Sample ID: HWH0120-09
Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	300		11		mg/Kg		09/19/13 15:40	09/20/13 10:55	20
Iron	41000		36		mg/Kg		09/19/13 15:40	09/20/13 10:55	20

QC Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Method: 6010B - Metals (ICP)

Lab Sample ID: 145469-1 — **Client Sample ID: Method Blank**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 144803 — **Prep Batch: 144803_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		09/19/13 15:40	09/20/13 08:53	1
Iron	ND		10		mg/Kg		09/19/13 15:40	09/20/13 08:53	1

Lab Sample ID: 145469-2 — **Client Sample ID: Lab Control Sample**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 144803 — **Prep Batch: 144803_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	199		mg/Kg		100	80 - 120
Iron	1100	1150		mg/Kg		104	80 - 120

Lab Sample ID: 145469-3 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 144803 — **Prep Batch: 144803_P**

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	196		mg/Kg		98	80 - 120	2	20
Iron	1100	1150		mg/Kg		105	80 - 120	1	20

Lab Sample ID: 401131D — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 144803 — **Prep Batch: 144803_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	240		39.4	227	4	mg/Kg		-31	80 - 120	13	20
Iron	35000		217	36000	4	mg/Kg		269	80 - 120	3	20

Lab Sample ID: 401131S — **Client Sample ID: Matrix Spike**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 144803 — **Prep Batch: 144803_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	240		39.6	199	4	mg/Kg		-102	80 - 120
Iron	35000		218	34900	4	mg/Kg		-225	80 - 120

Lab Sample ID: 401131X — **Client Sample ID: Duplicate**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 144803 — **Prep Batch: 144803_P**

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
Arsenic	240		182	F	mg/Kg		27	20
Iron	35000		36500		mg/Kg		3	20

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

TTAC

Analysis Batch: 144803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
145469-1	Method Blank	Total	Soil	6010B	144803_P
145469-2	Lab Control Sample	Total	Soil	6010B	144803_P
145469-3	Lab Control Sample Dup	Total	Soil	6010B	144803_P
401131D	Matrix Spike Duplicate	Total	Soil	6010B	144803_P
401131S	Matrix Spike	Total	Soil	6010B	144803_P
401131X	Duplicate	Total	Soil	6010B	144803_P
HWH0120-01	WP-DU1 (0-4)	Total	Solid/Soil	6010B	144803_P
HWH0120-02	WP-DU1 (4-8)	Total	Solid/Soil	6010B	144803_P
HWH0120-03	WP-DU1 (8-12)	Total	Solid/Soil	6010B	144803_P
HWH0120-04	WP-DU2 (0-4)	Total	Solid/Soil	6010B	144803_P
HWH0120-05	WP-DU2 (4-8)	Total	Solid/Soil	6010B	144803_P
HWH0120-06	WP-DU2 (8-12)	Total	Solid/Soil	6010B	144803_P
HWH0120-07	WP-DU5 (0-4)	Total	Solid/Soil	6010B	144803_P
HWH0120-08	WP-DU5 (4-8)	Total	Solid/Soil	6010B	144803_P
HWH0120-09	WP-DU5 (8-12)	Total	Solid/Soil	6010B	144803_P

Prep Batch: 144803_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
145469-1	Method Blank	Total	Soil	3050B	
145469-2	Lab Control Sample	Total	Soil	3050B	
145469-3	Lab Control Sample Dup	Total	Soil	3050B	
401131D	Matrix Spike Duplicate	Total	Soil	3050B	
401131S	Matrix Spike	Total	Soil	3050B	
401131X	Duplicate	Total	Soil	3050B	
HWH0120-01	WP-DU1 (0-4)	Total	Solid/Soil	3050B	
HWH0120-02	WP-DU1 (4-8)	Total	Solid/Soil	3050B	
HWH0120-03	WP-DU1 (8-12)	Total	Solid/Soil	3050B	
HWH0120-04	WP-DU2 (0-4)	Total	Solid/Soil	3050B	
HWH0120-05	WP-DU2 (4-8)	Total	Solid/Soil	3050B	
HWH0120-06	WP-DU2 (8-12)	Total	Solid/Soil	3050B	
HWH0120-07	WP-DU5 (0-4)	Total	Solid/Soil	3050B	
HWH0120-08	WP-DU5 (4-8)	Total	Solid/Soil	3050B	
HWH0120-09	WP-DU5 (8-12)	Total	Solid/Soil	3050B	

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Client Sample ID: WP-DU1 (0-4)

Lab Sample ID: HWH0120-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 09:08	HJM	Test

Client Sample ID: WP-DU1 (4-8)

Lab Sample ID: HWH0120-02
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:32	HJM	Test

Client Sample ID: WP-DU1 (8-12)

Lab Sample ID: HWH0120-03
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:36	HJM	Test

Client Sample ID: WP-DU2 (0-4)

Lab Sample ID: HWH0120-04
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:39	HJM	Test

Client Sample ID: WP-DU2 (4-8)

Lab Sample ID: HWH0120-05
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:42	HJM	Test

Client Sample ID: WP-DU2 (8-12)

Lab Sample ID: HWH0120-06
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:46	HJM	Test

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Client Sample ID: WP-DU5 (0-4)

Lab Sample ID: HWH0120-07

Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:49	HJM	Test

Client Sample ID: WP-DU5 (4-8)

Lab Sample ID: HWH0120-08

Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:52	HJM	Test

Client Sample ID: WP-DU5 (8-12)

Lab Sample ID: HWH0120-09

Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			144803_P	09/19/13 15:40		Test
Total	Analysis	6010B		20	144803	09/20/13 10:55	HJM	Test

Laboratory References:

Test = TestAmerica Tacoma, , ,

Certification Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Method Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWH0120

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)		Test

Protocol References:

Laboratory References:

Test = TestAmerica Tacoma, , ,

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

HWH0120

TestAmerica
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Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: John Peard	Site Contact: J. Peard	Date: 8/29/13	COC No: 1
Your Company Name here HDOH/HEER	Tel/Fax:	Lab Contact: Krutia Reilly	Carrier:	1 of 1 COCs
Address 1582 Kamehameha Ave	Analysis Turnaround Time			Sampler:
City/State/Zip Hilo, HI 96720	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx Phone 808.933-9921	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: Waiakea Pond	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Total As (<2mm)	Total Fe (<2mm)	Bioaccessible As	Total Fe (<250um)	Sample Specific Notes:
WP-DU1 (0-4")	8/26/13	6:00pm	MIS	S	1			X	X	X	X	Only test
WP-DU1 (4-8")	8/26/13	6:00pm	"	"	1			X	X	X	X	For bioaccessible
WP-DU1 (8-12")	8/26/13	6:00pm	"	"	1			X	X	X	X	As (& total Fe) in
WP-DU2 (0-4")	8/27/13	6:00pm	"	"	1			X	X	X	X	<250um fraction
WP-DU2 (4-8")	8/27/13	6:00pm	"	"	1			X	X	X	X	if total As >24mg/kg
WP-DU2 (8-12")	8/27/13	6:00pm	"	"	1			X	X	X	X	in <2mm fraction
WP-DU5 (0-4")	8/23/13	6:00pm	"	"	1			X	X	X	X	-07
WP-DU5 (4-8")	8/23/13	6:00pm	"	"	1			X	X	X	X	-08
WP-DU5 (8-12")	8/23/13	6:00pm	"	"	1			X	X	X	X	-09

Preservation Used: 1= Ice, 2= HCL, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Sediment samples. Process using MIS protocol
*See attached notes
* Bioaccessible arsenic fraction only if total As in <2mm fraction >24mg/kg
Include total As for <250um fraction. Also report total iron for <250um fraction.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by: John Peard	Company: HDOH-HEER Office	Date/Time: 8/29/13 10:00 AM	Received by: [signature]	Company: TA Hon	Date/Time: 8/30/13 1215
Relinquished by:	Company:	Date/Time:	Received by: [signature]	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Sediment Processing Procedure Request for HEER Office samples (WP-DU samples):

- Air Dry each bulk sample (in 1 gallon zip locks) on large clean tray.
- Sieve each bulk sample to <2mm particle size (virtually all should pass through this screen but may be some grass or few rocks)
- MIS sub-sample each (dried and sieved to <2mm) bulk sample for a 10 gram total arsenic and total iron analysis. Report results in mg/kg.
- For samples where total arsenic in <2mm particle size exceeds 24 mg/kg: Sieve rest of each entire bulk sample to the <250 micron particle size, and subsample for Bioaccessible Arsenic analysis per SBRC bioaccessibilty testing method. Please include total arsenic analysis of the <250 micron size fraction (per method), and also total iron (Fe) in the < 250 micron particle size.
- Please report: total arsenic (and total FE), and % arsenic bioaccessibility, and bioaccessible arsenic concentration (mg/kg) in <250 micron fraction.

If any questions on this procedure (before processing samples) please call John Peard, Hilo HEER Office, at 808-933-9921 (office) or 808-960-0080 (cell).

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Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: KDOW Date/ Time Received: 8/30/13 1215

Received By: JL

Matrices: Soil Carrier: Fedex Airbill# : 8037 2108 7478

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	☐
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Gel
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: 3 °C

Comments/ Sampling Handling Notes:

Hold for possible PDET Analysis JL 8/30/13

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
1946 Young St. Suite 400A
Honolulu, HI 96826
Tel: 808-486-5227

TestAmerica Job ID: HWI0023
Client Project/Site: [none]
Client Project Description: Waiakea Pond

For:
Department of Health, HEER Office
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814

Attn: John Peard

Authorized for release by:
9/27/2013 7:28:37 AM

Kristie Reilly, Project Manager
808-486-5227
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Qualifiers

Metals

Qualifier	Qualifier Description
F	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
F	MS/MSD Recovery and/or RPD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Job ID: HWI0023

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was -2 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Samples were prepared in accordance with the State of Hawai'i Department of Health Office of Hazard Evaluation and Emergency Response's Technical Guidance Manual for the Implementation of the Hawai`i State Contingency Plan 2009 edition Laboratory Preparation of Multi-Increment Samples.

Laboratory: TestAmerica Seattle

Narrative

Receipt
The samples were received on 9/7/2013 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.3º C and 5.1º C.

Metals - Method(s) 6010B:
The matrix duplicate %RPD for As associated with analysis batch 145469 was outside the control limits due to non homogeneity of the sample. The result has been "F" qualified and reported.

The matrix spike (MS) recovery for analysis batch 145906 was outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria. The result has been qualified "F" and reported.

No other analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted.

Sample Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWI0023-01	WP-DU3 (0-4 IN)	Solid/Soil	08/28/13 18:00	09/05/13 13:30
HWI0023-02	WP-DU3 (4-8 IN)	Solid/Soil	08/28/13 18:00	09/05/13 13:30
HWI0023-03	WP-DU3 (8-12 IN)	Solid/Soil	08/28/13 18:00	09/05/13 13:30
HWI0023-04	WP-DU4 (0-4 IN)	Solid/Soil	08/29/13 18:00	09/05/13 13:30
HWI0023-05	WP-DU4 (4-8 IN)	Solid/Soil	08/29/13 18:00	09/05/13 13:30
HWI0023-06	WP-DU4 (8-12 IN)	Solid/Soil	08/29/13 18:00	09/05/13 13:30

Detection Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Client Sample ID: WP-DU3 (0-4 IN) — Lab Sample ID: HWI0023-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	160		12		mg/Kg	20		6010B	Total/NA
Iron	43000		40		mg/Kg	20		6010B	Total/NA

Client Sample ID: WP-DU3 (4-8 IN) — Lab Sample ID: HWI0023-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	160		12		mg/Kg	20		6010B	Total/NA
Iron	42000		39		mg/Kg	20		6010B	Total/NA

Client Sample ID: WP-DU3 (8-12 IN) — Lab Sample ID: HWI0023-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	180		12		mg/Kg	20		6010B	Total/NA
Iron	49000		40		mg/Kg	20		6010B	Total/NA

Client Sample ID: WP-DU4 (0-4 IN) — Lab Sample ID: HWI0023-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	100		11		mg/Kg	20		6010B	Total/NA
Iron	48000		38		mg/Kg	20		6010B	Total/NA

Client Sample ID: WP-DU4 (4-8 IN) — Lab Sample ID: HWI0023-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	150		12		mg/Kg	20		6010B	Total/NA
Iron	49000		39		mg/Kg	20		6010B	Total/NA

Client Sample ID: WP-DU4 (8-12 IN) — Lab Sample ID: HWI0023-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	140		12		mg/Kg	20		6010B	Total/NA
Iron	51000		39		mg/Kg	20		6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Client Sample ID: WP-DU3 (0-4 IN)

Lab Sample ID: HWI0023-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	160		12		mg/Kg		09/19/13 15:40	09/20/13 11:32	20
Iron	43000		40		mg/Kg		09/19/13 15:40	09/20/13 11:32	20

Client Sample ID: WP-DU3 (4-8 IN)

Lab Sample ID: HWI0023-02
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	160		12		mg/Kg		09/19/13 15:40	09/20/13 11:36	20
Iron	42000		39		mg/Kg		09/19/13 15:40	09/20/13 11:36	20

Client Sample ID: WP-DU3 (8-12 IN)

Lab Sample ID: HWI0023-03
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	180		12		mg/Kg		09/19/13 15:40	09/20/13 11:39	20
Iron	49000		40		mg/Kg		09/19/13 15:40	09/20/13 11:39	20

Client Sample ID: WP-DU4 (0-4 IN)

Lab Sample ID: HWI0023-04
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	100		11		mg/Kg		09/19/13 15:40	09/20/13 11:42	20
Iron	48000		38		mg/Kg		09/19/13 15:40	09/20/13 11:42	20

Client Sample ID: WP-DU4 (4-8 IN)

Lab Sample ID: HWI0023-05
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	150		12		mg/Kg		09/19/13 15:40	09/20/13 11:46	20
Iron	49000		39		mg/Kg		09/19/13 15:40	09/20/13 11:46	20

Client Sample ID: WP-DU4 (8-12 IN)

Lab Sample ID: HWI0023-06
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	140		12		mg/Kg		09/25/13 14:57	09/26/13 10:34	20
Iron	51000		39		mg/Kg		09/25/13 14:57	09/26/13 10:34	20

QC Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 580-145384/24-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145469 — **Prep Batch: 145384**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		09/19/13 15:40	09/20/13 08:53	1
Iron	ND		10		mg/Kg		09/19/13 15:40	09/20/13 08:53	1

Lab Sample ID: LCS 580-145384/25-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145469 — **Prep Batch: 145384**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	199		mg/Kg		100	80 - 120
Iron	1100	1150		mg/Kg		104	80 - 120

Lab Sample ID: LCSD 580-145384/26-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145469 — **Prep Batch: 145384**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	196		mg/Kg		98	80 - 120	2	20
Iron	1100	1150		mg/Kg		105	80 - 120	1	20

Lab Sample ID: 580-40113-A-1-D MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145469 — **Prep Batch: 145384**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	240		39.6	199	4	mg/Kg		-102	80 - 120
Iron	35000		218	34900	4	mg/Kg		-225	80 - 120

Lab Sample ID: 580-40113-A-1-E MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145469 — **Prep Batch: 145384**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	240		39.4	227	4	mg/Kg		-31	80 - 120	13	20
Iron	35000		217	36000	4	mg/Kg		269	80 - 120	3	20

Lab Sample ID: 580-40113-A-1-C DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145469 — **Prep Batch: 145384**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	240		182	F	mg/Kg		27	20
Iron	35000		36500		mg/Kg		3	20

Lab Sample ID: MB 580-145829/21-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		09/25/13 14:57	09/26/13 10:20	1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 580-145829/21-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		10		mg/Kg		09/25/13 14:57	09/26/13 10:20	1

Lab Sample ID: LCS 580-145829/22-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	192		mg/Kg		96	80 - 120
Iron	1100	1140		mg/Kg		104	80 - 120

Lab Sample ID: LCSD 580-145829/23-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	190		mg/Kg		95	80 - 120	1	20
Iron	1100	1130		mg/Kg		103	80 - 120	0	20

Lab Sample ID: 580-40180-6 MS — **Client Sample ID: HWI0023-06**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	140		38.9	172	F	mg/Kg		74	80 - 120
Iron	51000		214	50800	4	mg/Kg		-232	80 - 120

Lab Sample ID: 580-40180-6 MSD — **Client Sample ID: HWI0023-06**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	140		38.6	177		mg/Kg		88	80 - 120	3	20
Iron	51000		212	51400	4	mg/Kg		57	80 - 120	1	20

Lab Sample ID: 580-40180-6 DU — **Client Sample ID: HWI0023-06**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 145906 — **Prep Batch: 145829**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	140		146		mg/Kg		2	20
Iron	51000		50000		mg/Kg		3	20

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Metals

Leach Batch: 144803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40113-A-1-C DU	Duplicate	Total/NA	Solid	Increm, Prep	
580-40113-A-1-D MS	Matrix Spike	Total/NA	Solid	Increm, Prep	
580-40113-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	Increm, Prep	

Leach Batch: 144904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40180-6 DU	HWI0023-06	Total/NA	Solid	Increm, Prep	
580-40180-6 MS	HWI0023-06	Total/NA	Solid	Increm, Prep	
580-40180-6 MSD	HWI0023-06	Total/NA	Solid	Increm, Prep	
HWI0023-01	WP-DU3 (0-4 IN)	Total/NA	Solid/Soil	Increm, Prep	
HWI0023-02	WP-DU3 (4-8 IN)	Total/NA	Solid/Soil	Increm, Prep	
HWI0023-03	WP-DU3 (8-12 IN)	Total/NA	Solid/Soil	Increm, Prep	
HWI0023-04	WP-DU4 (0-4 IN)	Total/NA	Solid/Soil	Increm, Prep	
HWI0023-05	WP-DU4 (4-8 IN)	Total/NA	Solid/Soil	Increm, Prep	
HWI0023-06	WP-DU4 (8-12 IN)	Total/NA	Solid/Soil	Increm, Prep	

Prep Batch: 145384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40113-A-1-C DU	Duplicate	Total/NA	Solid	3050B	144803
580-40113-A-1-D MS	Matrix Spike	Total/NA	Solid	3050B	144803
580-40113-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	3050B	144803
HWI0023-01	WP-DU3 (0-4 IN)	Total/NA	Solid/Soil	3050B	144904
HWI0023-02	WP-DU3 (4-8 IN)	Total/NA	Solid/Soil	3050B	144904
HWI0023-03	WP-DU3 (8-12 IN)	Total/NA	Solid/Soil	3050B	144904
HWI0023-04	WP-DU4 (0-4 IN)	Total/NA	Solid/Soil	3050B	144904
HWI0023-05	WP-DU4 (4-8 IN)	Total/NA	Solid/Soil	3050B	144904
LCS 580-145384/25-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 580-145384/26-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 580-145384/24-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 145469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40113-A-1-C DU	Duplicate	Total/NA	Solid	6010B	145384
580-40113-A-1-D MS	Matrix Spike	Total/NA	Solid	6010B	145384
580-40113-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	6010B	145384
HWI0023-01	WP-DU3 (0-4 IN)	Total/NA	Solid/Soil	6010B	145384
HWI0023-02	WP-DU3 (4-8 IN)	Total/NA	Solid/Soil	6010B	145384
HWI0023-03	WP-DU3 (8-12 IN)	Total/NA	Solid/Soil	6010B	145384
HWI0023-04	WP-DU4 (0-4 IN)	Total/NA	Solid/Soil	6010B	145384
HWI0023-05	WP-DU4 (4-8 IN)	Total/NA	Solid/Soil	6010B	145384
LCS 580-145384/25-A	Lab Control Sample	Total/NA	Solid	6010B	145384
LCSD 580-145384/26-A	Lab Control Sample Dup	Total/NA	Solid	6010B	145384
MB 580-145384/24-A	Method Blank	Total/NA	Solid	6010B	145384

Prep Batch: 145829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40180-6 DU	HWI0023-06	Total/NA	Solid	3050B	144904
580-40180-6 MS	HWI0023-06	Total/NA	Solid	3050B	144904
580-40180-6 MSD	HWI0023-06	Total/NA	Solid	3050B	144904
HWI0023-06	WP-DU4 (8-12 IN)	Total/NA	Solid/Soil	3050B	144904
LCS 580-145829/22-A	Lab Control Sample	Total/NA	Solid	3050B	

Metals (Continued)

Prep Batch: 145829 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 580-145829/23-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 580-145829/21-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 145906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40180-6 DU	HWI0023-06	Total/NA	Solid	6010B	145829
580-40180-6 MS	HWI0023-06	Total/NA	Solid	6010B	145829
580-40180-6 MSD	HWI0023-06	Total/NA	Solid	6010B	145829
HWI0023-06	WP-DU4 (8-12 IN)	Total/NA	Solid/Soil	6010B	145829
LCS 580-145829/22-A	Lab Control Sample	Total/NA	Solid	6010B	145829
LCSD 580-145829/23-A	Lab Control Sample Dup	Total/NA	Solid	6010B	145829
MB 580-145829/21-A	Method Blank	Total/NA	Solid	6010B	145829

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Client Sample ID: WP-DU3 (0-4 IN)

Lab Sample ID: HWI0023-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Increm, Prep			144904	09/13/13 16:06	HJM	TAL SEA
Total/NA	Prep	3050B			145384	09/19/13 15:40	PAB	TAL SEA
Total/NA	Analysis	6010B		20	145469	09/20/13 11:32	HJM	TAL SEA

Client Sample ID: WP-DU3 (4-8 IN)

Lab Sample ID: HWI0023-02
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Increm, Prep			144904	09/13/13 16:06	HJM	TAL SEA
Total/NA	Prep	3050B			145384	09/19/13 15:40	PAB	TAL SEA
Total/NA	Analysis	6010B		20	145469	09/20/13 11:36	HJM	TAL SEA

Client Sample ID: WP-DU3 (8-12 IN)

Lab Sample ID: HWI0023-03
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Increm, Prep			144904	09/13/13 16:06	HJM	TAL SEA
Total/NA	Prep	3050B			145384	09/19/13 15:40	PAB	TAL SEA
Total/NA	Analysis	6010B		20	145469	09/20/13 11:39	HJM	TAL SEA

Client Sample ID: WP-DU4 (0-4 IN)

Lab Sample ID: HWI0023-04
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Increm, Prep			144904	09/13/13 16:06	HJM	TAL SEA
Total/NA	Prep	3050B			145384	09/19/13 15:40	PAB	TAL SEA
Total/NA	Analysis	6010B		20	145469	09/20/13 11:42	HJM	TAL SEA

Client Sample ID: WP-DU4 (4-8 IN)

Lab Sample ID: HWI0023-05
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Increm, Prep			144904	09/13/13 16:06	HJM	TAL SEA
Total/NA	Prep	3050B			145384	09/19/13 15:40	PAB	TAL SEA
Total/NA	Analysis	6010B		20	145469	09/20/13 11:46	HJM	TAL SEA

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Client Sample ID: WP-DU4 (8-12 IN)

Lab Sample ID: HWI0023-06

Date Collected: 08/29/13 18:00

Matrix: Solid/Soil

Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Increm, Prep			144904	09/13/13 16:06	HJM	TAL SEA
Total/NA	Prep	3050B			145829	09/25/13 14:57	PAB	TAL SEA
Total/NA	Analysis	6010B		20	145906	09/26/13 10:34	HJM	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-14
California	NELAP	9	01115CA	01-31-14
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-13
USDA	Federal		P330-11-00222	05-20-14
Washington	State Program	10	C553	02-17-14

Method Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0023

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL SEA

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

TestAmerica
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TestAmerica Laboratories, Inc.

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other:

Client Contact			
Your Company Name here	HDOH/HEER	Project Manager: John Pennd	Site Contact: J. Pennd
Address	1582 Kamehameha Ave.	Tel/Fax:	Lab Contact: Kristie Reilly
City/State/Zip	Hilo, HI 96720	Analysis Turnaround Time	Date: 9/4/13
(xxx) xxx-xxxx	Phone 808 933-9921	☐ CALENDAR DAYS ☐ WORKING DAYS	Carrier:
(xxx) xxx-xxxx	FAX	TAT if different from Below _____	COC No: 1
Project Name:	Whiskey Pond	☑ 2 weeks	1 of 1 COCs
Site:		☐ 1 week	Sampler:
P O #		☐ 2 days	For Lab Use Only:
		☐ 1 day	Walk-in Client:
			Lab Sampling:
			Job / SDG No.:
			HWI0023

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2 mm)	Total Fe (<2 mm)	*Bioaccessible As	Total Fe (<250 µm)	Sample Specific Notes:
WP-DU3 (0-4 in.)	8/28/13	6:00 PM	MIS	Sed	1			X	X	X	X	Only test for -01
WP-DU3 (4-8 in.)	8/28/13	6:00 PM	"	Sed	1			X	X	X	X	Bioaccessible As -02
WP-DU3 (8-12 in.)	8/28/13	6:00 PM	"	Sed	1			X	X	X	X	(& Total Fe) in -03
WP-DU4 (0-4 in.)	8/28/13	6:00 PM	"	Sed	1			X	X	X	X	<250 µm Fraction -04
WP-DU4 (4-8 in.)	8/28/13	6:00 PM	"	Sed	1			X	X	X	X	if total As >24 mg/kg -05
WP-DU4 (8-12 in.)	8/28/13	6:00 PM	"	Sed	1			X	X	X	X	in <2 mm Fraction -06

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☐Disposal by Lab ☐Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Sediment Samples. Process using MIS protocol.
* See Attached notes
* Bioaccessible Arsenic analysis only if total Arsenic <2mm fraction >24 mg/kg
Total As should be included for <250 µm Fraction (if Bioaccessible run). Also report Total Fe for <250 µm Fraction (if >10 As).

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____		
Relinquished by: Kevin Kelly	Company: Tetra Tech	Date/Time: 9/4/13 1145	Received by: [signature]	Company: TA Lab	Date/Time: 9/5/13 1330
Relinquished by:	Company:	Date/Time:	Received by: Brent Dig Rec -2	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

ORIGIN ID:ITOA (808) 831-6600
TETRA TECH EM INC GOVT
737 BISHOP ST STE 3010
HONOLULU, HI 968139297
UNITED STATES US

SHIP DATE: 04SEP13
ACTWGT: 65.4 LB
CAD: /POS1400
DIMS: 24x14x15 IN
DRY ICE: 4.0 KGS
BILL SENDER

TO KRISTIE
TEST AMERICA
1946 YOUNG ST
STE 400A
HONOLULU HI 96826
(808) 486-5227
INV:
PO:
REF:
DEPT:

FedEx Express

J1811130212012 6

TRK# 8037 2108 9459

THU - 05 SEP PM
PRIORITY OVERNIGHT
ICE
96826
HI-US HNL

97 HIKA

FedEx Express NEW Package US Airbill

FedEx Tracking Number 8037 2108 9459

1 From
Date 9-4-13
Sender's Name Kurt Kelly Phone 808 941-6600
Company Tetra Tech
Address 737 Bishop St. Suite 3010
City Honolulu State HI ZIP 96813

2 Your Internal Billing Reference

3 To
Recipient's Name Kristie Phone 808 486-5227
Company Test America
Address 1946 Young St. Suite 400A
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Dept./Floor/Suite/Room
Address
Use this line for the HOLD location address or for additional address info.
City Honolulu State HI ZIP 96826

HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.
HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

4 Express Package Service
NOTE: ...
Next ...
FedEx Earliest ...
FedEx Morning ...
FedEx Priority ...
FedEx Standard ...

5 Packaging
FedEx ...

6 Special Handling
SATURDAY ...
No Signature ...
Does this ...
No
Dangerous goods (including dry ice)

7 Payment Bill to:
Sender Acct. No. in Section 1 will be billed
Recipient
Third Party
Credit Card
Cash/Check
Enter FedEx Acct. No. or Credit Card No. below.
Obtain recip. Acct. No.
Credit Card Auth.

Total Packages
Total Weight 65 lb.

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644

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Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: DOH MEER Date/ Time Received: 9/5/13 1330

Received By: N

Matrices: Soil Carrier: fedex Airbill# :

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	☐
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Dry Ice
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present: ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: -2 °C

Comments/ Sampling Handling Notes:

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
1946 Young St. Suite 400A
Honolulu, HI 96826
Tel: 808-486-5227

TestAmerica Job ID: HWI0039
Client Project/Site: [none]
Client Project Description: Waiakea Pond

For:
Department of Health, HEER Office
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814

Attn: John Peard

Kristie Reilly

Authorized for release by:
9/27/2013 10:25:15 AM

Kristie Reilly, Project Manager
808-486-5227
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Qualifiers

TTAC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Job ID: HWI0039

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was -2.2 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Samples were prepared in accordance with the State of Hawai'i Department of Health Office of Hazard Evaluation and Emergency Response's Technical Guidance Manual for the Implementation of the Hawai`i State Contingency Plan 2009 edition Laboratory Preparation of Multi-Increment Samples.

Laboratory: TestAmerica Seattle

Narrative

Receipt
The samples were received on 9/12/2013 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperatures of the 2 coolers at receipt time were 0.4º C and 1.0º C.

Metals
No analytical or quality issues were noted.

General Chemistry
No analytical or quality issues were noted

Sample Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWI0039-01	WP-DU-6 (0-4 IN)	Solid/Soil	09/03/13 18:00	09/10/13 14:02
HWI0039-02	WP-DU-6 (4-8 IN)	Solid/Soil	09/03/13 18:00	09/10/13 14:02
HWI0039-03	WP-DU-6 (8-12 IN)	Solid/Soil	09/03/13 18:00	09/10/13 14:02
HWI0039-04	WP-DU-7 (0-4 IN)	Solid/Soil	09/04/13 18:00	09/10/13 14:02
HWI0039-05	WP-DU-7 (4-8 IN)	Solid/Soil	09/04/13 18:00	09/10/13 14:02
HWI0039-06	WP-DU-7 (8-12 IN)	Solid/Soil	09/04/13 18:00	09/10/13 14:02

Detection Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Client Sample ID: WP-DU-6 (0-4 IN) — Lab Sample ID: HWI0039-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	250		11		mg/Kg	20		6010B	Total
Iron	32000		38		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU-6 (4-8 IN) — Lab Sample ID: HWI0039-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	320		12		mg/Kg	20		6010B	Total
Iron	34000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU-6 (8-12 IN) — Lab Sample ID: HWI0039-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	310		12		mg/Kg	20		6010B	Total
Iron	36000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU-7 (0-4 IN) — Lab Sample ID: HWI0039-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	270		12		mg/Kg	20		6010B	Total
Iron	34000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU-7 (4-8 IN) — Lab Sample ID: HWI0039-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	300		12		mg/Kg	20		6010B	Total
Iron	35000		39		mg/Kg	20		6010B	Total

Client Sample ID: WP-DU-7 (8-12 IN) — Lab Sample ID: HWI0039-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	320		11		mg/Kg	20		6010B	Total
Iron	36000		38		mg/Kg	20		6010B	Total

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Client Sample ID: WP-DU-6 (0-4 IN)

Lab Sample ID: HWI0039-01
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	250		11		mg/Kg		09/25/13 17:08	09/26/13 19:40	20
Iron	32000		38		mg/Kg		09/25/13 17:08	09/26/13 19:40	20

Client Sample ID: WP-DU-6 (4-8 IN)

Lab Sample ID: HWI0039-02
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	320		12		mg/Kg		09/25/13 17:08	09/26/13 20:08	20
Iron	34000		39		mg/Kg		09/25/13 17:08	09/26/13 20:08	20

Client Sample ID: WP-DU-6 (8-12 IN)

Lab Sample ID: HWI0039-03
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	310		12		mg/Kg		09/25/13 17:08	09/26/13 20:11	20
Iron	36000		39		mg/Kg		09/25/13 17:08	09/26/13 20:11	20

Client Sample ID: WP-DU-7 (0-4 IN)

Lab Sample ID: HWI0039-04
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	270		12		mg/Kg		09/25/13 17:08	09/26/13 20:15	20
Iron	34000		39		mg/Kg		09/25/13 17:08	09/26/13 20:15	20

Client Sample ID: WP-DU-7 (4-8 IN)

Lab Sample ID: HWI0039-05
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	300		12		mg/Kg		09/25/13 17:08	09/26/13 20:19	20
Iron	35000		39		mg/Kg		09/25/13 17:08	09/26/13 20:19	20

Client Sample ID: WP-DU-7 (8-12 IN)

Lab Sample ID: HWI0039-06
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	320		11		mg/Kg		09/25/13 17:08	09/26/13 20:23	20
Iron	36000		38		mg/Kg		09/25/13 17:08	09/26/13 20:23	20

QC Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Method: 6010B - Metals (ICP)

Lab Sample ID: 145958-13 — **Client Sample ID: Method Blank**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 145165 — **Prep Batch: 145165_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		09/25/13 17:08	09/26/13 19:25	1
Iron	ND		10		mg/Kg		09/25/13 17:08	09/26/13 19:25	1

Lab Sample ID: 145958-14 — **Client Sample ID: Lab Control Sample**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 145165 — **Prep Batch: 145165_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	191		mg/Kg		96	80 - 120
Iron	1100	1130		mg/Kg		103	80 - 120

Lab Sample ID: 145958-15 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 145165 — **Prep Batch: 145165_P**

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	192		mg/Kg		96	80 - 120	0	20
Iron	1100	1130		mg/Kg		103	80 - 120	0	20

Lab Sample ID: 145958-16 — **Client Sample ID: Lab Control Sample**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 145165 — **Prep Batch: 145165_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	237	236		mg/Kg		99.6	71.3 - 129.1
Iron	13100	11100		mg/Kg		84.5	32.7 - 167.9

Lab Sample ID: 402461D — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 145165 — **Prep Batch: 145165_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Dup Result	Matrix Spike Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	250		38.6	253	4	mg/Kg		18	80 - 120	4	20
Iron	32000		212	31900	4	mg/Kg		172	80 - 120	2	20

Lab Sample ID: 402461S — **Client Sample ID: Matrix Spike**
Matrix: Soil — **Prep Type: Total**
Analysis Batch: 145165 — **Prep Batch: 145165_P**

Analyte	Sample Result	Sample Qualifier	Spike Added	Matrix Spike Result	Matrix Spike Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	250		37.7	264	4	mg/Kg		49	80 - 120
Iron	32000		207	32500	4	mg/Kg		458	80 - 120

QC Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 402461X
Matrix: Soil
Analysis Batch: 145165

Client Sample ID: Duplicate
Prep Type: Total
Prep Batch: 145165_P

Analyte	Sample Result	Sample Qualifier		Duplicate Result	Duplicate Qualifier	Unit	D			RPD	RPD Limit
Arsenic	250			290		mg/Kg				17	20
Iron	32000			32400		mg/Kg				3	20

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

TTAC

Analysis Batch: 145165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
145958-13	Method Blank	Total	Soil	6010B	145165_P
145958-14	Lab Control Sample	Total	Soil	6010B	145165_P
145958-15	Lab Control Sample Dup	Total	Soil	6010B	145165_P
145958-16	Lab Control Sample	Total	Soil	6010B	145165_P
402461D	Matrix Spike Duplicate	Total	Soil	6010B	145165_P
402461S	Matrix Spike	Total	Soil	6010B	145165_P
402461X	Duplicate	Total	Soil	6010B	145165_P
HWI0039-01	WP-DU-6 (0-4 IN)	Total	Solid/Soil	6010B	145165_P
HWI0039-02	WP-DU-6 (4-8 IN)	Total	Solid/Soil	6010B	145165_P
HWI0039-03	WP-DU-6 (8-12 IN)	Total	Solid/Soil	6010B	145165_P
HWI0039-04	WP-DU-7 (0-4 IN)	Total	Solid/Soil	6010B	145165_P
HWI0039-05	WP-DU-7 (4-8 IN)	Total	Solid/Soil	6010B	145165_P
HWI0039-06	WP-DU-7 (8-12 IN)	Total	Solid/Soil	6010B	145165_P

Prep Batch: 145165_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
145958-13	Method Blank	Total	Soil	3050B	
145958-14	Lab Control Sample	Total	Soil	3050B	
145958-15	Lab Control Sample Dup	Total	Soil	3050B	
145958-16	Lab Control Sample	Total	Soil	3050B	
402461D	Matrix Spike Duplicate	Total	Soil	3050B	
402461S	Matrix Spike	Total	Soil	3050B	
402461X	Duplicate	Total	Soil	3050B	
HWI0039-01	WP-DU-6 (0-4 IN)	Total	Solid/Soil	3050B	
HWI0039-02	WP-DU-6 (4-8 IN)	Total	Solid/Soil	3050B	
HWI0039-03	WP-DU-6 (8-12 IN)	Total	Solid/Soil	3050B	
HWI0039-04	WP-DU-7 (0-4 IN)	Total	Solid/Soil	3050B	
HWI0039-05	WP-DU-7 (4-8 IN)	Total	Solid/Soil	3050B	
HWI0039-06	WP-DU-7 (8-12 IN)	Total	Solid/Soil	3050B	

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Client Sample ID: WP-DU-6 (0-4 IN)

Lab Sample ID: HWI0039-01
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			145165_P	09/25/13 17:08		Test
Total	Analysis	6010B		20	145165	09/26/13 19:40	HJM	Test

Client Sample ID: WP-DU-6 (4-8 IN)

Lab Sample ID: HWI0039-02
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			145165_P	09/25/13 17:08		Test
Total	Analysis	6010B		20	145165	09/26/13 20:08	HJM	Test

Client Sample ID: WP-DU-6 (8-12 IN)

Lab Sample ID: HWI0039-03
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			145165_P	09/25/13 17:08		Test
Total	Analysis	6010B		20	145165	09/26/13 20:11	HJM	Test

Client Sample ID: WP-DU-7 (0-4 IN)

Lab Sample ID: HWI0039-04
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			145165_P	09/25/13 17:08		Test
Total	Analysis	6010B		20	145165	09/26/13 20:15	HJM	Test

Client Sample ID: WP-DU-7 (4-8 IN)

Lab Sample ID: HWI0039-05
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			145165_P	09/25/13 17:08		Test
Total	Analysis	6010B		20	145165	09/26/13 20:19	HJM	Test

Client Sample ID: WP-DU-7 (8-12 IN)

Lab Sample ID: HWI0039-06
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/10/13 14:02

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	3050B			145165_P	09/25/13 17:08		Test
Total	Analysis	6010B		20	145165	09/26/13 20:23	HJM	Test

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Laboratory References:

Test = TestAmerica Tacoma, , ,

Certification Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Method Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0039

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)		Test

Protocol References:

Laboratory References:

Test = TestAmerica Tacoma, , ,

HW10039

>>> Select a Laboratory <<<

#N/A Test America - Honolulu
#N/A
#N/A
#N/A

Chain of Custody Record

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Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Your Company Name here HDOH/HEER	Tel/Fax:	Lab Contact:	Carrier:	1 of 1 COCs
Address 1582 Kamehameha Ave.	Analysis Turnaround Time			Sampler:
City/State/Zip Hilo, HI 96720	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx Phone 808-933-9921	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: Waiakea Pond	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2 mm)	Total Fe (<2 mm)	Bioaccessible As	Total Fe (<250 um)	Sample Specific Notes:
WP-DU-6 (0-4 in.)	9/3/13	6:00 pm	MIS	Sed	1			X	X	X	X	HW10039-01
WP-DU-6 (4-8 in.)	9/3/13	6:00 pm	MIS	Sed	1			X	X	X	X	-02
WP-DU6 (8-12 in.)	9/3/13	6:00 pm	MIS	Sed	1			X	X	X	X	-03
WP-DU7 (0-4 in.)	9/4/13	6:00 pm	MIS	Sed	1			X	X	X	X	-04
WP-DU7 (4-8 in.)	9/4/13	6:00 pm	MIS	Sed	1			X	X	X	X	-05
WP-DU7 (8-12 in.)	9/4/13	6:00 pm	MIS	Sed	1			X	X	X	X	-06

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☐Disposal by Lab ☐Archive for_____ Months

Special Instructions/QC Requirements & Comments: Sediment Samples. Process using HDOH MIS Protocol - 10gm total As & Fe in <2mm fraction. * Please Report Total As & Fe in <2 mm fraction, then HDOH-HEER will get back on which samples to run Bioaccessible Arsenic on. For Samples where Bio As analyzed please report Total As & Fe in the <250 um fraction.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Beard	HDOH-HEER office	9/9/13 AM	Nina Kim	TA HON	9/10/13 1402 Cooler Dry Intact 1(a-2.2C
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

ORIGIN ID:ITOA (808) 831-6600
TETRA TECH EM INC GOVT
737 BISHOP ST STE 3010
HONOLULU, HI 968133297
UNITED STATES US

SHIP DATE: 09SEP1
ACTWGT: 67.0 LB M
CAD: /POS1400
DIMS: 25x14x15 IN
DRY ICE: 5.0 KGS
BILL SENDER

TO KRISTIE REILLY
TEST AMERICA – HONOLULU LABS
1946 YOUNG ST
STE 400A
HONLULU HI 96826
(808) 486-5227 REF:
INV: DEPT:
PO#:

FedEx Express

TUE – 10 SEP PM
PRIORITY OVERNIGHT
ICE
96826
HNL

TRK# 8037 2108 9194
0200
97 HIKA
HI-US

INSPECTED BY ORIGIN
DANG. GOODS SPEC.
EMP. # 163307
111003 M-1558 7/98 SRC

FedEx Express NEW Package US Airbill
FedEx Tracking Number 8037 2108 9194

1 From
Date 9/9/12
Sender's Name Kevin Reilly
Phone 808-831-6600
Company Tetra Tech
Address 737 Bishop St Suite 3010
Dept./Floor/Suite/Room
City Honolulu State HI ZIP 96813

2 Your Internal Billing Reference

3 To
Recipient's Name Kristie Reilly
Phone 786 486-5227
Company Test America - Honolulu Labs
Address 1946 Young St Suite 400A
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Dept./Floor/Suite/Room
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City Honolulu State HI ZIP 96826

HOLD Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.
HOLD Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

4
5 Pi
6 Sig
SAT
NOT

Does this shipment contain dangerous goods?
One box must be checked.
No
Yes As per attached Shipper's Declaration.
Yes Shipper's Declaration not required.
Dry Ice Dry Ice, 9, UN 1845 5 kg
Dangerous goods in fedex envelopes cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.
Cargo Aircraft Only

7 Payment Bill to:
Sender Acct. No. in Section 1 will be billed.
Recipient
Third Party
Credit Card
Cash/Check
Enter FedEx Acct. No. or Credit Card No. below.
Obtain recip. Acct. No.
Total Packages 1
Total Weight 67
Credit Card Auth.

644

8037 2108 9194

Align Open End of FedEx Pouch Here

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Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: DOH HEER **Date/ Time Received:** 9/10/13 1402

Received By: Nina Kim

Matrices: Soil **Carrier:** Fed Ex **Airbill# :** 8037 2108 9194

Shipping container/cooler in good condition?	Yes	☑	No	☐	Not Present ☐
Chain of Custody present?	Yes	☑	No	☐	☐
Chain of Custody Signed when relinquished and received?	Yes	☑	No	☐	
Chain of Custody agrees with sample labels?	Yes	☑	No	☐	
Samples in proper container/bottle?	Yes	☑	No	☐	
Sample containers intact?	Yes	☑	No	☐	
Sample containers on ice?	Yes	☑	No	☐	Type: Dry
Sufficient sample volume for indicated test?	Yes	☑	No	☐	
All samples received within holding time?	Yes	☑	No	☐	
Water - VOA Vials have Zero Headspace?	Yes	☐	No	☐	No VOA vials present: ☑
Water - pH acceptable upon receipt?	Yes	☐	No	☐	Not Checked: ☑
pH Adjusted?	Yes	☐	No	☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes	☐	No	☑	Location:
Sample Filtration Needed?	Yes	☐	No	☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes	☐	No	☑	Take Action: ☐
DODQSM / QAPP Project?	Yes	☐	No	☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: -2.2 °C

Comments/ Sampling Handling Notes:

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
1946 Young St. Suite 400A
Honolulu, HI 96826
Tel: 808-486-5227

TestAmerica Job ID: HWI0091
Client Project/Site: [none]
Client Project Description: Waiakea Pond

For:
Department of Health, HEER Office
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814

Attn: John Peard

Authorized for release by:
10/11/2013 4:46:42 PM

Kristie Reilly, Project Manager
808-486-5227
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

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Definitions/Glossary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Job ID: HWI0091

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was 3 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Samples were prepared in accordance with the State of Hawai'i Department of Health Office of Hazard Evaluation and Emergency Response's Technical Guidance Manual for the Implementation of the Hawai`i State Contingency Plan 2009 edition Laboratory Preparation of Multi-Increment Samples.

Laboratory: TestAmerica Seattle

Narrative

Receipt

The samples were received on 10/4/2013 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 3.9º C.

Sample Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWI0091-01	WP-DU1 (0-4)	Solid/Soil	08/28/13 18:00	08/30/13 12:15
HWI0091-02	WP-DU2 (0-4)	Solid/Soil	08/27/13 18:00	08/30/13 12:15
HWI0091-03	WP-DU5 (0-4)	Solid/Soil	08/23/13 18:00	08/30/13 12:15

Detection Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Client Sample ID: WP-DU1 (0-4) — Lab Sample ID: HWI0091-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic Bio-accessible	20.8		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	6.94		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total
Arsenic	300		3.0		mg/Kg	1		6010B	Total
Iron - RE1	40000		100		mg/Kg	10		6010B	Total

Client Sample ID: WP-DU2 (0-4) — Lab Sample ID: HWI0091-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic Bio-accessible	37.5		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	2.68		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total
Arsenic	1400		2.9		mg/Kg	1		6010B	Total
Iron - RE1	37000		97		mg/Kg	10		6010B	Total

Client Sample ID: WP-DU5 (0-4) — Lab Sample ID: HWI0091-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic Bio-accessible	6.49		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	5.90		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total
Arsenic	110		2.9		mg/Kg	1		6010B	Total
Iron - RE1	64000		97		mg/Kg	10		6010B	Total

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Client Sample ID: WP-DU1 (0-4)

Lab Sample ID: HWI0091-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	20.8		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	6.94		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	300		3.0		mg/Kg		10/07/13 14:46	10/08/13 12:41	1

Method: 6010B - Metals (ICP) - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	40000		100		mg/Kg		10/07/13 14:46	10/08/13 16:04	10

Client Sample ID: WP-DU2 (0-4)

Lab Sample ID: HWI0091-02
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	37.5		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	2.68		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1400		2.9		mg/Kg		10/07/13 14:46	10/08/13 12:45	1

Method: 6010B - Metals (ICP) - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	37000		97		mg/Kg		10/07/13 14:46	10/08/13 16:08	10

Client Sample ID: WP-DU5 (0-4)

Lab Sample ID: HWI0091-03
Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	6.49		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	5.90		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	110		2.9		mg/Kg		10/07/13 14:46	10/08/13 12:49	1

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Client Sample ID: WP-DU5 (0-4)

Lab Sample ID: HWI0091-03

Date Collected: 08/23/13 18:00

Matrix: Solid/Soil

Date Received: 08/30/13 12:15

Method: 6010B - Metals (ICP) - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	64000		97		mg/Kg		10/07/13 14:46	10/08/13 16:11	10

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Metals

Pre prep Batch: 13J0005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0091-01	WP-DU1 (0-4)	Total	Solid/Soil	Default Prep GenChem	
HWI0091-02	WP-DU2 (0-4)	Total	Solid/Soil	Default Prep GenChem	
HWI0091-03	WP-DU5 (0-4)	Total	Solid/Soil	Default Prep GenChem	

Analysis Batch: 13J0012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0091-01	WP-DU1 (0-4)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0091-01	WP-DU1 (0-4)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P
HWI0091-02	WP-DU2 (0-4)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0091-02	WP-DU2 (0-4)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P
HWI0091-03	WP-DU5 (0-4)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0091-03	WP-DU5 (0-4)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P

Prep Batch: 13J0012_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0091-01	WP-DU1 (0-4)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005
HWI0091-02	WP-DU2 (0-4)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005
HWI0091-03	WP-DU5 (0-4)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005

TTAC

Analysis Batch: 146716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0091-01	WP-DU1 (0-4)	Total	Solid/Soil	6010B	146716_P
HWI0091-01 - RE1	WP-DU1 (0-4)	Total	Solid/Soil	6010B	146716_P
HWI0091-02	WP-DU2 (0-4)	Total	Solid/Soil	6010B	146716_P
HWI0091-02 - RE1	WP-DU2 (0-4)	Total	Solid/Soil	6010B	146716_P
HWI0091-03	WP-DU5 (0-4)	Total	Solid/Soil	6010B	146716_P
HWI0091-03 - RE1	WP-DU5 (0-4)	Total	Solid/Soil	6010B	146716_P

Prep Batch: 146716_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0091-01	WP-DU1 (0-4)	Total	Solid/Soil	3050B	
HWI0091-01 - RE1	WP-DU1 (0-4)	Total	Solid/Soil	3050B	
HWI0091-02	WP-DU2 (0-4)	Total	Solid/Soil	3050B	
HWI0091-02 - RE1	WP-DU2 (0-4)	Total	Solid/Soil	3050B	
HWI0091-03 - RE1	WP-DU5 (0-4)	Total	Solid/Soil	3050B	
HWI0091-03	WP-DU5 (0-4)	Total	Solid/Soil	3050B	

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Client Sample ID: WP-DU1 (0-4)

Lab Sample ID: HWI0091-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Prep	3050B			146716_P	10/07/13 14:46		Test
Total	Analysis	6010B		1	146716	10/08/13 12:41	HJM	Test
Total	Prep	3050B	RE1		146716_P	10/07/13 14:46		Test
Total	Analysis	6010B	RE1	10	146716	10/08/13 16:04	HJM	Test

Client Sample ID: WP-DU2 (0-4)

Lab Sample ID: HWI0091-02
Date Collected: 08/27/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Prep	3050B			146716_P	10/07/13 14:46		Test
Total	Analysis	6010B		1	146716	10/08/13 12:45	HJM	Test
Total	Prep	3050B	RE1		146716_P	10/07/13 14:46		Test
Total	Analysis	6010B	RE1	10	146716	10/08/13 16:08	HJM	Test

Client Sample ID: WP-DU5 (0-4)

Lab Sample ID: HWI0091-03
Date Collected: 08/23/13 18:00
Matrix: Solid/Soil
Date Received: 08/30/13 12:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Prep	3050B			146716_P	10/07/13 14:46		Test
Total	Analysis	6010B		1	146716	10/08/13 12:49	HJM	Test
Total	Prep	3050B	RE1		146716_P	10/07/13 14:46		Test
Total	Analysis	6010B	RE1	10	146716	10/08/13 16:11	HJM	Test

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Laboratory References:

TAL HON = TestAmerica Honolulu, 1946 Young St. Suite 400A, Honolulu, HI 96826, TEL 808-486-5227

Test = TestAmerica Tacoma, , ,

Certification Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Method Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0091

Method	Method Description	Protocol	Laboratory
EPA 6010	Bio-available Metals		TAL HON
SBRC Appendix C Rev. #8	Bio-available Metals		TAL HON
6010B	Metals (ICP)		Test

Protocol References:

Laboratory References:

TAL HON = TestAmerica Honolulu, 1946 Young St. Suite 400A, Honolulu, HI 96826, TEL 808-486-5227

Test = TestAmerica Tacoma, , ,

New (Relogged) Workorder Number: HWI0091

REQUEST TO RELOG SAMPLES

(Please submit to sample control with a copy of the COC)

CLIENT: HDOH HEER MATRIX: soil

PREVIOUSLY LOGGED SAMPLES

[X] TAT Change status to: available

Change status as of Day: 9/24/2013 Time: 1:16 PM

[ ] CHANGE ANALYSES

Add Analyses [X] Cancel Analyses [ ]

Project Work Order #: HWH0120

Sample Number	Analyses	New Sample Number
-01	PBET As, Total As and Fe on 250um fraction	-01
-04	PBET As. Total As and Fe on 250um fraction	-02
-07	PBET As, Total As and Fe on 250um fraction	-03
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	

SAMPLES ON HOLD

Sample Description	Analyses	New Sample Number
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	

Client Authorization (Person/Date/Time): HDOH HEER John Peard 9/24/2013 1:16 PM

Project Manager: Kristie Reilly

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

HWH0120

TestAmerica
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TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact
Your Company Name here: HDOH/HEER
Address: 1582 Kamehameha Hwy
City/State/Zip: Hilo, HI 96720
(xxx) xxx-xxxx Phone: 808.933-9921
(xxx) xxx-xxxx FAX
Project Name: Waiakea Pond
Site:
P O #

Project Manager: John Peard
Tel/Fax:

Analysis Turnaround Time
☑ CALENDAR DAYS ☐ WORKING DAYS
TAT if different from Below _____
☑ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

Site Contact: J. Peard
Lab Contact: Krystal Reilly
Carrier:

Date: 8/29/13
COC No: 1
1 of 1 COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

HWH0120

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total As (<2mm)	Total Fe (<2mm)	Bioaccessible As	Total Fe (<250um)	Sample Specific Notes:
WP-DU1 (0-4")	8/26/13	6:00pm	MIS	S	1			X	X	X	X	~~Only~~ Only test -01
WP-DU1 (4-8")	8/26/13	6:00pm	"	"	1			X	X	X	X	For bioaccessible -02
WP-DU1 (8-12")	8/26/13	6:00pm	"	"	1			X	X	X	X	As (& total Fe) in -03
WP-DU2 (0-4")	8/27/13	6:00pm	"	"	1			X	X	X	X	<250um fraction -04
WP-DU2 (4-8")	8/27/13	6:00pm	"	"	1			X	X	X	X	if total As >24mg/kg -05
WP-DU2 (8-12")	8/27/13	6:00pm	"	"	1			X	X	X	X	in <2mm fraction -06
WP-DU5 (0-4")	8/23/13	6:00pm	"	"	1			X	X	X	X	-07
WP-DU5 (4-8")	8/23/13	6:00pm	"	"	1			X	X	X	X	-08
WP-DU5 (8-12")	8/23/13	6:00pm	"	"	1			X	X	X	X	-09

Preservation: 1=None 2=ICE 3=HCl 4=H2SO4 5=HNO3 6=NaOH 7=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Sediment samples. Process using MIS protocol
*See attached notes
* Bioaccessible arsenic fraction only if total As in <2mm fraction >24mg/kg
~~Report~~ total As for <250um. Include. Also report total iron for <250um fraction.

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.:
Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Peard	HDOH-HEER Office	8/29/13 1048	[illegible]	TA Hon	8/30/13 1215
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
			[illegible]		
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

Sediment Processing Procedure Request for HEER Office samples (WP-DU samples):

- Air Dry each bulk sample (in 1 gallon zip locks) on large clean tray.
- Sieve each bulk sample to <2mm particle size (virtually all should pass through this screen but may be some grass or few rocks)
- MIS sub-sample each (dried and sieved to <2mm) bulk sample for a 10 gram total arsenic and total iron analysis. Report results in mg/kg.
- For samples where total arsenic in <2mm particle size exceeds 24 mg/kg: Sieve rest of each entire bulk sample to the <250 micron particle size, and subsample for Bioaccessible Arsenic analysis per SBRC bioaccessibilty testing method. Please include total arsenic analysis of the <250 micron size fraction (per method), and also total iron (Fe) in the < 250 micron particle size.
- Please report: total arsenic (and total FE), and % arsenic bioaccessibility, and bioaccessible arsenic concentration (mg/kg) in <250 micron fraction.

If any questions on this procedure (before processing samples) please call John Peard, Hilo HEER Office, at 808-933-9921 (office) or 808-960-0080 (cell).

TestAmerica
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Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: KDOW Date/ Time Received: 8/30/13 1215

Received By: JL

Matrices: Soil Carrier: Fedex Airbill# : 8037 2108 7478

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	☐
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Gel
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: 3 °C

Comments/ Sampling Handling Notes:

Hold for possible PBET Analysis JL 8/30/13

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
1946 Young St. Suite 400A
Honolulu, HI 96826
Tel: 808-486-5227

TestAmerica Job ID: HWI0112
Client Project/Site: [none]
Client Project Description: Waiakea Pond

For:
Department of Health, HEER Office
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814

Attn: John Peard

Authorized for release by:
10/17/2013 4:18:08 PM

Kristie Reilly, Project Manager
808-486-5227
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Job ID: HWI0112

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was -2 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Samples were prepared in accordance with the State of Hawai'i Department of Health Office of Hazard Evaluation and Emergency Response's Technical Guidance Manual for the Implementation of the Hawai`i State Contingency Plan 2009 edition Laboratory Preparation of Multi-Increment Samples.

Laboratory: TestAmerica Seattle

Narrative

Receipt
The samples were received on 10/4/2013 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 3.9º C.

Sample Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWI0112-01	WP-DU3 (0-4 IN)	Solid/Soil	08/28/13 18:00	09/05/13 13:30
HWI0112-02	WP-DU3 (8-12 IN)	Solid/Soil	08/28/13 18:00	09/05/13 13:30
HWI0112-03	WP-DU4 (0-4 IN)	Solid/Soil	08/29/13 18:00	09/05/13 13:30
HWI0112-04	WP-DU4 (8-12 IN)	Solid/Soil	08/29/13 18:00	09/05/13 13:30

Detection Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Client Sample ID: WP-DU3 (0-4 IN) — Lab Sample ID: HWI0112-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	180		3.0		mg/Kg	1		6010B	Total/NA
Iron	44000		99		mg/Kg	10		6010B	Total/NA
Arsenic Bio-accessible	8.06		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	4.48		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total

Client Sample ID: WP-DU3 (8-12 IN) — Lab Sample ID: HWI0112-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	240		3.1		mg/Kg	1		6010B	Total/NA
Iron	51000		100		mg/Kg	10		6010B	Total/NA
Arsenic Bio-accessible	20.8		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	8.69		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total

Client Sample ID: WP-DU4 (0-4 IN) — Lab Sample ID: HWI0112-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	140		3.0		mg/Kg	1		6010B	Total/NA
Iron	54000		100		mg/Kg	10		6010B	Total/NA
Arsenic Bio-accessible	8.03		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	5.73		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total

Client Sample ID: WP-DU4 (8-12 IN) — Lab Sample ID: HWI0112-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	170		2.9		mg/Kg	1		6010B	Total/NA
Iron	58000		97		mg/Kg	10		6010B	Total/NA
Arsenic Bio-accessible	14.3		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	8.39		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Client Sample ID: WP-DU3 (0-4 IN)

Lab Sample ID: HWI0112-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	180		3.0		mg/Kg		10/14/13 14:21	10/14/13 19:13	1
Iron	44000		99		mg/Kg		10/14/13 14:21	10/14/13 20:05	10

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	8.06		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	4.48		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Client Sample ID: WP-DU3 (8-12 IN)

Lab Sample ID: HWI0112-02
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	240		3.1		mg/Kg		10/14/13 14:21	10/14/13 18:58	1
Iron	51000		100		mg/Kg		10/14/13 14:21	10/14/13 20:08	10

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	20.8		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	8.69		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Client Sample ID: WP-DU4 (0-4 IN)

Lab Sample ID: HWI0112-03
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	140		3.0		mg/Kg		10/14/13 14:21	10/14/13 19:17	1
Iron	54000		100		mg/Kg		10/14/13 14:21	10/14/13 20:12	10

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	8.03		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	5.73		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Client Sample ID: WP-DU4 (8-12 IN)

Lab Sample ID: HWI0112-04

Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	170		2.9		mg/Kg		10/14/13 14:21	10/14/13 19:27	1
Iron	58000		97		mg/Kg		10/14/13 14:21	10/14/13 20:16	10

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	14.3		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	8.39		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

QC Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 580-147216/15-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		10/14/13 14:21	10/14/13 18:46	1
Iron	ND		10		mg/Kg		10/14/13 14:21	10/14/13 18:46	1

Lab Sample ID: LCS 580-147216/16-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	198		mg/Kg		99	80 - 120
Iron	1100	1130		mg/Kg		103	80 - 120

Lab Sample ID: LCSD 580-147216/17-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	204		mg/Kg		102	80 - 120	3	20
Iron	1100	1140		mg/Kg		104	80 - 120	1	20

Lab Sample ID: 580-40714-6 MS — **Client Sample ID: HWI0112-02**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	240		199	434		mg/Kg		98	80 - 120
Iron	49000		1100	50600	4	mg/Kg		121	80 - 120

Lab Sample ID: 580-40714-6 MSD — **Client Sample ID: HWI0112-02**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	240		207	451		mg/Kg		103	80 - 120	4	20
Iron	49000		1140	51100	4	mg/Kg		156	80 - 120	1	20

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Metals

Prep Batch: 147216

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40714-6 MS	HWI0112-02	Total/NA	Solid	3050B	
580-40714-6 MSD	HWI0112-02	Total/NA	Solid	3050B	
HWI0112-01	WP-DU3 (0-4 IN)	Total/NA	Solid/Soil	3050B	
HWI0112-02	WP-DU3 (8-12 IN)	Total/NA	Solid/Soil	3050B	
HWI0112-03	WP-DU4 (0-4 IN)	Total/NA	Solid/Soil	3050B	
HWI0112-04	WP-DU4 (8-12 IN)	Total/NA	Solid/Soil	3050B	
LCS 580-147216/16-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 580-147216/17-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 580-147216/15-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 147257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40714-6 MS	HWI0112-02	Total/NA	Solid	6010B	147216
580-40714-6 MSD	HWI0112-02	Total/NA	Solid	6010B	147216
HWI0112-01	WP-DU3 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-01	WP-DU3 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-02	WP-DU3 (8-12 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-02	WP-DU3 (8-12 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-03	WP-DU4 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-03	WP-DU4 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-04	WP-DU4 (8-12 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0112-04	WP-DU4 (8-12 IN)	Total/NA	Solid/Soil	6010B	147216
LCS 580-147216/16-A	Lab Control Sample	Total/NA	Solid	6010B	147216
LCSD 580-147216/17-A	Lab Control Sample Dup	Total/NA	Solid	6010B	147216
MB 580-147216/15-A	Method Blank	Total/NA	Solid	6010B	147216

Pre prep Batch: 13J0005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0112-01	WP-DU3 (0-4 IN)	Total	Solid/Soil	Default Prep GenChem	
HWI0112-02	WP-DU3 (8-12 IN)	Total	Solid/Soil	Default Prep GenChem	
HWI0112-03	WP-DU4 (0-4 IN)	Total	Solid/Soil	Default Prep GenChem	
HWI0112-04	WP-DU4 (8-12 IN)	Total	Solid/Soil	Default Prep GenChem	

Analysis Batch: 13J0012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0112-01	WP-DU3 (0-4 IN)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0112-01	WP-DU3 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P
HWI0112-02	WP-DU3 (8-12 IN)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0112-02	WP-DU3 (8-12 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P
HWI0112-03	WP-DU4 (0-4 IN)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0112-03	WP-DU4 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P
HWI0112-04	WP-DU4 (8-12 IN)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0112-04	WP-DU4 (8-12 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Metals (Continued)

Prep Batch: 13J0012_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0112-01	WP-DU3 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005
HWI0112-02	WP-DU3 (8-12 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005
HWI0112-03	WP-DU4 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005
HWI0112-04	WP-DU4 (8-12 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Client Sample ID: WP-DU3 (0-4 IN)

Lab Sample ID: HWI0112-01
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			147216	10/14/13 14:21	PAB	TAL SEA
Total/NA	Analysis	6010B		10	147257	10/14/13 20:05	HJM	TAL SEA
Total/NA	Analysis	6010B		1	147257	10/14/13 19:13	HJM	TAL SEA
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON

Client Sample ID: WP-DU3 (8-12 IN)

Lab Sample ID: HWI0112-02
Date Collected: 08/28/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			147216	10/14/13 14:21	PAB	TAL SEA
Total/NA	Analysis	6010B		10	147257	10/14/13 20:08	HJM	TAL SEA
Total/NA	Analysis	6010B		1	147257	10/14/13 18:58	HJM	TAL SEA
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON

Client Sample ID: WP-DU4 (0-4 IN)

Lab Sample ID: HWI0112-03
Date Collected: 08/29/13 18:00
Matrix: Solid/Soil
Date Received: 09/05/13 13:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010B		1	147257	10/14/13 19:17	HJM	TAL SEA
Total/NA	Prep	3050B			147216	10/14/13 14:21	PAB	TAL SEA
Total/NA	Analysis	6010B		10	147257	10/14/13 20:12	HJM	TAL SEA
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Client Sample ID: WP-DU4 (8-12 IN)

Date Collected: 08/29/13 18:00
Date Received: 09/05/13 13:30

Lab Sample ID: HWI0112-04

Matrix: Solid/Soil

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			147216	10/14/13 14:21	PAB	TAL SEA
Total/NA	Analysis	6010B		1	147257	10/14/13 19:27	HJM	TAL SEA
Total/NA	Analysis	6010B		10	147257	10/14/13 20:16	HJM	TAL SEA
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON

Laboratory References:

TAL HON = TestAmerica Honolulu, 1946 Young St. Suite 400A, Honolulu, HI 96826, TEL 808-486-5227

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-14
California	NELAP	9	01115CA	01-31-14
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-13
USDA	Federal		P330-11-00222	05-20-14
Washington	State Program	10	C553	02-17-14

Method Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0112

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL SEA
EPA 6010	Bio-available Metals		TAL HON
SBRC Appendix C Rev. #8	Bio-available Metals		TAL HON

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL HON = TestAmerica Honolulu, 1946 Young St. Suite 400A, Honolulu, HI 96826, TEL 808-486-5227

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

New (Relogged) Workorder Number: HWI0112

REQUEST TO RELOG SAMPLES

(Please submit to sample control with a copy of the COC)

CLIENT: DOH HEER MATRIX: soil

PREVIOUSLY LOGGED SAMPLES

[X] TAT Change status to: available
Change status as of Day: 9/27/2013 Time: 12:10 PM

[ ] CHANGE ANALYSES

Add Analyses [X] Cancel Analyses [ ]

Project Work Order #: HWI0023

Sample Number	Analyses	New Sample Number
-01	Bioaccessible As, Iron 250 µm fract.	-01
-03	Bioaccessible As, Iron 250 µm fract	-02
-04	Bioaccessible As, Iron 250 µm fract.	-03
-06	Bioaccessible As, Iron 250 µm fract.	-04
NA	NA	
NA	NA	
NA	NA	
NA	NA	

SAMPLES ON HOLD

Sample Description	Analyses	New Sample Number
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	

Client Authorization (Person/Date/Time): DOH HEER John Peard 9/27/2013 12:10 PM

Project Manager: Kristie Reilly

Relog as HWI0112

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact
Your Company Name here: HDOH/HEER
Address: 1582 Kamehameha Hwy.
City/State/Zip: Hilo, HI 96720
(xxx) xxx-xxxx Phone: 808 933-5821
(xxx) xxx-xxxx FAX
Project Name: Waiakea Pond
Site:
PO#

Project Manager: John Pennel
Tel/Fax:

Analysis Turnaround Time
☐ CALENDAR DAYS ☐ WORKING DAYS
TAT if different from Below
☑ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

Site Contact: J. Pennel
Lab Contact: Kristie Reilly
Carrier:

Date: 9/4/13
COC No: 1 of 1 COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:
HWI0023

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2 mm)	Total Fe (<2 mm)	* Bioaccessible As	Total Fe (<250 µm)	Sample Specific Notes:
WP-DU3 (0-4 in.)	8/29/13	6:00 PM	MIS	Sed	1			X	X	X	X	Only test For -01 *
WP-DU3 (4-8 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	Bioaccessible As -02
WP-DU3 (8-12 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	(& Total Fe) in -03 *
WP-DU4 (0-4 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	<250 µm Fraction -04 *
WP-DU4 (4-8 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	if total As >24 mg/kg -05
WP-DU4 (8-12 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	in <2 mm Fraction -06 *

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:
Sediment Samples. Process using MIS protocol.
* See Attached notes
* Bioaccessible Arsenic analysis only if total Arsenic <2mm Fraction >24 mg/kg
Total As should be included for <250 µm Fraction (if Bioaccessible run). Also report Total Fe for <250 µm Fraction (if #10 As).

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.:
Cooler Temp. (°C): Obs'd: ____ Corr'd: ____
Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kevin Kelly	Tetra Tech	9/4/13 11:45	[signature]	TA Hon	9/5/13 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
			[signature]		
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

* Relogged samples.

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

FedEx Express

NEW Package
US Airbill

8037 2108 9459

1 From
Date 4 3
Sender Name [redacted] Phone 808 [illegible]
Company [illegible]
Address [illegible] Suite 301
City [illegible] State [illegible] ZIP [illegible]

2 Your Internal Billing Reference

3 To
Recipients Name [illegible] Phone 808 586-5227
Company TEST AMERICA
Address 1948 Young St. Suite 400A
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for a HOLD location address or for additional address information.
City Honolulu State HI ZIP 96826

HOLD Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.
HOLD Saturday
FedEx location address REQUIRED. Available ONLY for FedEx First Overnight, FedEx Priority Overnight and FedEx 2Day to select locations.

4 Express Package Service
FedEx Priority Overnight
FedEx Standard Overnight
FedEx 2Day
FedEx Express Saver

5 Packaging
FedEx Envelope
FedEx Pak
FedEx Box
FedEx Tube
Other Pkg

6 Special Handling
SATURDAY Delivery
NOT Available for FedEx First Overnight
No Signature Required
Package may be left without obtaining signature for delivery
Does this shipment contain dangerous goods?
No
Dangerous goods as per attached Shipper's Declaration
Dry Ice
Cargo Aircraft Only

7 Payment Bill to:
Sender
Recipient
Third Party
Credit Card
Cash/Check
Enter FedEx Acct. No. or Credit Card No. below.
Obtain recip. Acct. No.
Credit Card Auth.

Total Packages
Total Weight
Total Declared Value $ .00

644

8037 2108 9459

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ORIGIN ID:HOPA (808) 631-6600
TEST AMERICA INC
737 SISHOP ST STE 3010
HONOLULU HI 968139297
UNITED STATES US

SHIP DATE: 04SEP13
ACTWGT: 65.4 LB
CAD: /POS1400
DIMS: 24x14x15 IN
DRY ICE: 4.0 KGS
BILL SENDER

TO KRISTIE
TEST AMERICA
1948 YOUNG ST
STE 400A
HONOLULU HI 96826
(808) 586-5227
REF:
DEPT:

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J13111302120126

TRK# 8037 2108 9459

THU - 05 SEP PM
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96826
HI-US HNL

97 HIKA

Align Open End of FedEx Pouch Here

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: DOW MEER Date/ Time Received: 9/5/13 1330

Received By: N

Matrices: Soil Carrier: Fedex Airbill# :

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	☐
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Dry Ice
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present: ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: -2 °C

Comments/ Sampling Handling Notes:

Reilly, Kristie

From: Peard, John [john.peard@doh.hawaii.gov]
Sent: Friday, September 27, 2013 12:10 PM
To: Reilly, Kristie
Subject: REPLY2: HWI0023- Waiakea Pond Sediments
Importance: High

Kristie,
Hi. Thanks much for these initial results. Of these 6 samples I would like you to further process the following 4 samples (to fines fraction) and run for arsenic bioaccessibility:

Lab Sample ID – Client ID:
1. HW10023-01 – WP-DU3 (0-4 in)
2. HW10023-03 – WP-DU3 (8-12 in)
3. HW10023-04 – WP-DU4 (0-4 in)
4. HW10023-06 – WP-DU4 (8-12 in)

For these four samples, please include analysis of both total arsenic and total iron in the fines fraction (<250 microns). So for the bioaccessible arsenic analysis reporting, please report: total arsenic and total iron levels in fines fraction, % arsenic bioaccessibility, and bioaccessibe arsenic concentration (mg/kg) in the fines fraction. Please let me know if you have questions.

Note, we are interested in receiving an invoice for all work completed by Sept. 31 (even partial work like processing and digestion portions, if possible), with the balance of any work invoiced as soon as possible thereafter in October.

As a reminder, after any analyses requested, we would like you to retain any remaining sample mass for all sediment samples sent (all size fractions if split up) – and we can arrange to pick up from you in the future. Thanks very much. John

John Peard, Remediation Project Manager
Hawai`i Dept. of Health, Hazard Evaluation & Emergency Response Office (HEER Office)
Hawai`i District Health Office
1582 Kamehameha Ave., Hilo, Hi 96720-4623
john.peard@doh.hawaii.gov
(808) 933-9921 (office)
(808) 960-0080 (cell)

From: Reilly, Kristie [mailto:Kristie.Reilly@testamericainc.com]
Sent: Friday, September 27, 2013 7:37 AM
To: Peard, John
Subject: HWI0023- Waiakea Pond Sediments

Hi John,

Attached is the report and EDD for HWI0023.

Thanks,

Kristie Reilly

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1946 Young Street, Suite 400A
Honolulu, HI 96826
Tel: 808.486.5227 | Fax: 808.486.2456
www.testamericainc.com

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
1946 Young St. Suite 400A
Honolulu, HI 96826
Tel: 808-486-5227

TestAmerica Job ID: HWI0113
Client Project/Site: [none]
Client Project Description: Waiakea Pond

For:
Department of Health, HEER Office
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814

Attn: John Peard

Authorized for release by:
10/17/2013 4:40:48 PM

Kristie Reilly, Project Manager
808-486-5227
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Job ID: HWI0113

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was -2.2 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Samples were prepared in accordance with the State of Hawai'i Department of Health Office of Hazard Evaluation and Emergency Response's Technical Guidance Manual for the Implementation of the Hawai`i State Contingency Plan 2009 edition Laboratory Preparation of Multi-Increment Samples.

Laboratory: TestAmerica Seattle

Narrative

Receipt
The samples were received on 10/4/2013 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 3.9º C.

Sample Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWI0113-01	WP-DU-6 (0-4 IN)	Solid/Soil	09/03/13 18:00	09/27/13 14:15
HWI0113-02	WP-DU-7 (0-4 IN)	Solid/Soil	09/04/13 18:00	09/27/13 14:15

Detection Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Client Sample ID: WP-DU-6 (0-4 IN) — Lab Sample ID: HWI0113-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	440		3.0		mg/Kg	1		6010B	Total/NA
Iron	35000		100		mg/Kg	10		6010B	Total/NA
Arsenic Bio-accessible	12.8		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	2.92		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total

Client Sample ID: WP-DU-7 (0-4 IN) — Lab Sample ID: HWI0113-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	440		2.9		mg/Kg	1		6010B	Total/NA
Iron	35000		96		mg/Kg	10		6010B	Total/NA
Arsenic Bio-accessible	15.2		1.00		mg/kg	1.00		EPA 6010	Total
Arsenic Bio-accessible percent	3.44		0.200		% by Weight	1.00		SBRC Appendix C Rev. #8	Total

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Client Sample ID: WP-DU-6 (0-4 IN)

Lab Sample ID: HWI0113-01
Date Collected: 09/03/13 18:00
Matrix: Solid/Soil
Date Received: 09/27/13 14:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	440		3.0		mg/Kg		10/14/13 14:21	10/14/13 19:48	1
Iron	35000		100		mg/Kg		10/14/13 14:21	10/14/13 20:19	10

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	12.8		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	2.92		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

Client Sample ID: WP-DU-7 (0-4 IN)

Lab Sample ID: HWI0113-02
Date Collected: 09/04/13 18:00
Matrix: Solid/Soil
Date Received: 09/27/13 14:15

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	440		2.9		mg/Kg		10/14/13 14:21	10/14/13 19:52	1
Iron	35000		96		mg/Kg		10/14/13 14:21	10/14/13 20:22	10

Method: EPA 6010 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible	15.2		1.00		mg/kg		10/10/13 11:04	10/10/13 11:06	1.00

Method: SBRC Appendix C Rev. #8 - Bio-available Metals

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic Bio-accessible percent	3.44		0.200		% by Weight		10/10/13 11:04	10/10/13 11:06	1.00

QC Sample Results

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 580-147216/15-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		10/14/13 14:21	10/14/13 18:46	1
Iron	ND		10		mg/Kg		10/14/13 14:21	10/14/13 18:46	1

Lab Sample ID: LCS 580-147216/16-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	198		mg/Kg		99	80 - 120
Iron	1100	1130		mg/Kg		103	80 - 120

Lab Sample ID: LCSD 580-147216/17-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	204		mg/Kg		102	80 - 120	3	20
Iron	1100	1140		mg/Kg		104	80 - 120	1	20

Lab Sample ID: 580-40714-B-6-A MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	240		199	434		mg/Kg		98	80 - 120
Iron	49000		1100	50600	4	mg/Kg		121	80 - 120

Lab Sample ID: 580-40714-C-6-A MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 147257 — **Prep Batch: 147216**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	240		207	451		mg/Kg		103	80 - 120	4	20
Iron	49000		1140	51100	4	mg/Kg		156	80 - 120	1	20

QC Association Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Metals

Prep Batch: 147216

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40714-B-6-A MS	Matrix Spike	Total/NA	Solid	3050B	
580-40714-C-6-A MSD	Matrix Spike Duplicate	Total/NA	Solid	3050B	
HWI0113-01	WP-DU-6 (0-4 IN)	Total/NA	Solid/Soil	3050B	
HWI0113-02	WP-DU-7 (0-4 IN)	Total/NA	Solid/Soil	3050B	
LCS 580-147216/16-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 580-147216/17-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
MB 580-147216/15-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 147257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-40714-B-6-A MS	Matrix Spike	Total/NA	Solid	6010B	147216
580-40714-C-6-A MSD	Matrix Spike Duplicate	Total/NA	Solid	6010B	147216
HWI0113-01	WP-DU-6 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0113-01	WP-DU-6 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0113-02	WP-DU-7 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
HWI0113-02	WP-DU-7 (0-4 IN)	Total/NA	Solid/Soil	6010B	147216
LCS 580-147216/16-A	Lab Control Sample	Total/NA	Solid	6010B	147216
LCSD 580-147216/17-A	Lab Control Sample Dup	Total/NA	Solid	6010B	147216
MB 580-147216/15-A	Method Blank	Total/NA	Solid	6010B	147216

Pre prep Batch: 13J0005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0113-01	WP-DU-6 (0-4 IN)	Total	Solid/Soil	Default Prep GenChem	
HWI0113-02	WP-DU-7 (0-4 IN)	Total	Solid/Soil	Default Prep GenChem	

Analysis Batch: 13J0012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0113-01	WP-DU-6 (0-4 IN)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0113-01	WP-DU-6 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P
HWI0113-02	WP-DU-7 (0-4 IN)	Total	Solid/Soil	EPA 6010	13J0012_P
HWI0113-02	WP-DU-7 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0012_P

Prep Batch: 13J0012_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWI0113-01	WP-DU-6 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005
HWI0113-02	WP-DU-7 (0-4 IN)	Total	Solid/Soil	SBRC Appendix C Rev. #8	13J0005

Lab Chronicle

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Client Sample ID: WP-DU-6 (0-4 IN)

Lab Sample ID: HWI0113-01

Date Collected: 09/03/13 18:00

Matrix: Solid/Soil

Date Received: 09/27/13 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010B		1	147257	10/14/13 19:48	HJM	TAL SEA
Total/NA	Prep	3050B			147216	10/14/13 14:21	PAB	TAL SEA
Total/NA	Analysis	6010B		10	147257	10/14/13 20:19	HJM	TAL SEA
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON

Client Sample ID: WP-DU-7 (0-4 IN)

Lab Sample ID: HWI0113-02

Date Collected: 09/04/13 18:00

Matrix: Solid/Soil

Date Received: 09/27/13 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			147216	10/14/13 14:21	PAB	TAL SEA
Total/NA	Analysis	6010B		1	147257	10/14/13 19:52	HJM	TAL SEA
Total/NA	Analysis	6010B		10	147257	10/14/13 20:22	HJM	TAL SEA
Total	Analysis	SBRC Appendix C Rev. #8		1.00	13J0012	10/10/13 11:06	KR	TAL HON
Total	Pre prep	Default Prep GenChem		1.00	13J0005	10/02/13 17:09	NK	TAL HON
Total	Prep	SBRC Appendix C Rev. #8		1.00	13J0012_P	10/10/13 11:04	KR	TAL HON
Total	Analysis	EPA 6010		1.00	13J0012	10/10/13 11:06	KR	TAL HON

Laboratory References:

TAL HON = TestAmerica Honolulu, 1946 Young St. Suite 400A, Honolulu, HI 96826, TEL 808-486-5227

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-14
California	NELAP	9	01115CA	01-31-14
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-13
USDA	Federal		P330-11-00222	05-20-14
Washington	State Program	10	C553	02-17-14

Method Summary

Client: Department of Health, HEER Office
Project/Site: [none]

TestAmerica Job ID: HWI0113

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL SEA
EPA 6010	Bio-available Metals		TAL HON
SBRC Appendix C Rev. #8	Bio-available Metals		TAL HON

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL HON = TestAmerica Honolulu, 1946 Young St. Suite 400A, Honolulu, HI 96826, TEL 808-486-5227

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

New (Relogged) Workorder Number: HWI0113

REQUEST TO RELOG SAMPLES

(Please submit to sample control with a copy of the COC)

CLIENT: DOH HEER MATRIX: soil

PREVIOUSLY LOGGED SAMPLES

[X] TAT Change status to: available

Change status as of Day: 9/27/2013 Time: ~~2:26~~ 14:15 PM

[ ] CHANGE ANALYSES

Add Analyses [X] Cancel Analyses [ ]

Project Work Order #: HWI0039

Sample Number	Analyses	New Sample Number
-01	Bioaccessible As, 250um fraction Iron analysis	-01
-04	Bioaccessible As, 250um fraction Iron analysis	-02
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	

SAMPLES ON HOLD

Sample Description	Analyses	New Sample Number
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	
NA	NA	

Client Authorization (Person/Date/Time): DOH HEER John Peard 9/27/2013 2:26 PM

Project Manager: Kristie Reilly

Relog as HWI0113
HW10039

>>> Select a Laboratory <<<
#N/A Test America - Honolulu
#N/A
#N/A
#N/A

Chain of Custody Record

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TestAmerica Laboratories, Inc.

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other:

Client Contact			
Your Company Name here	HDOH / HEER	Project Manager:	
Address	1582 Kamehameha Ave.	Tel/Fax:	
City/State/Zip	Hilo, HI 96720		
(xxx) xxx-xxxx	Phone 808-933-9921		
(xxx) xxx-xxxx	FAX		
Project Name:	Waiakea Pond		
Site:			
PO #			

Analysis Turnaround Time
☐ CALENDAR DAYS ☐ WORKING DAYS
TAT if different from Below _____
☑ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

Site Contact: | Date: | COC No: 1 of 1 COCs
Lab Contact: | Carrier: | Sampler:

For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2 mm)	Total Fe (<2 mm)	Bioaccessible As	% Total Fe (<250 um)	Sample Specific Notes:
WP-DU-6 (0-4 in)	9/3/13	6:00pm	MIS	Sed	1			X	X	X	X	HW10039-01 *
WP-DU-6 (4-8 in)	9/3/13	6:00pm	MIS	Sed	1			X	X	X	X	-02
WP-DU-6 (8-12 in)	9/3/13	6:00pm	MIS	Sed	1			X	X	X	X	-03
WP-DU-7 (0-4 in)	9/4/13	6:00pm	MIS	Sed	1			X	X	X	X	-04 *
WP-DU-7 (4-8 in)	9/4/13	6:00pm	MIS	Sed	1			X	X	X	X	-05
WP-DU-7 (8-12 in)	9/4/13	6:00pm	MIS	Sed	1			X	X	X	X	-06

* Relogged.

Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐Return to Client ☐Disposal by Lab ☐Archive for _____ Months

Special Instructions/QC Requirements & Comments: Sediment Samples. Process using HDOH MIS Protocol - 10gm total As & Fe in <2mm fraction. * Please Report Total As & Fe in <2mm fraction, then HDOH-HEER will get back on which samples to run Bioaccessible Arsenic on. For Samples where Bio As analyzed please report Total As & Fe in the <250um fraction.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Pearl	HDOH-HEER office	9/9/13 AM	Nina Kim	TA HON	9/10/13 1402 Cooler Dry Intact
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.2, dated 04/02/2013

ORIGIN ID:ITOA (808) 831-6600
TETRA TECH EM INC GOVT
737 BISHOP ST STE 3010
HONOLULU, HI 968133297
UNITED STATES US

SHIP DATE: 09SEP1
ACTWGT: 67.0 LB M
CAD: /POS1400
DIMS: 25x14x15 IN
DRY ICE: 5.0 KGS
BILL SENDER

TO KRISTIE REILLY
TEST AMERICA -- HONOLULU LABS
1946 YOUNG ST
STE 400A
HONOLULU HI 96826
(808) 488-5227 REF:
INV: DEPT:

FedEx Express

TUE - 10 SEP PM
PRIORITY OVERNIGHT
ICE
96826
HI-US HNL

TRK# 8037 2108 9194

97 HIKA

644

INSPECTED BY ORIGIN
DANG. GOODS SPEC.
EMP. # 167307
111003 M-1558 7/98 SRC

FedEx Express NEW Package US Airbill FedEx Tracking Number 8037 2108 9194

1. From
Date 9/10/12
Sender's Name [redacted]
Phone [redacted]
Company [redacted]
Address [redacted]
City [redacted] State HI ZIP 96812

2. Your Internal Billing Reference

3. To Recipients Name [redacted]
Phone 206 440-5222
Company Test America - Honolulu Labs
Address 1946 Young St Suite 400A
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address Use this line for the HOLD location address or for additional address information.
City Honolulu State HI ZIP 96826

HOLD Weekday
HOLD Saturday

Does this shipment contain dangerous goods?
No Yes Dry Ice
Cargo Aircraft Only

7 Payment Bill to:
Sender Recipient Third Party Credit Card Cash/Check
Enter FedEx Acct. No. or Credit Card No. below
Obtain recip. Acct. No.
Total Packages Total Weight
Credit Card Auth.

8037 2108 9194

fedex.com 1 800 463 3339

Page 15 of 18

10/17/2013

Align Open End of FedEx Pouch Here

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Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: DOH HEER **Date/ Time Received:** 9/10/13 1402

Received By: Nina Kim

Matrices: Soil **Carrier:** Fed Ex **Airbill#:** 8037 2108 9194

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	☐
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Dry
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present: ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / MI-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: -2.2 °C

Comments/ Sampling Handling Notes:

Reilly, Kristie

From: Peard, John [john.peard@doh.hawaii.gov]
Sent: Friday, September 27, 2013 2:11 PM
To: Reilly, Kristie
Subject: REPLY: HWI0039 - Waiakea Pond Sediment

Kristie,
Hi. Thanks much for these initial results on the last of our sediment samples from Waiakea Pond. Of these 6 samples I would like you to further process the following 2 samples (to fines fraction) and run for arsenic bioaccessibility:

Lab Sample ID – Client ID:
1. HW10039-01 – WP-DU6 (0-4 in)
2. HW10039-04 – WP-DU7 (0-4 in)

For these two samples, please include analysis of both total arsenic and total iron in the fines fraction (<250 microns). So for the bioaccessible arsenic analysis reporting, please report: total arsenic and total iron levels in fines fraction, % arsenic bioaccessibility, and bioaccessibe arsenic concentration (mg/kg) in the fines fraction. Please let me know if you have questions.

Note, we are interested in receiving an invoice for all work completed by Sept. 31 (even partial work like processing and digestion portions, if possible), with the balance of any work invoiced as soon as possible thereafter in October.

As a reminder, after any analyses requested, we would like you to retain any remaining sample mass for all sediment samples sent (all size fractions if split up) – and we can arrange to pick up from you in the future. Thanks very much. John

John Peard, Remediation Project Manager
Hawai`i Dept. of Health, Hazard Evaluation & Emergency Response Office (HEER Office)
Hawai`i District Health Office
1582 Kamehameha Ave., Hilo, HI 96720-4623
john.peard@doh.hawaii.gov
(808) 933-9921 (office)
(808) 960-0080 (cell)

From: Reilly, Kristie [mailto:Kristie.Reilly@testamericainc.com]
Sent: Friday, September 27, 2013 10:31 AM
To: Peard, John
Subject: HWI0039 - Waiakea Pond Sediment

Hi John

Attached is the report and EDD for HWI0039. I've included the .xls and .xlsx versions because Roger was having trouble with the older version. xlsx might work better for you.

Thanks,

Kristie Reilly

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1946 Young Street, Suite 400A
Honolulu, HI 96826
Tel: 808.486.5227 | Fax: 808.486.2456
www.testamericainc.com

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU1(0-4")	1336001-01	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(0-4")	1336001-02	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(0-4")	1336001-03	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(4-8")	1336001-04	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(4-8")	1336001-05	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(4-8")	1336001-06	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(8-12")	1336001-07	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(8-12")	1336001-08	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(8-12")	1336001-09	Sediment	Sample	08/26/2013	09/03/2013
WP-DU2(0-4")	1336001-10	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(0-4")	1336001-11	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(0-4")	1336001-12	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(4-8")	1336001-13	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(4-8")	1336001-14	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(4-8")	1336001-15	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(8-12")	1336001-16	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(8-12")	1336001-17	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(8-12")	1336001-18	Sediment	Sample	08/27/2013	09/03/2013
WP-DU5 (0-4")	1336001-19	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (0-4")	1336001-20	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (0-4")	1336001-21	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (4-8')	1336001-22	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (4-8')	1336001-23	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (4-8')	1336001-24	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (8-12')	1336001-25	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (8-12')	1336001-26	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (8-12')	1336001-27	Sediment	Sample	08/23/2013	09/03/2013

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU3 (0-4")	1336023-01	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (4-8")	1336023-02	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (8-12")	1336023-03	Sediment	Sample	08/28/2013	09/05/2013
WP-DU4 (0-4")	1336023-04	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (4-8")	1336023-05	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (8-12")	1336023-06	Sediment	Sample	08/29/2013	09/05/2013
WP-DU1-Algae	1336023-07	Algae	Sample	08/31/2013	09/05/2013
WP-DU2-Algae	1336023-08	Algae	Sample	08/31/2013	09/05/2013
WP-DU3-Algae	1336023-09	Algae	Sample	08/31/2013	09/05/2013
WP-DU3 (0-4")	1336023-10	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (0-4")	1336023-11	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (4-8")	1336023-12	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (4-8")	1336023-13	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (8-12")	1336023-14	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (8-12")	1336023-15	Sediment	Sample	08/28/2013	09/05/2013
WP-DU4 (0-4")	1336023-16	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (0-4")	1336023-17	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (4-8")	1336023-18	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (4-8")	1336023-19	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (8-12")	1336023-20	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (8-12")	1336023-21	Sediment	Sample	08/29/2013	09/05/2013

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU6 (0-4")	1337006-01	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (4-8")	1337006-02	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (8-12")	1337006-03	Sediment	Sample	09/03/2013	09/10/2013
WP-DU7 (0-4")	1337006-04	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (4-8")	1337006-05	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (8-12")	1337006-06	Sediment	Sample	09/04/2013	09/10/2013
WP-DU6 (0-4")	1337006-07	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (0-4")	1337006-08	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (4-8")	1337006-09	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (4-8")	1337006-10	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (8-12")	1337006-11	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (8-12")	1337006-12	Sediment	Sample	09/03/2013	09/10/2013
WP-DU7 (0-4")	1337006-13	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (0-4")	1337006-14	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (4-8")	1337006-15	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (4-8")	1337006-16	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (8-12")	1337006-17	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (8-12")	1337006-18	Sediment	Sample	09/04/2013	09/10/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Soil/Sediment	SM 2540G	09/20/2013	09/25/2013	B131466	N/A
As	Soil/Sediment	EPA 1638 DRC	09/23/2013	10/01/2013	B131499	1300666
As(Inorg)	Soil/Sediment	EPA 1632	10/20/2013	10/21/2013	B131463	1300715
DMAs	Soil/Sediment	EPA 1632	10/20/2013	10/22/2013	B131465	1300718
Fe	Soil/Sediment	EPA 1638 DRC	09/23/2013	09/27/2013	B131500	1300659
MMAs	Soil/Sediment	EPA 1632	10/20/2013	10/22/2013	B131464	1300717

ANALYTICAL REPORT

Job Number: 580-40519-1

Job Description: Brooks Rand Labs

For:
Brooks Rand Labs LLC
3958 6th Avenue NW
Seattle, WA 98107

Attention: Lydia Greaves

Pamela R. Johnson

Approved for release.
Pam R Johnson
Project Manager I
10/14/2013 4:17 PM

Pam R Johnson, Project Manager I
5755 8th Street East, Tacoma, WA, 98424
(253)922-2310 x112
pamr.johnson@testamericainc.com
10/14/2013

cc: Ms. Elizabeth Madonick

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

Receipt
The samples were received on 9/25/2013 12:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.2º C.

General Chemistry - Method 9060
The following samples were received with greater than 50% of holding time expired: (580-40519-1), (580-40519-2), (580-40519-3), (580-40519-4), (580-40519-5), (580-40519-6), (580-40519-7), (580-40519-8), (580-40519-9). As such, the laboratory had insufficient time remaining to perform the analysis within holding time.

No other analytical or quality issues were noted.

Geotechnical
No analytical or quality issues were noted.

METHOD SUMMARY

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Organic Carbon, Total (TOC)	TAL SEA	SW846 9060	
Incremental Sample Preparation	TAL SEA		EPA Increm, Prep
Percent Moisture	TAL SEA	ASTM D 2216	
Grain Size	TAL BUR	ASTM D422	

Lab References:

TAL BUR = TestAmerica Burlington

TAL SEA = TestAmerica Seattle

Method References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-40519-1	1336001-01	Solid	08/26/2013 1800	09/25/2013 1215
580-40519-2	1336001-04	Solid	08/26/2013 1800	09/25/2013 1215
580-40519-3	1336001-07	Solid	08/26/2013 1800	09/25/2013 1215
580-40519-4	1336001-10	Solid	08/27/2013 1800	09/25/2013 1215
580-40519-5	1336001-13	Solid	08/27/2013 1800	09/25/2013 1215
580-40519-6	1336001-16	Solid	08/27/2013 1800	09/25/2013 1215
580-40519-7	1336001-19	Solid	08/23/2013 1800	09/25/2013 1215
580-40519-8	1336001-22	Solid	08/23/2013 1800	09/25/2013 1215
580-40519-9	1336001-25	Solid	08/23/2013 1800	09/25/2013 1215

SAMPLE RESULTS

General Chemistry

Client Sample ID: **1336001-01**

Lab Sample ID: 580-40519-1

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	39000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1215						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	41		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	59		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-04**

Lab Sample ID: 580-40519-2

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	43000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1220						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	44		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1625						DryWt Corrected: N
Percent Moisture	56		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1625						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-07**

Lab Sample ID: 580-40519-3

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	42000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1224						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	38		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	62		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-10**

Lab Sample ID: 580-40519-4

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	40000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1228						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	34		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	66		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-13**

Lab Sample ID: 580-40519-5

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	48000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1232						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	40		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	60		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-16**

Lab Sample ID: 580-40519-6

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	51000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1242						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	39		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	61		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-19**

Lab Sample ID: 580-40519-7

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	12000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1246						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	71		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	29		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-22**

Lab Sample ID: 580-40519-8

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	12000	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1250						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	72		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1625						DryWt Corrected: N
Percent Moisture	28		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1625						DryWt Corrected: N

General Chemistry

Client Sample ID: **1336001-25**

Lab Sample ID: 580-40519-9

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	9800	H	mg/Kg	250	2000	1.0	9060
Analysis Batch: 580-147218	Analysis Date: 10/14/2013 1255						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Solids	69		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N
Percent Moisture	31		%	0.10	0.10	1.0	D 2216
Analysis Batch: 580-146059	Analysis Date: 09/28/2013 1601						DryWt Corrected: N

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-01**

Lab Sample ID: 580-40519-1

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	155.31 g
Analysis Date:	10/02/2013 2128			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.0			
Sieve Size #20 - Percent Finer		97.0			
Sieve Size #40 - Percent Finer		92.1			
Sieve Size #60 - Percent Finer		83.8			
Sieve Size #80 - Percent Finer		77.1			
Sieve Size #100 - Percent Finer		70.5			
Sieve Size #200 - Percent Finer		41.2			
Hydrometer Reading 1 - Percent Finer		26.8			
Hydrometer Reading 2 - Percent Finer		22.8			
Hydrometer Reading 3 - Percent Finer		16.1			
Hydrometer Reading 4 - Percent Finer		12.1			
Hydrometer Reading 5 - Percent Finer		7.8			
Hydrometer Reading 6 - Percent Finer		6.3			
Hydrometer Reading 7 - Percent Finer		3.6			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-01**

Lab Sample ID: 580-40519-1

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	155.31 g
Analysis Date:	10/02/2013 2128			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		58.8			
Coarse Sand		1.0			
Medium Sand		6.9			
Fine Sand		50.9			
Silt		33.4			
Clay		7.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-01**

Lab Sample ID: 580-40519-1

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	155.31 g
Analysis Date:	10/02/2013 2128			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		33.0			
Hydrometer Reading 2 - Particle Size		21.2			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.2			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-04**

Lab Sample ID: 580-40519-2

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	155 g
Analysis Date:	10/02/2013 2131			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.4			
Sieve Size #20 - Percent Finer		98.3			
Sieve Size #40 - Percent Finer		95.9			
Sieve Size #60 - Percent Finer		90.9			
Sieve Size #80 - Percent Finer		85.1			
Sieve Size #100 - Percent Finer		78.0			
Sieve Size #200 - Percent Finer		49.6			
Hydrometer Reading 1 - Percent Finer		24.5			
Hydrometer Reading 2 - Percent Finer		20.3			
Hydrometer Reading 3 - Percent Finer		14.9			
Hydrometer Reading 4 - Percent Finer		11.7			
Hydrometer Reading 5 - Percent Finer		8.4			
Hydrometer Reading 6 - Percent Finer		6.0			
Hydrometer Reading 7 - Percent Finer		2.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-04**

Lab Sample ID: 580-40519-2

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	155 g
Analysis Date:	10/02/2013 2131			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		50.4			
Coarse Sand		0.6			
Medium Sand		3.5			
Fine Sand		46.3			
Silt		41.3			
Clay		8.3			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-04**

Lab Sample ID: 580-40519-2

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	155 g
Analysis Date:	10/02/2013 2131			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.5			
Hydrometer Reading 2 - Particle Size		21.0			
Hydrometer Reading 3 - Particle Size		12.4			
Hydrometer Reading 4 - Particle Size		9.1			
Hydrometer Reading 5 - Particle Size		6.3			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-07**

Lab Sample ID: 580-40519-3

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	134.07 g
Analysis Date:	10/02/2013 2133			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.1			
Sieve Size #10 - Percent Finer		98.5			
Sieve Size #20 - Percent Finer		97.8			
Sieve Size #40 - Percent Finer		96.6			
Sieve Size #60 - Percent Finer		93.2			
Sieve Size #80 - Percent Finer		87.9			
Sieve Size #100 - Percent Finer		80.9			
Sieve Size #200 - Percent Finer		47.7			
Hydrometer Reading 1 - Percent Finer		29.7			
Hydrometer Reading 2 - Percent Finer		27.0			
Hydrometer Reading 3 - Percent Finer		21.6			
Hydrometer Reading 4 - Percent Finer		16.2			
Hydrometer Reading 5 - Percent Finer		13.3			
Hydrometer Reading 6 - Percent Finer		7.7			
Hydrometer Reading 7 - Percent Finer		2.3			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-07**

Lab Sample ID: 580-40519-3

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	134.07 g
Analysis Date:	10/02/2013 2133			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.9			
Sand		51.4			
Coarse Sand		0.6			
Medium Sand		1.9			
Fine Sand		48.9			
Silt		34.4			
Clay		13.3			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-07**

Lab Sample ID: 580-40519-3

Client Matrix: Solid

Date Sampled: 08/26/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	134.07 g
Analysis Date:	10/02/2013 2133			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.7			
Hydrometer Reading 2 - Particle Size		20.9			
Hydrometer Reading 3 - Particle Size		12.3			
Hydrometer Reading 4 - Particle Size		8.7			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.3			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-10**

Lab Sample ID: 580-40519-4

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	134.94 g
Analysis Date:	10/02/2013 2134			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		98.9			
Sieve Size #10 - Percent Finer		98.0			
Sieve Size #20 - Percent Finer		97.1			
Sieve Size #40 - Percent Finer		94.1			
Sieve Size #60 - Percent Finer		87.8			
Sieve Size #80 - Percent Finer		81.0			
Sieve Size #100 - Percent Finer		74.1			
Sieve Size #200 - Percent Finer		49.3			
Hydrometer Reading 1 - Percent Finer		36.4			
Hydrometer Reading 2 - Percent Finer		30.4			
Hydrometer Reading 3 - Percent Finer		21.3			
Hydrometer Reading 4 - Percent Finer		13.7			
Hydrometer Reading 5 - Percent Finer		8.9			
Hydrometer Reading 6 - Percent Finer		5.6			
Hydrometer Reading 7 - Percent Finer		2.5			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-10**

Lab Sample ID: 580-40519-4

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	134.94 g
Analysis Date:	10/02/2013 2134			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		1.1			
Sand		49.6			
Coarse Sand		0.9			
Medium Sand		3.9			
Fine Sand		44.8			
Silt		40.4			
Clay		8.9			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-10**

Lab Sample ID: 580-40519-4

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	134.94 g
Analysis Date:	10/02/2013 2134			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.3			
Hydrometer Reading 2 - Particle Size		20.9			
Hydrometer Reading 3 - Particle Size		12.4			
Hydrometer Reading 4 - Particle Size		8.9			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.1			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-13**

Lab Sample ID: 580-40519-5

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	146.9 g
Analysis Date:	10/02/2013 2136			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		95.3			
Sieve Size #4 - Percent Finer		93.4			
Sieve Size #10 - Percent Finer		91.8			
Sieve Size #20 - Percent Finer		89.8			
Sieve Size #40 - Percent Finer		86.4			
Sieve Size #60 - Percent Finer		81.6			
Sieve Size #80 - Percent Finer		76.2			
Sieve Size #100 - Percent Finer		70.5			
Sieve Size #200 - Percent Finer		48.3			
Hydrometer Reading 1 - Percent Finer		31.1			
Hydrometer Reading 2 - Percent Finer		25.9			
Hydrometer Reading 3 - Percent Finer		19.5			
Hydrometer Reading 4 - Percent Finer		15.6			
Hydrometer Reading 5 - Percent Finer		12.8			
Hydrometer Reading 6 - Percent Finer		7.4			
Hydrometer Reading 7 - Percent Finer		4.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-13**

Lab Sample ID: 580-40519-5

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	146.9 g
Analysis Date:	10/02/2013 2136			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		6.6			
Sand		45.1			
Coarse Sand		1.6			
Medium Sand		5.4			
Fine Sand		38.1			
Silt		35.5			
Clay		12.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-13**

Lab Sample ID: 580-40519-5

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	146.9 g
Analysis Date:	10/02/2013 2136			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.3			
Hydrometer Reading 2 - Particle Size		20.9			
Hydrometer Reading 3 - Particle Size		12.4			
Hydrometer Reading 4 - Particle Size		8.7			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.1			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-16**

Lab Sample ID: 580-40519-6

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	131.22 g
Analysis Date:	10/02/2013 2138			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		98.9			
Sieve Size #10 - Percent Finer		96.4			
Sieve Size #20 - Percent Finer		93.7			
Sieve Size #40 - Percent Finer		89.3			
Sieve Size #60 - Percent Finer		84.1			
Sieve Size #80 - Percent Finer		77.8			
Sieve Size #100 - Percent Finer		70.9			
Sieve Size #200 - Percent Finer		48.2			
Hydrometer Reading 1 - Percent Finer		30.5			
Hydrometer Reading 2 - Percent Finer		24.7			
Hydrometer Reading 3 - Percent Finer		18.9			
Hydrometer Reading 4 - Percent Finer		14.5			
Hydrometer Reading 5 - Percent Finer		11.4			
Hydrometer Reading 6 - Percent Finer		5.3			
Hydrometer Reading 7 - Percent Finer		2.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-16**

Lab Sample ID: 580-40519-6

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	131.22 g
Analysis Date:	10/02/2013 2138			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		1.1			
Sand		50.7			
Coarse Sand		2.5			
Medium Sand		7.1			
Fine Sand		41.1			
Silt		36.8			
Clay		11.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-16**

Lab Sample ID: 580-40519-6

Client Matrix: Solid

Date Sampled: 08/27/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	131.22 g
Analysis Date:	10/02/2013 2138			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.8			
Hydrometer Reading 2 - Particle Size		21.2			
Hydrometer Reading 3 - Particle Size		12.5			
Hydrometer Reading 4 - Particle Size		8.7			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-19**

Lab Sample ID: 580-40519-7

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-7.txt
Dilution:	1.0			Initial Weight/Volume:	185.49 g
Analysis Date:	10/02/2013 2140			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		99.0			
Sieve Size #4 - Percent Finer		97.0			
Sieve Size #10 - Percent Finer		91.7			
Sieve Size #20 - Percent Finer		80.9			
Sieve Size #40 - Percent Finer		64.9			
Sieve Size #60 - Percent Finer		47.5			
Sieve Size #80 - Percent Finer		36.5			
Sieve Size #100 - Percent Finer		29.3			
Sieve Size #200 - Percent Finer		16.7			
Hydrometer Reading 1 - Percent Finer		12.8			
Hydrometer Reading 2 - Percent Finer		11.0			
Hydrometer Reading 3 - Percent Finer		8.4			
Hydrometer Reading 4 - Percent Finer		7.2			
Hydrometer Reading 5 - Percent Finer		6.0			
Hydrometer Reading 6 - Percent Finer		3.5			
Hydrometer Reading 7 - Percent Finer		1.6			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-19**

Lab Sample ID: 580-40519-7

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-7.txt
Dilution:	1.0			Initial Weight/Volume:	185.49 g
Analysis Date:	10/02/2013 2140			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		3.0			
Sand		80.3			
Coarse Sand		5.3			
Medium Sand		26.8			
Fine Sand		48.2			
Silt		10.7			
Clay		6.0			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-19**

Lab Sample ID: 580-40519-7

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-7.txt
Dilution:	1.0			Initial Weight/Volume:	185.49 g
Analysis Date:	10/02/2013 2140			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.8			
Hydrometer Reading 2 - Particle Size		21.1			
Hydrometer Reading 3 - Particle Size		12.5			
Hydrometer Reading 4 - Particle Size		8.9			
Hydrometer Reading 5 - Particle Size		6.2			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-22**

Lab Sample ID: 580-40519-8

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-8.txt
Dilution:	1.0			Initial Weight/Volume:	178.04 g
Analysis Date:	10/02/2013 2141			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		96.3			
Sieve Size #4 - Percent Finer		93.8			
Sieve Size #10 - Percent Finer		87.1			
Sieve Size #20 - Percent Finer		74.1			
Sieve Size #40 - Percent Finer		57.5			
Sieve Size #60 - Percent Finer		41.8			
Sieve Size #80 - Percent Finer		32.3			
Sieve Size #100 - Percent Finer		25.6			
Sieve Size #200 - Percent Finer		11.7			
Hydrometer Reading 1 - Percent Finer		11.3			
Hydrometer Reading 2 - Percent Finer		8.8			
Hydrometer Reading 3 - Percent Finer		7.5			
Hydrometer Reading 4 - Percent Finer		6.3			
Hydrometer Reading 5 - Percent Finer		4.9			
Hydrometer Reading 6 - Percent Finer		2.9			
Hydrometer Reading 7 - Percent Finer		1.7			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-22**

Lab Sample ID: 580-40519-8

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-8.txt
Dilution:	1.0			Initial Weight/Volume:	178.04 g
Analysis Date:	10/02/2013 2141			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		6.2			
Sand		82.1			
Coarse Sand		6.7			
Medium Sand		29.6			
Fine Sand		45.8			
Silt		6.8			
Clay		4.9			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-22**

Lab Sample ID: 580-40519-8

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-8.txt
Dilution:	1.0			Initial Weight/Volume:	178.04 g
Analysis Date:	10/02/2013 2141			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		33.4			
Hydrometer Reading 2 - Particle Size		21.5			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.0			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-25**

Lab Sample ID: 580-40519-9

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-9.txt
Dilution:	1.0			Initial Weight/Volume:	161.25 g
Analysis Date:	10/02/2013 2144			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.7			
Sieve Size #10 - Percent Finer		98.6			
Sieve Size #20 - Percent Finer		94.1			
Sieve Size #40 - Percent Finer		85.8			
Sieve Size #60 - Percent Finer		71.1			
Sieve Size #80 - Percent Finer		56.8			
Sieve Size #100 - Percent Finer		44.3			
Sieve Size #200 - Percent Finer		14.7			
Hydrometer Reading 1 - Percent Finer		9.8			
Hydrometer Reading 2 - Percent Finer		9.1			
Hydrometer Reading 3 - Percent Finer		8.4			
Hydrometer Reading 4 - Percent Finer		6.9			
Hydrometer Reading 5 - Percent Finer		5.5			
Hydrometer Reading 6 - Percent Finer		3.3			
Hydrometer Reading 7 - Percent Finer		1.9			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-25**

Lab Sample ID: 580-40519-9

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-9.txt
Dilution:	1.0			Initial Weight/Volume:	161.25 g
Analysis Date:	10/02/2013 2144			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.3			
Sand		85.0			
Coarse Sand		1.1			
Medium Sand		12.8			
Fine Sand		71.1			
Silt		9.2			
Clay		5.5			

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Client Sample ID: **1336001-25**

Lab Sample ID: 580-40519-9

Client Matrix: Solid

Date Sampled: 08/23/2013 1800

Date Received: 09/25/2013 1215

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62232	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40519-B-9.txt
Dilution:	1.0			Initial Weight/Volume:	161.25 g
Analysis Date:	10/02/2013 2144			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		34.0			
Hydrometer Reading 2 - Particle Size		21.6			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.0			
Hydrometer Reading 5 - Particle Size		6.3			
Hydrometer Reading 6 - Particle Size		3.3			
Hydrometer Reading 7 - Particle Size		1.4			

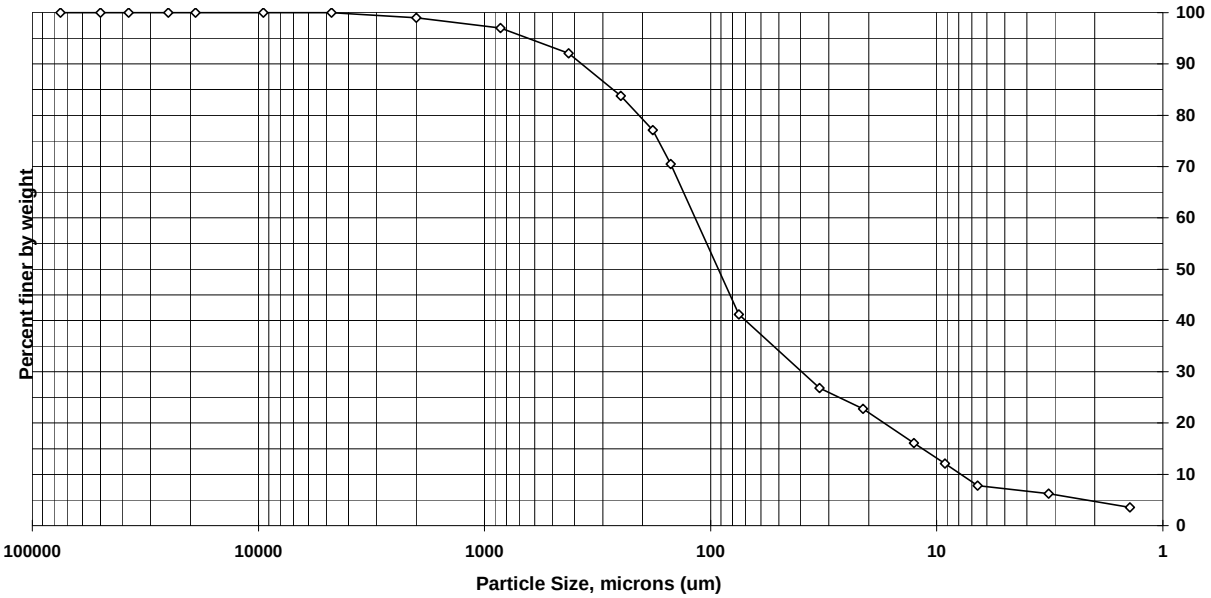
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-01	**Percent Solids:**	38.6%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-1	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): angular

Non-soil material: plant, wood, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.0	1.0
#20	850	97.0	2.0
#40	425	92.1	4.9
#60	250	83.8	8.3
#80	180	77.1	6.7
#100	150	70.5	6.6
#200	75	41.2	29.3
Hyd1	33	26.8	14.4
Hyd2	21.2	22.8	4.0
Hyd3	12.6	16.1	6.7
Hyd4	9.2	12.1	4.0
Hyd5	6.6	7.8	4.3
Hyd6	3.2	6.3	1.6
Hyd7	1.4	3.6	2.7

Soil Classification	Percent of sample
Gravel	0.0
Sand	58.8
Coarse Sand	1.0
Medium Sand	6.9
Fine Sand	50.9
Silt	33.4
Clay	7.8

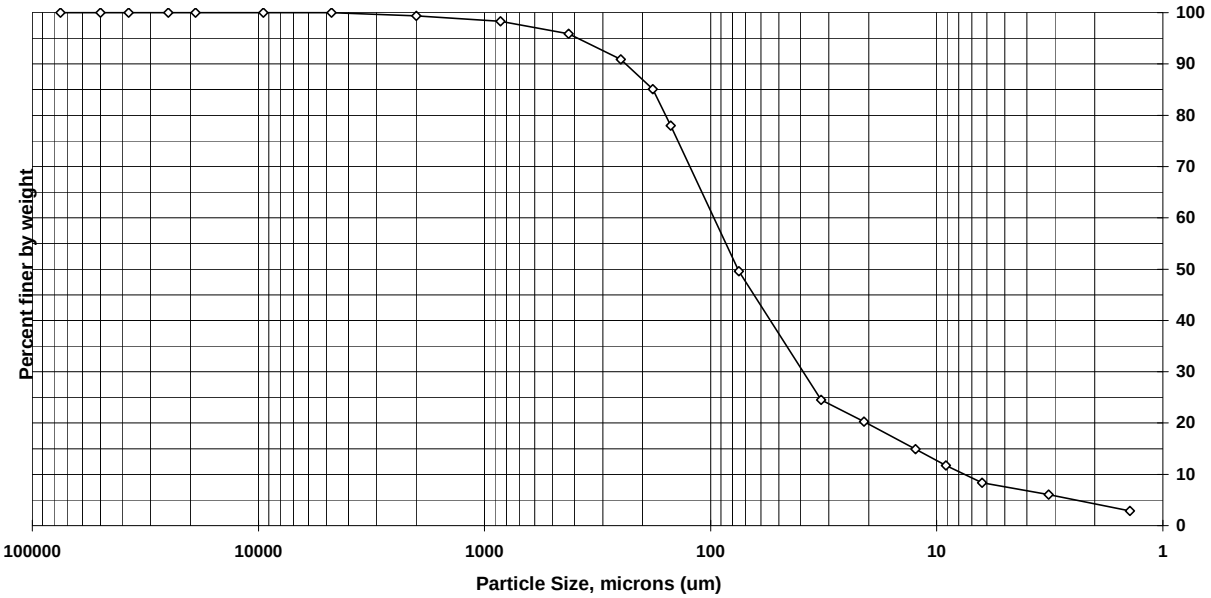
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-04	**Percent Solids:**	48.6%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-2	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): n/a

Non-soil material: shell, wood, plant

Hardness (> #10): n/a



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.4	0.6
#20	850	98.3	1.1
#40	425	95.9	2.4
#60	250	90.9	5.0
#80	180	85.1	5.8
#100	150	78.0	7.1
#200	75	49.6	28.4
Hyd1	32.5	24.5	25.1
Hyd2	21	20.3	4.2
Hyd3	12.4	14.9	5.4
Hyd4	9.1	11.7	3.2
Hyd5	6.3	8.4	3.4
Hyd6	3.2	6.0	2.3
Hyd7	1.4	2.8	3.2

Soil Classification	Percent of sample
Gravel	0.0
Sand	50.4
Coarse Sand	0.6
Medium Sand	3.5
Fine Sand	46.3
Silt	41.3
Clay	8.3

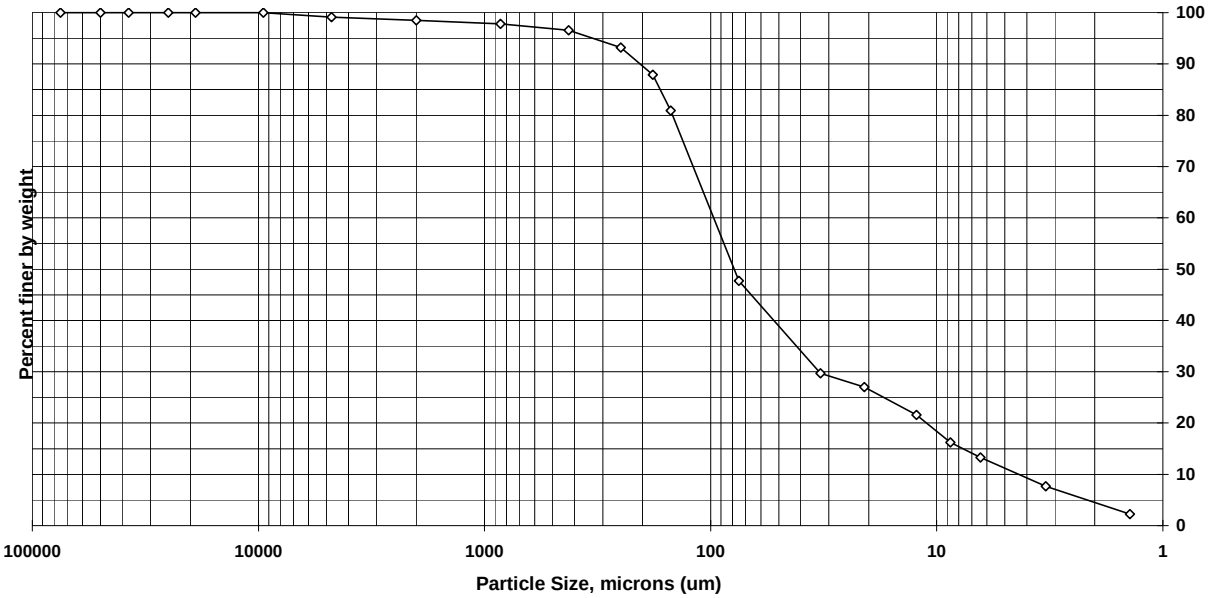
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-07	**Percent Solids:**	44.4%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-3	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): suangular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.1	0.9
#10	2000	98.5	0.6
#20	850	97.8	0.7
#40	425	96.6	1.2
#60	250	93.2	3.4
#80	180	87.9	5.3
#100	150	80.9	7.0
#200	75	47.7	33.2
Hyd1	32.7	29.7	18.0
Hyd2	20.9	27.0	2.7
Hyd3	12.3	21.6	5.4
Hyd4	8.7	16.2	5.4
Hyd5	6.4	13.3	2.9
Hyd6	3.3	7.7	5.6
Hyd7	1.4	2.3	5.4

Soil Classification	Percent of sample
Gravel	0.9
Sand	51.4
Coarse Sand	0.6
Medium Sand	1.9
Fine Sand	48.9
Silt	34.4
Clay	13.3

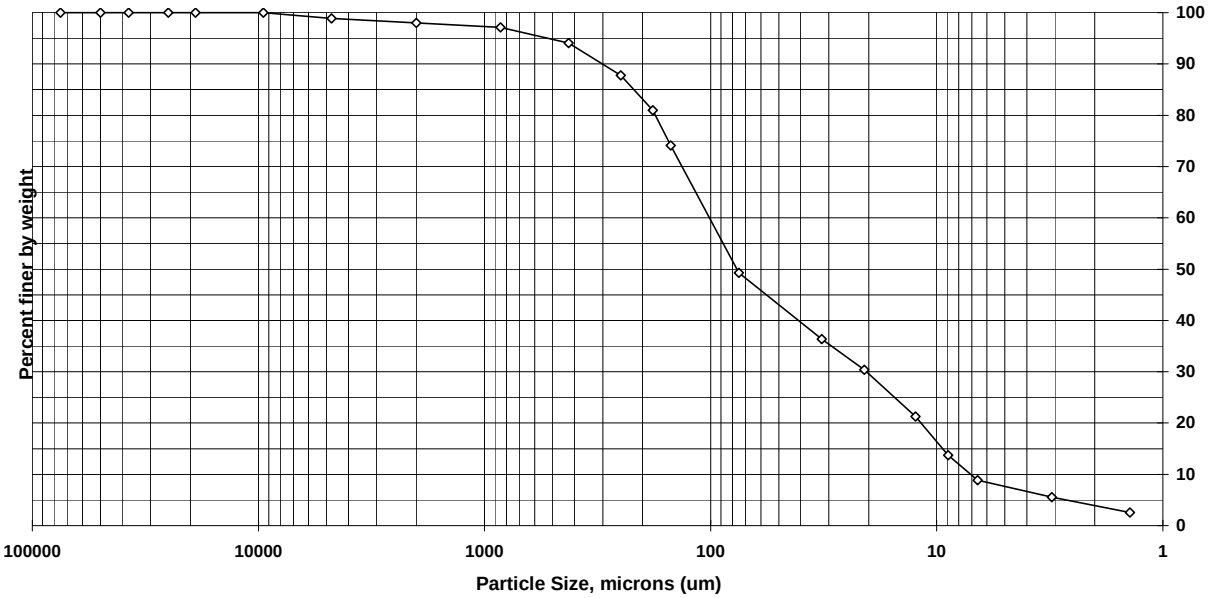
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-10	**Percent Solids:**	39.2%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-4	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): subangular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	98.9	1.1
#10	2000	98.0	0.9
#20	850	97.1	0.9
#40	425	94.1	3.0
#60	250	87.8	6.3
#80	180	81.0	6.8
#100	150	74.1	6.9
#200	75	49.3	24.8
Hyd1	32.3	36.4	12.9
Hyd2	20.9	30.4	6.0
Hyd3	12.4	21.3	9.1
Hyd4	8.9	13.7	7.6
Hyd5	6.6	8.9	4.8
Hyd6	3.1	5.6	3.3
Hyd7	1.4	2.5	3.0

Soil Classification	Percent of sample
Gravel	1.1
Sand	49.6
Coarse Sand	0.9
Medium Sand	3.9
Fine Sand	44.8
Silt	40.4
Clay	8.9

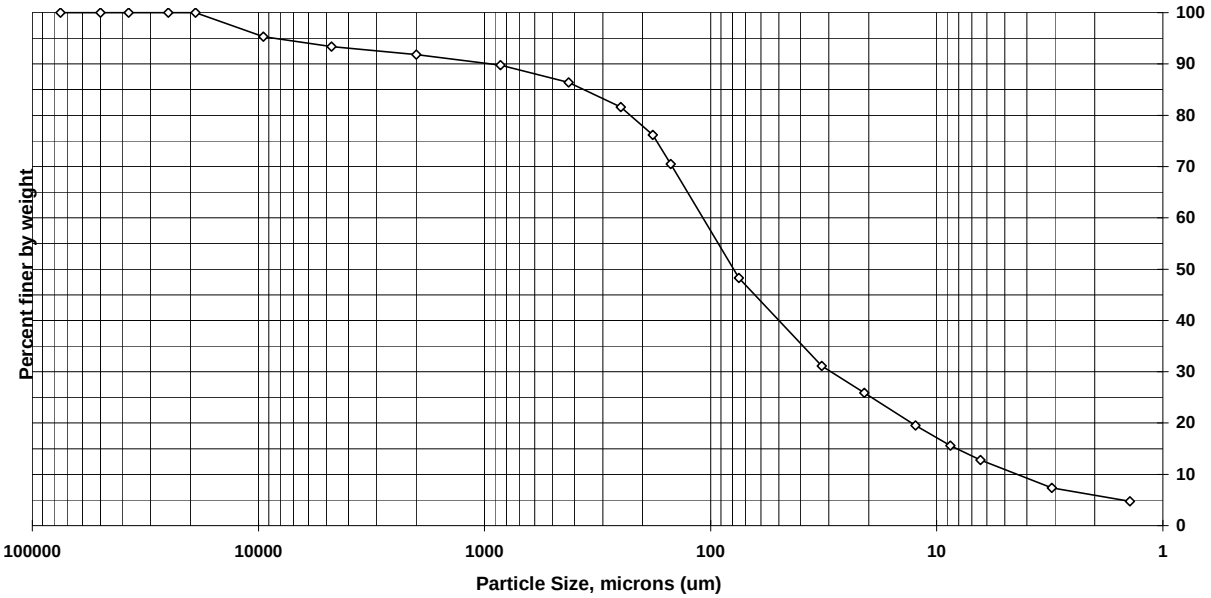
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-13	**Percent Solids:**	42.1%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-5	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): subangular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	95.3	4.7
#4	4750	93.4	1.9
#10	2000	91.8	1.6
#20	850	89.8	2.0
#40	425	86.4	3.4
#60	250	81.6	4.8
#80	180	76.2	5.4
#100	150	70.5	5.7
#200	75	48.3	22.2
Hyd1	32.3	31.1	17.2
Hyd2	20.9	25.9	5.2
Hyd3	12.4	19.5	6.4
Hyd4	8.7	15.6	3.9
Hyd5	6.4	12.8	2.8
Hyd6	3.1	7.4	5.5
Hyd7	1.4	4.8	2.6

Soil Classification	Percent of sample
Gravel	6.6
Sand	45.1
Coarse Sand	1.6
Medium Sand	5.4
Fine Sand	38.1
Silt	35.5
Clay	12.8

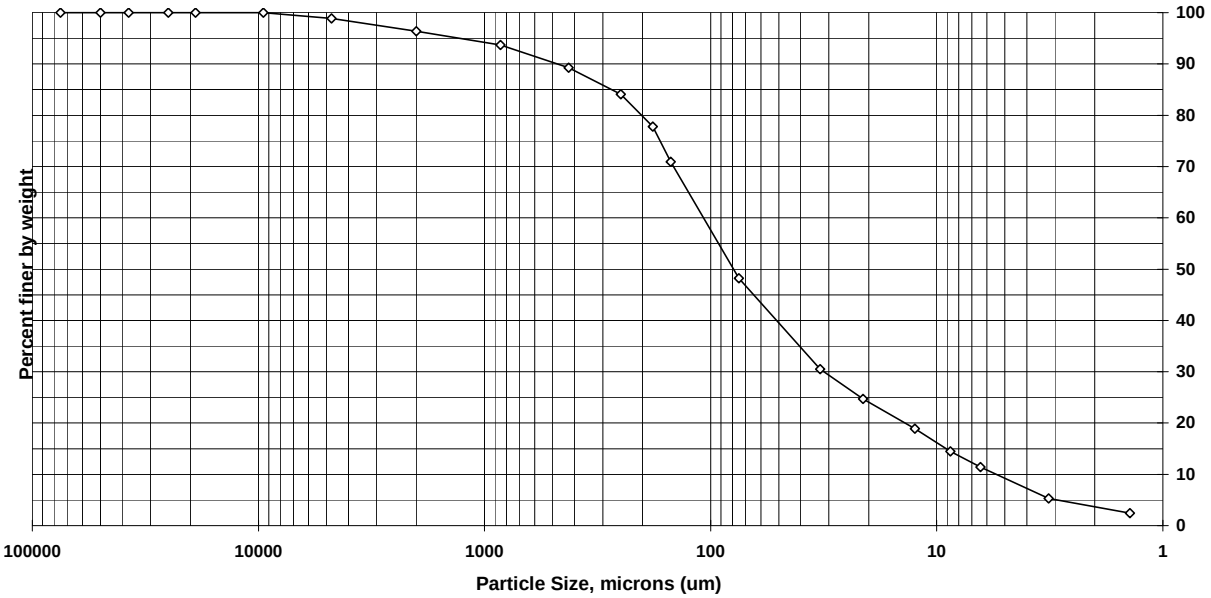
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-16	**Percent Solids:**	42.1%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-6	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): subangular

Non-soil material: wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	98.9	1.1
#10	2000	96.4	2.5
#20	850	93.7	2.7
#40	425	89.3	4.4
#60	250	84.1	5.2
#80	180	77.8	6.3
#100	150	70.9	6.9
#200	75	48.2	22.7
Hyd1	32.8	30.5	17.7
Hyd2	21.2	24.7	5.8
Hyd3	12.5	18.9	5.8
Hyd4	8.7	14.5	4.4
Hyd5	6.4	11.4	3.1
Hyd6	3.2	5.3	6.1
Hyd7	1.4	2.4	2.9

Soil Classification	Percent of sample
Gravel	1.1
Sand	50.7
Coarse Sand	2.5
Medium Sand	7.1
Fine Sand	41.1
Silt	36.8
Clay	11.4

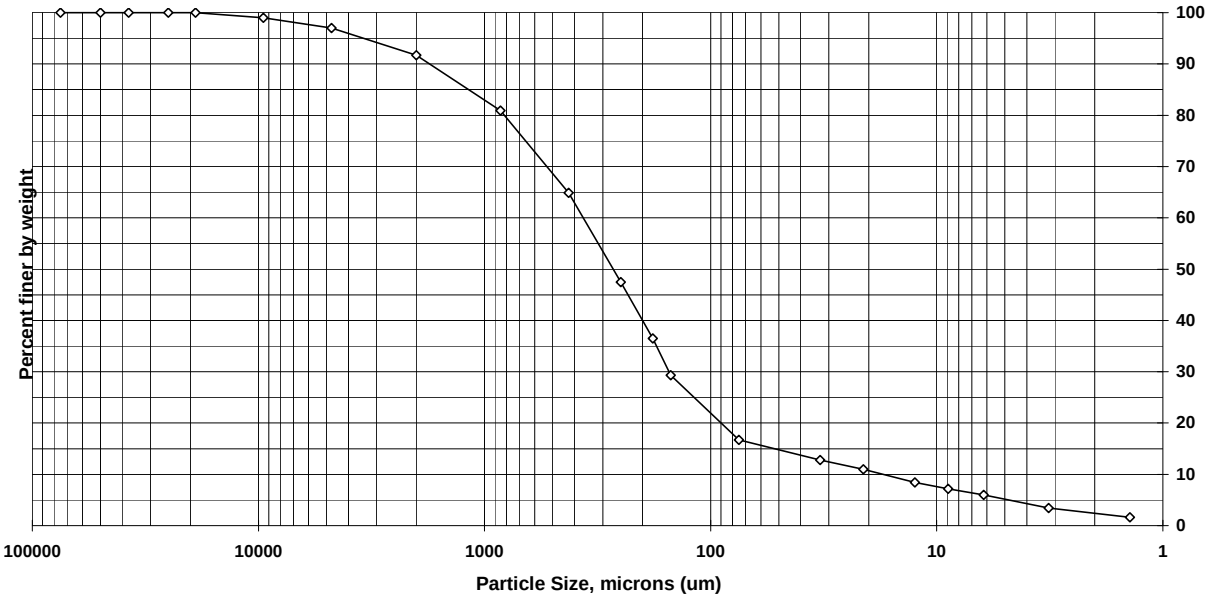
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-19	**Percent Solids:**	71.3%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-7	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): subrounded

Non-soil material: shell, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	99.0	1.0
#4	4750	97.0	2.0
#10	2000	91.7	5.3
#20	850	80.9	10.8
#40	425	64.9	16.0
#60	250	47.5	17.4
#80	180	36.5	11.0
#100	150	29.3	7.2
#200	75	16.7	12.6
Hyd1	32.8	12.8	3.9
Hyd2	21.1	11.0	1.8
Hyd3	12.5	8.4	2.6
Hyd4	8.9	7.2	1.2
Hyd5	6.2	6.0	1.2
Hyd6	3.2	3.5	2.5
Hyd7	1.4	1.6	1.8

Soil Classification	Percent of sample
Gravel	3.0
Sand	80.3
Coarse Sand	5.3
Medium Sand	26.8
Fine Sand	48.2
Silt	10.7
Clay	6.0

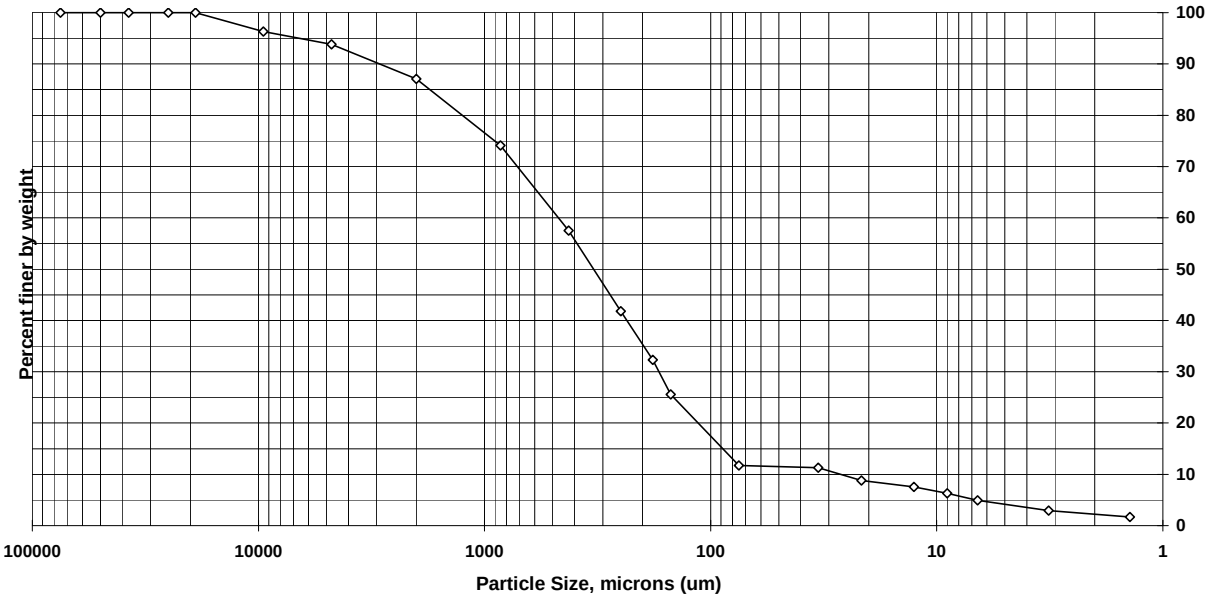
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-22	**Percent Solids:**	71.9%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-8	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): subrounded

Non-soil material: shell, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	96.3	3.7
#4	4750	93.8	2.5
#10	2000	87.1	6.7
#20	850	74.1	13.0
#40	425	57.5	16.6
#60	250	41.8	15.7
#80	180	32.3	9.5
#100	150	25.6	6.7
#200	75	11.7	13.9
Hyd1	33.4	11.3	0.4
Hyd2	21.5	8.8	2.5
Hyd3	12.6	7.5	1.3
Hyd4	9	6.3	1.3
Hyd5	6.6	4.9	1.4
Hyd6	3.2	2.9	2.0
Hyd7	1.4	1.7	1.3

Soil Classification	Percent of sample
Gravel	6.2
Sand	82.1
Coarse Sand	6.7
Medium Sand	29.6
Fine Sand	45.8
Silt	6.8
Clay	4.9

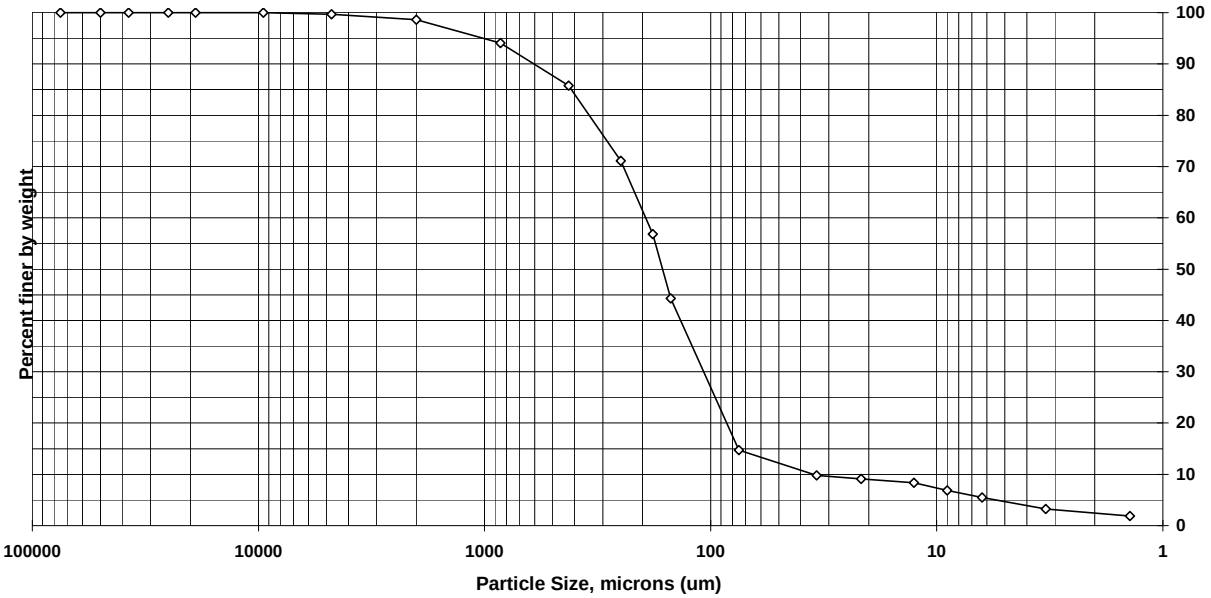
Particle Size of Soils by ASTM D422

				Date Received:	9/25/2013
Sample ID:	1336001-25	**Percent Solids:**	71.2%	**Start Date:**	10/2/2013
Lab ID:	580-40519-B-9	**Specific Gravity:**	2.650	**End Date:**	10/5/2013

Shape (> #10): subrounded

Non-soil material: shell, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.7	0.3
#10	2000	98.6	1.1
#20	850	94.1	4.5
#40	425	85.8	8.3
#60	250	71.1	14.7
#80	180	56.8	14.3
#100	150	44.3	12.5
#200	75	14.7	29.6
Hyd1	34	9.8	4.9
Hyd2	21.6	9.1	0.7
Hyd3	12.6	8.4	0.7
Hyd4	9	6.9	1.5
Hyd5	6.3	5.5	1.4
Hyd6	3.3	3.3	2.2
Hyd7	1.4	1.9	1.4

Soil Classification	Percent of sample
Gravel	0.3
Sand	85.0
Coarse Sand	1.1
Medium Sand	12.8
Fine Sand	71.1
Silt	9.2
Clay	5.5

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-01	Start Date	10/02/2013 21:28
Lab Sample ID	580-40519-B-1	End Date	10/05/2013 13:42

Dry Weight Determination

Tin Weight	1.03	g
Wet Sample + Tin	20.01	g
Dry Sample + Tin	8.35	g
% Moisture	61.43	%

Non-soil material:	plant, wood, shell
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:30
Date/Time out of oven	10/03/2013 18:28

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		155.31	155.31
Sample Weight (Oven Dried)			59.9

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.61
Sample <#10			59.3
% Passing #10			38.2

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750			0.00	g	100.0	Gravel	
#10	2000	462.79	463.40	0.61	g	99.0	Sand	Coarse
#20	850	381.19	382.39	1.20	g	97.0	Sand	Medium
#40	425	352.82	355.77	2.95	g	92.1	Sand	Medium
#60	250	350.93	355.89	4.96	g	83.8	Sand	Fine
#80	180	329.95	333.97	4.02	g	77.1	Sand	Fine
#100	150	327.04	330.97	3.93	g	70.5	Sand	Fine
#200	75	306.18	323.73	17.55	g	41.2	Sand	Fine
				0.00	g	41.2		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	59.9

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0140	23.0	33	26.8	Silt	
5	5	1.0125	23.0	21.2	22.8	Silt	
15	15	1.0100	23.0	12.6	16.1	Silt	
30	29	1.0085	23.0	9.2	12.1	Silt	
60	58	1.0070	22.5	6.6	7.82	Silt	
250	250	1.0065	22.0	3.2	6.26	Clay	
1440	1434	1.0055	22.0	1.4	3.57	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-04	Start Date	10/02/2013 21:31
Lab Sample ID	580-40519-B-2	End Date	10/05/2013 13:46

Dry Weight Determination

Tin Weight	1.02	g
Wet Sample + Tin	25.22	g
Dry Sample + Tin	12.77	g
% Moisture	51.45	%

Non-soil material:	shell, wood, plant
Shape (> #10):	n/a
Hardness (> #10):	n/a
Date/Time in oven	10/02/2013 21:32
Date/Time out of oven	10/03/2013 18:29

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		155.00	155
Sample Weight (Oven Dried)			75.3

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.46
Sample <#10			74.8
% Passing #10			48.3

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750			0.00	g	100.0	Gravel	
#10	2000	462.79	463.25	0.46	g	99.4	Sand	Coarse
#20	850	389.86	390.72	0.86	g	98.3	Sand	Medium
#40	425	354.96	356.77	1.81	g	95.9	Sand	Medium
#60	250	345.99	349.77	3.78	g	90.9	Sand	Fine
#80	180	331.82	336.15	4.33	g	85.1	Sand	Fine
#100	150	331.14	336.45	5.31	g	78.0	Sand	Fine
#200	75	320.60	341.99	21.39	g	49.6	Sand	Fine
				0.00	g	49.6		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	75.3

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0155	23.0	32.5	24.5	Silt	
5	5	1.0135	23.0	21	20.3	Silt	
15	15	1.0110	23.0	12.4	14.9	Silt	
30	29	1.0095	23.0	9.1	11.7	Silt	
60	63	1.0080	22.5	6.3	8.35	Silt	
250	250	1.0070	22.0	3.2	6.04	Clay	
1440	1434	1.0055	22.0	1.4	2.84	Clay	

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Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-07	Start Date	10/02/2013 21:33
Lab Sample ID	580-40519-B-3	End Date	10/05/2013 13:49

Dry Weight Determination

Tin Weight	1.00	g
Wet Sample + Tin	21.40	g
Dry Sample + Tin	10.05	g
% Moisture	55.64	%

Non-soil material:	plant, wood
Shape (> #10):	suangular
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:34
Date/Time out of oven	10/03/2013 18:29

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		134.07	134.07
Sample Weight (Oven Dried)			59.5

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.94
Sample <#10			58.6
% Passing #10			43.7

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.01	488.57	0.56	g	99.1	Gravel	
#10	2000	462.79	463.17	0.38	g	98.5	Sand	Coarse
#20	850	381.19	381.63	0.44	g	97.8	Sand	Medium
#40	425	352.82	353.55	0.73	g	96.6	Sand	Medium
#60	250	350.93	352.95	2.02	g	93.2	Sand	Fine
#80	180	329.95	333.11	3.16	g	87.9	Sand	Fine
#100	150	327.04	331.20	4.16	g	80.9	Sand	Fine
#200	75	306.18	325.96	19.78	g	47.7	Sand	Fine
				0.00	g	47.7		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	59.5

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0150	23.0	32.7	29.7	Silt	
5	5	1.0140	23.0	20.9	27	Silt	
15	15	1.0120	23.0	12.3	21.6	Silt	
30	31	1.0100	23.0	8.7	16.2	Silt	
60	60	1.0090	22.5	6.4	13.3	Silt	
250	240	1.0070	22.0	3.3	7.65	Clay	
1440	1424	1.0050	22.0	1.4	2.25	Clay	

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Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-10	Start Date	10/02/2013 21:34
Lab Sample ID	580-40519-B-4	End Date	10/05/2013 14:01

Dry Weight Determination

Tin Weight	1.04	g
Wet Sample + Tin	32.92	g
Dry Sample + Tin	13.53	g
% Moisture	60.82	%

Non-soil material:	plant, wood
Shape (> #10):	subangular
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:36
Date/Time out of oven	10/03/2013 18:29

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		134.94	134.94
Sample Weight (Oven Dried)			52.9

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			1.07
Sample <#10			51.8
% Passing #10			38.4

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.01	488.60	0.59	g	98.9	Gravel	
#10	2000	462.79	463.27	0.48	g	98.0	Sand	Coarse
#20	850	389.86	390.34	0.48	g	97.1	Sand	Medium
#40	425	354.96	356.55	1.59	g	94.1	Sand	Medium
#60	250	345.99	349.33	3.34	g	87.8	Sand	Fine
#80	180	331.82	335.43	3.61	g	81.0	Sand	Fine
#100	150	331.14	334.79	3.65	g	74.1	Sand	Fine
#200	75	320.60	333.72	13.12	g	49.3	Sand	Fine
				0.00	g	49.3		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	52.9

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0160	23.0	32.3	36.4	Silt	
5	5	1.0140	23.0	20.9	30.4	Silt	
15	15	1.0110	23.0	12.4	21.3	Silt	
30	31	1.0085	23.0	8.9	13.7	Silt	
60	59	1.0070	22.5	6.6	8.86	Silt	
250	265	1.0060	22.0	3.1	5.57	Clay	
1440	1412	1.0050	22.0	1.4	2.53	Clay	

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Sediment Grain Size - D422

Client	
Client Sample ID	1336001-13
Lab Sample ID	580-40519-B-5

Date Received	9/25/2013
Start Date	10/02/2013 21:36
End Date	10/05/2013 13:39

Dry Weight Determination

Tin Weight	1.03	g
Wet Sample + Tin	35.90	g
Dry Sample + Tin	15.72	g
% Moisture	57.87	%

Non-soil material:	plant, wood
Shape (> #10):	subangular
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:37
Date/Time out of oven	10/03/2013 18:29

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		146.90	146.9
Sample Weight (Oven Dried)			61.9

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			5.04
Sample <#10			56.9
% Passing #10			38.7

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500	447.32	450.20	2.88	g	95.3	Gravel	
#4	4750	488.01	489.20	1.19	g	93.4	Gravel	
#10	2000	462.79	463.76	0.97	g	91.8	Sand	Coarse
#20	850	381.19	382.44	1.25	g	89.8	Sand	Medium
#40	425	352.82	354.94	2.12	g	86.4	Sand	Medium
#60	250	350.93	353.90	2.97	g	81.6	Sand	Fine
#80	180	329.95	333.32	3.37	g	76.2	Sand	Fine
#100	150	327.04	330.58	3.54	g	70.5	Sand	Fine
#200	75	306.18	319.95	13.77	g	48.3	Sand	Fine
				0.00	g	48.3		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	61.9

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0160	23.0	32.3	31.1	Silt	
5	5	1.0140	23.0	20.9	25.9	Silt	
15	15	1.0115	23.0	12.4	19.5	Silt	
30	31	1.0100	23.0	8.7	15.6	Silt	
60	59	1.0090	22.5	6.4	12.8	Silt	
250	265	1.0070	22.0	3.1	7.35	Clay	
1440	1412	1.0060	22.0	1.4	4.76	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-16	Start Date	10/02/2013 21:38
Lab Sample ID	580-40519-B-6	End Date	10/05/2013 14:07

Dry Weight Determination

Tin Weight	1.04	g
Wet Sample + Tin	35.20	g
Dry Sample + Tin	15.43	g
% Moisture	57.87	%

Non-soil material:	wood
Shape (> #10):	subangular
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:39
Date/Time out of oven	10/03/2013 18:30

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		131.22	131.22
Sample Weight (Oven Dried)			55.3

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			2.01
Sample <#10			53.3
% Passing #10			40.6

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.01	488.62	0.61	g	98.9	Gravel	
#10	2000	462.79	464.19	1.40	g	96.4	Sand	Coarse
#20	850	389.86	391.34	1.48	g	93.7	Sand	Medium
#40	425	354.96	357.39	2.43	g	89.3	Sand	Medium
#60	250	345.99	348.89	2.90	g	84.1	Sand	Fine
#80	180	331.82	335.31	3.49	g	77.8	Sand	Fine
#100	150	331.14	334.97	3.83	g	70.9	Sand	Fine
#200	75	320.60	333.14	12.54	g	48.2	Sand	Fine
				0.00	g	48.2		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	55.3

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0145	23.0	32.8	30.5	Silt	
5	5	1.0125	23.0	21.2	24.7	Silt	
15	15	1.0105	23.0	12.5	18.9	Silt	
30	32	1.0090	23.0	8.7	14.5	Silt	
60	60	1.0080	22.5	6.4	11.4	Silt	
250	259	1.0060	22.0	3.2	5.32	Clay	
1440	1406	1.0050	22.0	1.4	2.42	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-19	Start Date	10/02/2013 21:40
Lab Sample ID	580-40519-B-7	End Date	10/05/2013 14:20

Dry Weight Determination

Tin Weight	1.06	g
Wet Sample + Tin	27.67	g
Dry Sample + Tin	20.03	g
% Moisture	28.71	%

Non-soil material:	shell, wood
Shape (> #10):	subrounded
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:41
Date/Time out of oven	10/03/2013 18:30

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		185.49	185.49
Sample Weight (Oven Dried)			132

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			11.1
Sample <#10			121
% Passing #10			65.2

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500	447.32	448.70	1.38	g	99.0	Gravel	
#4	4750	488.01	490.65	2.64	g	97.0	Gravel	
#10	2000	462.79	469.83	7.04	g	91.7	Sand	Coarse
#20	850	381.19	395.43	14.24	g	80.9	Sand	Medium
#40	425	352.82	373.89	21.07	g	64.9	Sand	Medium
#60	250	350.93	373.95	23.02	g	47.5	Sand	Fine
#80	180	329.95	344.43	14.48	g	36.5	Sand	Fine
#100	150	327.04	336.61	9.57	g	29.3	Sand	Fine
#200	75	306.18	322.80	16.62	g	16.7	Sand	Fine
				0.00	g	16.7		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	132

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0145	23.0	32.8	12.8	Silt	
5	5	1.0130	23.0	21.1	11	Silt	
15	15	1.0110	22.5	12.5	8.42	Silt	
30	30	1.0100	22.5	8.9	7.2	Silt	
60	63	1.0090	22.5	6.2	5.98	Silt	
250	253	1.0070	22.0	3.2	3.45	Clay	
1440	1400	1.0055	22.0	1.4	1.62	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-22	Start Date	10/02/2013 21:41
Lab Sample ID	580-40519-B-8	End Date	10/05/2013 14:28

Dry Weight Determination

Tin Weight	1.05	g
Wet Sample + Tin	22.83	g
Dry Sample + Tin	16.71	g
% Moisture	28.10	%

Non-soil material:	shell, wood
Shape (> #10):	subrounded
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:43
Date/Time out of oven	10/03/2013 18:31

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		178.04	178.04
Sample Weight (Oven Dried)			128

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			16.6
Sample <#10			111
% Passing #10			62.3

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500	447.32	452.07	4.75	g	96.3	Gravel	
#4	4750	488.01	491.19	3.18	g	93.8	Gravel	
#10	2000	462.79	471.41	8.62	g	87.1	Sand	Coarse
#20	850	389.86	406.45	16.59	g	74.1	Sand	Medium
#40	425	354.96	376.21	21.25	g	57.5	Sand	Medium
#60	250	345.99	366.03	20.04	g	41.8	Sand	Fine
#80	180	331.82	343.95	12.13	g	32.3	Sand	Fine
#100	150	331.14	339.66	8.52	g	25.6	Sand	Fine
#200	75	320.60	338.35	17.75	g	11.7	Sand	Fine
				0.00	g	11.7		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	128

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0130	23.0	33.4	11.3	Silt	
5	5	1.0110	23.0	21.5	8.78	Silt	
15	15	1.0100	23.0	12.6	7.53	Silt	
30	30	1.0090	23.0	9	6.27	Silt	
60	57	1.0080	22.5	6.6	4.91	Silt	
250	247	1.0065	22.0	3.2	2.93	Clay	
1440	1394	1.0055	22.0	1.4	1.67	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/25/2013
Client Sample ID	1336001-25	Start Date	10/02/2013 21:44
Lab Sample ID	580-40519-B-9	End Date	10/05/2013 14:28

Dry Weight Determination

Tin Weight	1.03	g
Wet Sample + Tin	26.03	g
Dry Sample + Tin	18.84	g
% Moisture	28.76	%

Non-soil material:	shell, wood
Shape (> #10):	subrounded
Hardness (> #10):	hard

Date/Time in oven	10/02/2013 21:45
Date/Time out of oven	10/03/2013 18:31

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		161.25	161.25
Sample Weight (Oven Dried)			115

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			1.69
Sample <#10			113
% Passing #10			70.1

Hydrometer Data

Serial Number	540534
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0050
High Temp (C)	23.0
Reading at High Temp	1.0040
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.01	488.40	0.39	g	99.7	Gravel	
#10	2000	462.79	464.09	1.30	g	98.6	Sand	Coarse
#20	850	381.19	386.31	5.12	g	94.1	Sand	Medium
#40	425	352.82	362.31	9.49	g	85.8	Sand	Medium
#60	250	350.93	367.87	16.94	g	71.1	Sand	Fine
#80	180	329.95	346.44	16.49	g	56.8	Sand	Fine
#100	150	327.04	341.39	14.35	g	44.3	Sand	Fine
#200	75	306.18	340.24	34.06	g	14.7	Sand	Fine
				0.00	g	14.7		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	115

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0110	23.0	34	9.78	Silt	
5	5	1.0105	23.0	21.6	9.08	Silt	
15	15	1.0100	23.0	12.6	8.38	Silt	
30	30	1.0090	22.5	9	6.87	Silt	
60	63	1.0080	22.5	6.3	5.47	Silt	
250	241	1.0065	22.0	3.3	3.26	Clay	
1440	1388	1.0055	22.0	1.4	1.86	Clay	

DATA REPORTING QUALIFIERS

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Lab Section	Qualifier	Description
General Chemistry		
	H	Sample was prepped or analyzed beyond the specified holding time

QUALITY CONTROL RESULTS

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:580-146059					
580-40519-1	1336001-01	T	Solid	D 2216	
580-40519-2	1336001-04	T	Solid	D 2216	
580-40519-3	1336001-07	T	Solid	D 2216	
580-40519-4	1336001-10	T	Solid	D 2216	
580-40519-5	1336001-13	T	Solid	D 2216	
580-40519-6	1336001-16	T	Solid	D 2216	
580-40519-7	1336001-19	T	Solid	D 2216	
580-40519-8	1336001-22	T	Solid	D 2216	
580-40519-9	1336001-25	T	Solid	D 2216	
Prep Batch: 580-146168					
580-40519-1	1336001-01	T	Solid	Increm, Prep	
580-40519-2	1336001-04	T	Solid	Increm, Prep	
580-40519-3	1336001-07	T	Solid	Increm, Prep	
580-40519-4	1336001-10	T	Solid	Increm, Prep	
580-40519-5	1336001-13	T	Solid	Increm, Prep	
580-40519-6	1336001-16	T	Solid	Increm, Prep	
580-40519-7	1336001-19	T	Solid	Increm, Prep	
580-40519-8	1336001-22	T	Solid	Increm, Prep	
580-40519-9	1336001-25	T	Solid	Increm, Prep	
Analysis Batch:580-147218					
580-40519-1	1336001-01	T	Solid	9060	
580-40519-2	1336001-04	T	Solid	9060	
580-40519-3	1336001-07	T	Solid	9060	
580-40519-4	1336001-10	T	Solid	9060	
580-40519-5	1336001-13	T	Solid	9060	
580-40519-6	1336001-16	T	Solid	9060	
580-40519-7	1336001-19	T	Solid	9060	
580-40519-8	1336001-22	T	Solid	9060	
580-40519-9	1336001-25	T	Solid	9060	

Report Basis

T = Total

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Geotechnical					
Analysis Batch:200-62232					
580-40519-1	1336001-01	T	Solid	D422	
580-40519-2	1336001-04	T	Solid	D422	
580-40519-3	1336001-07	T	Solid	D422	
580-40519-4	1336001-10	T	Solid	D422	
580-40519-5	1336001-13	T	Solid	D422	
580-40519-6	1336001-16	T	Solid	D422	
580-40519-7	1336001-19	T	Solid	D422	
580-40519-8	1336001-22	T	Solid	D422	
580-40519-9	1336001-25	T	Solid	D422	

Report Basis

T = Total

SUBCONTRACT ORDER

Brooks Rand Labs

1336001

40519

SENDING LABORATORY:

Brooks Rand Labs
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
Project Manager: Lydia Greaves

RECEIVING LABORATORY:

Test America - Tacoma
5755 8th Street East
Tacoma, WA 98424
Phone :(253) 922-2310
Fax: (253) 922-5047

Cooler/TB Dig/IR cor 1.2 **unc** 1.2
Cooler Dsc dg white **@ Lab**
Wet/Packs w/o ice/frozen **Packing** none
w/o CS Client drop

Analysis	Laboratory ID	Comments
Client ID: WP-DU1(0-4")		
Sample ID: 1336001-01 Soil/Sediment Sampled:08/26/13 18:00		
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
Client ID: WP-DU1(4-8")		
Sample ID: 1336001-04 Soil/Sediment Sampled:08/26/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU1(8-12")		
Sample ID: 1336001-07 Soil/Sediment Sampled:08/26/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU2(0-4")		
Sample ID: 1336001-10 Soil/Sediment Sampled:08/27/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU2(4-8")		
Sample ID: 1336001-13 Soil/Sediment Sampled:08/27/13 18:00		
SUB - TOC-S		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America

580-40519 Chain of Custody

Released By	Date	Received By	Date
Lydia Greaves	9/25/13 9/26/13 11:15	Rachael [illegible]	9/25/13 1215
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Brooks Rand Labs

1336001

Analysis	Laboratory ID	Comments
Client ID: WP-DU2(8-12")		
Sample ID: 1336001-16 Soil/Sediment Sampled:08/27/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU5 (0-4")		
Sample ID: 1336001-19 Soil/Sediment Sampled:08/23/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU5 (4-8')		
Sample ID: 1336001-22 Soil/Sediment Sampled:08/23/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU5 (8-12')		
Sample ID: 1336001-25 Soil/Sediment Sampled:08/23/13 18:00		
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America

Released By	Date	Received By	Date
Lydia Greaves	9/25/13 ~~9/26/13~~ 11:15	Lakisha Pollard	9/25/13 125
Released By	Date	Received By	Date

Login Sample Receipt Checklist

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Login Number: 40519

List Source: TestAmerica Seattle

List Number: 1

Creator: McDaniel, Ronald T

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	False	None
Sample custody seals, if present, are intact.	False	None
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	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received 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	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Brooks Rand Labs LLC

Job Number: 580-40519-1

Login Number: 40519
List Number: 1
Creator: Gagne, Eric M

List Source: TestAmerica Burlington
List Creation: 10/02/13 04:16 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	624791 & 792
Sample custody seals, if present, are 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	5.0ºC. IR GUN ID 181. CF -0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	NO CLIENT CONTAINER LABELS.
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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Job Number: 580-40462-1

Job Description: 1336023

For:
Brooks Rand Labs LLC
3958 6th Avenue NW
Seattle, WA 98107

Attention: Lydia Greaves

Approved for release.
Pam R Johnson
Project Manager I
10/11/2013 4:16 PM

Pam R Johnson, Project Manager I
5755 8th Street East, Tacoma, WA, 98424
(253)922-2310 x112
pamr.johnson@testamericainc.com
10/11/2013

cc: Ms. Elizabeth Madonick

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

Receipt
The samples were received on 9/21/2013 10:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.7º C and 1.0º C.

General Chemistry - Method 9060
The following samples were received with greater than 50% of holding time expired: (580-40462-1), (580-40462-2), (580-40462-3), (580-40462-4), (580-40462-5) and (580-40462-6). As such, the laboratory had insufficient time remaining to perform the analysis within holding time.

No other analytical or quality issues were noted.

Geotechnical
No analytical or quality issues were noted.

METHOD SUMMARY

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Organic Carbon, Total (TOC)	TAL SEA	SW846 9060	
Incremental Sample Preparation	TAL SEA		EPA Increm, Prep
Grain Size	TAL BUR	ASTM D422	

Lab References:

TAL BUR = TestAmerica Burlington

TAL SEA = TestAmerica Seattle

Method References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-40462-1	1336023-01	Solid	08/28/2013 1800	09/21/2013 1050
580-40462-2	1336023-02	Solid	08/28/2013 1800	09/21/2013 1050
580-40462-3	1336023-03	Solid	08/28/2013 1800	09/21/2013 1050
580-40462-4	1336023-04	Solid	08/29/2013 1800	09/21/2013 1050
580-40462-5	1336023-05	Solid	08/29/2013 1800	09/21/2013 1050
580-40462-6	1336023-06	Solid	08/29/2013 1800	09/21/2013 1050

SAMPLE RESULTS

General Chemistry

Client Sample ID: **1336023-01**

Lab Sample ID: 580-40462-1

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	22000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1304 DryWt Corrected: N

General Chemistry

Client Sample ID: **1336023-02**

Lab Sample ID: 580-40462-2

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	22000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1318 DryWt Corrected: N

General Chemistry

Client Sample ID: **1336023-03**

Lab Sample ID: 580-40462-3

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	37000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1323 DryWt Corrected: N

General Chemistry

Client Sample ID: **1336023-04**

Lab Sample ID: 580-40462-4

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	21000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1327 DryWt Corrected: N

General Chemistry

Client Sample ID: **1336023-05**

Lab Sample ID: 580-40462-5

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	18000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1331 DryWt Corrected: N

General Chemistry

Client Sample ID: **1336023-06**

Lab Sample ID: 580-40462-6

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	17000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1335 DryWt Corrected: N

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-01**

Lab Sample ID: 580-40462-1

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	163.96 g
Analysis Date:	09/27/2013 2118			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.7			
Sieve Size #10 - Percent Finer		98.8			
Sieve Size #20 - Percent Finer		97.0			
Sieve Size #40 - Percent Finer		93.5			
Sieve Size #60 - Percent Finer		85.8			
Sieve Size #80 - Percent Finer		76.8			
Sieve Size #100 - Percent Finer		67.4			
Sieve Size #200 - Percent Finer		33.9			
Hydrometer Reading 1 - Percent Finer		20.2			
Hydrometer Reading 2 - Percent Finer		17.3			
Hydrometer Reading 3 - Percent Finer		14.3			
Hydrometer Reading 4 - Percent Finer		9.5			
Hydrometer Reading 5 - Percent Finer		7.5			
Hydrometer Reading 6 - Percent Finer		5.5			
Hydrometer Reading 7 - Percent Finer		2.6			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-01**

Lab Sample ID: 580-40462-1

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	163.96 g
Analysis Date:	09/27/2013 2118			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.3			
Sand		65.8			
Coarse Sand		0.9			
Medium Sand		5.3			
Fine Sand		59.6			
Silt		26.4			
Clay		7.5			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-01**

Lab Sample ID: 580-40462-1

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	163.96 g
Analysis Date:	09/27/2013 2118			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		33.4			
Hydrometer Reading 2 - Particle Size		21.5			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.1			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-02**

Lab Sample ID: 580-40462-2

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	147.31 g
Analysis Date:	09/27/2013 2120			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		98.9			
Sieve Size #10 - Percent Finer		98.1			
Sieve Size #20 - Percent Finer		96.3			
Sieve Size #40 - Percent Finer		92.1			
Sieve Size #60 - Percent Finer		82.2			
Sieve Size #80 - Percent Finer		72.5			
Sieve Size #100 - Percent Finer		63.2			
Sieve Size #200 - Percent Finer		33.2			
Hydrometer Reading 1 - Percent Finer		18.4			
Hydrometer Reading 2 - Percent Finer		16.4			
Hydrometer Reading 3 - Percent Finer		13.4			
Hydrometer Reading 4 - Percent Finer		10.5			
Hydrometer Reading 5 - Percent Finer		7.5			
Hydrometer Reading 6 - Percent Finer		5.6			
Hydrometer Reading 7 - Percent Finer		2.6			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-02**

Lab Sample ID: 580-40462-2

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	147.31 g
Analysis Date:	09/27/2013 2120			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		1.1			
Sand		65.7			
Coarse Sand		0.8			
Medium Sand		6.0			
Fine Sand		58.9			
Silt		25.7			
Clay		7.5			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-02**

Lab Sample ID: 580-40462-2

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	147.31 g
Analysis Date:	09/27/2013 2120			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		33.8			
Hydrometer Reading 2 - Particle Size		21.6			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.1			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-03**

Lab Sample ID: 580-40462-3

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	141.81 g
Analysis Date:	09/27/2013 2122			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.9			
Sieve Size #10 - Percent Finer		99.5			
Sieve Size #20 - Percent Finer		97.4			
Sieve Size #40 - Percent Finer		94.2			
Sieve Size #60 - Percent Finer		88.3			
Sieve Size #80 - Percent Finer		81.0			
Sieve Size #100 - Percent Finer		72.8			
Sieve Size #200 - Percent Finer		42.8			
Hydrometer Reading 1 - Percent Finer		23.8			
Hydrometer Reading 2 - Percent Finer		21.5			
Hydrometer Reading 3 - Percent Finer		16.9			
Hydrometer Reading 4 - Percent Finer		12.3			
Hydrometer Reading 5 - Percent Finer		10			
Hydrometer Reading 6 - Percent Finer		7.7			
Hydrometer Reading 7 - Percent Finer		4.2			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-03**

Lab Sample ID: 580-40462-3

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	141.81 g
Analysis Date:	09/27/2013 2122			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.1			
Sand		57.1			
Coarse Sand		0.4			
Medium Sand		5.3			
Fine Sand		51.4			
Silt		32.8			
Clay		10			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-03**

Lab Sample ID: 580-40462-3

Client Matrix: Solid

Date Sampled: 08/28/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	141.81 g
Analysis Date:	09/27/2013 2122			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		33.4			
Hydrometer Reading 2 - Particle Size		21.4			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.2			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-04**

Lab Sample ID: 580-40462-4

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	134.27 g
Analysis Date:	09/27/2013 2124			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.9			
Sieve Size #10 - Percent Finer		98.9			
Sieve Size #20 - Percent Finer		97.5			
Sieve Size #40 - Percent Finer		94.6			
Sieve Size #60 - Percent Finer		86.7			
Sieve Size #80 - Percent Finer		76.7			
Sieve Size #100 - Percent Finer		67.0			
Sieve Size #200 - Percent Finer		37.6			
Hydrometer Reading 1 - Percent Finer		23.5			
Hydrometer Reading 2 - Percent Finer		20.4			
Hydrometer Reading 3 - Percent Finer		15.2			
Hydrometer Reading 4 - Percent Finer		13.1			
Hydrometer Reading 5 - Percent Finer		9.0			
Hydrometer Reading 6 - Percent Finer		7.9			
Hydrometer Reading 7 - Percent Finer		4.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-04**

Lab Sample ID: 580-40462-4

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	134.27 g
Analysis Date:	09/27/2013 2124			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.1			
Sand		62.3			
Coarse Sand		1.0			
Medium Sand		4.3			
Fine Sand		57.0			
Silt		28.6			
Clay		9.0			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-04**

Lab Sample ID: 580-40462-4

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	134.27 g
Analysis Date:	09/27/2013 2124			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		33.1			
Hydrometer Reading 2 - Particle Size		21.2			
Hydrometer Reading 3 - Particle Size		12.6			
Hydrometer Reading 4 - Particle Size		9.1			
Hydrometer Reading 5 - Particle Size		6.3			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.3			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-05**

Lab Sample ID: 580-40462-5

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	158.65 g
Analysis Date:	09/27/2013 2125			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.8			
Sieve Size #10 - Percent Finer		99.0			
Sieve Size #20 - Percent Finer		97.6			
Sieve Size #40 - Percent Finer		94.5			
Sieve Size #60 - Percent Finer		85.8			
Sieve Size #80 - Percent Finer		75.1			
Sieve Size #100 - Percent Finer		64.3			
Sieve Size #200 - Percent Finer		33.3			
Hydrometer Reading 1 - Percent Finer		20.4			
Hydrometer Reading 2 - Percent Finer		18.7			
Hydrometer Reading 3 - Percent Finer		14.6			
Hydrometer Reading 4 - Percent Finer		10.5			
Hydrometer Reading 5 - Percent Finer		8.0			
Hydrometer Reading 6 - Percent Finer		6.3			
Hydrometer Reading 7 - Percent Finer		4.7			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-05**

Lab Sample ID: 580-40462-5

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	158.65 g
Analysis Date:	09/27/2013 2125			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.2			
Sand		66.5			
Coarse Sand		0.8			
Medium Sand		4.5			
Fine Sand		61.2			
Silt		25.3			
Clay		8.0			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-05**

Lab Sample ID: 580-40462-5

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	158.65 g
Analysis Date:	09/27/2013 2125			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.7			
Hydrometer Reading 2 - Particle Size		20.9			
Hydrometer Reading 3 - Particle Size		12.4			
Hydrometer Reading 4 - Particle Size		8.8			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.3			
Hydrometer Reading 7 - Particle Size		1.3			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-06**

Lab Sample ID: 580-40462-6

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	168.9 g
Analysis Date:	09/27/2013 2128			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.4			
Sieve Size #10 - Percent Finer		98.9			
Sieve Size #20 - Percent Finer		97.5			
Sieve Size #40 - Percent Finer		94.3			
Sieve Size #60 - Percent Finer		85.8			
Sieve Size #80 - Percent Finer		75.0			
Sieve Size #100 - Percent Finer		63.5			
Sieve Size #200 - Percent Finer		27.0			
Hydrometer Reading 1 - Percent Finer		21.8			
Hydrometer Reading 2 - Percent Finer		18.5			
Hydrometer Reading 3 - Percent Finer		15.3			
Hydrometer Reading 4 - Percent Finer		12.0			
Hydrometer Reading 5 - Percent Finer		9.5			
Hydrometer Reading 6 - Percent Finer		7.1			
Hydrometer Reading 7 - Percent Finer		4.6			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-06**

Lab Sample ID: 580-40462-6

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	168.9 g
Analysis Date:	09/27/2013 2128			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.6			
Sand		72.4			
Coarse Sand		0.5			
Medium Sand		4.6			
Fine Sand		67.3			
Silt		17.5			
Clay		9.5			

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Client Sample ID: **1336023-06**

Lab Sample ID: 580-40462-6

Client Matrix: Solid

Date Sampled: 08/29/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62025	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40462-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	168.9 g
Analysis Date:	09/27/2013 2128			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.4			
Hydrometer Reading 2 - Particle Size		20.9			
Hydrometer Reading 3 - Particle Size		12.3			
Hydrometer Reading 4 - Particle Size		8.8			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.3			
Hydrometer Reading 7 - Particle Size		1.4			

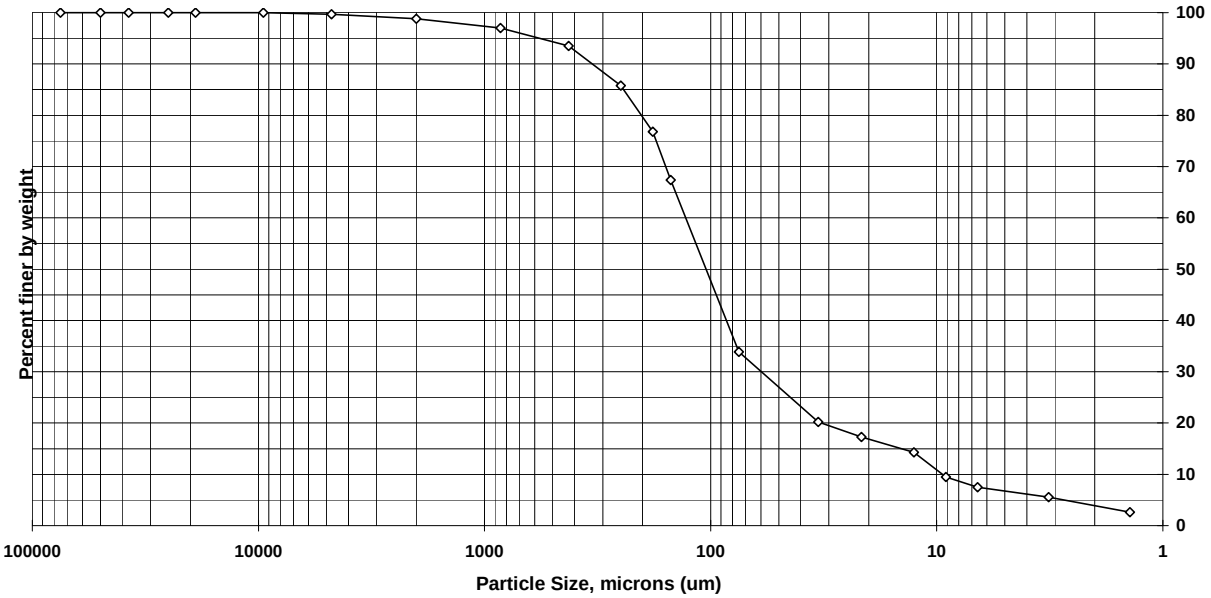
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1336023-01	**Percent Solids:**	50.1%	**Start Date:**	9/27/2013
Lab ID:	580-40462-B-1	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: shell, plant, wood

Hardness (> #10): n/a



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.7	0.3
#10	2000	98.8	0.9
#20	850	97.0	1.8
#40	425	93.5	3.5
#60	250	85.8	7.7
#80	180	76.8	9.0
#100	150	67.4	9.4
#200	75	33.9	33.5
Hyd1	33.4	20.2	13.7
Hyd2	21.5	17.3	2.9
Hyd3	12.6	14.3	3.0
Hyd4	9.1	9.5	4.8
Hyd5	6.6	7.5	2.0
Hyd6	3.2	5.5	2.0
Hyd7	1.4	2.6	2.9

Soil Classification	Percent of sample
Gravel	0.3
Sand	65.8
Coarse Sand	0.9
Medium Sand	5.3
Fine Sand	59.6
Silt	26.4
Clay	7.5

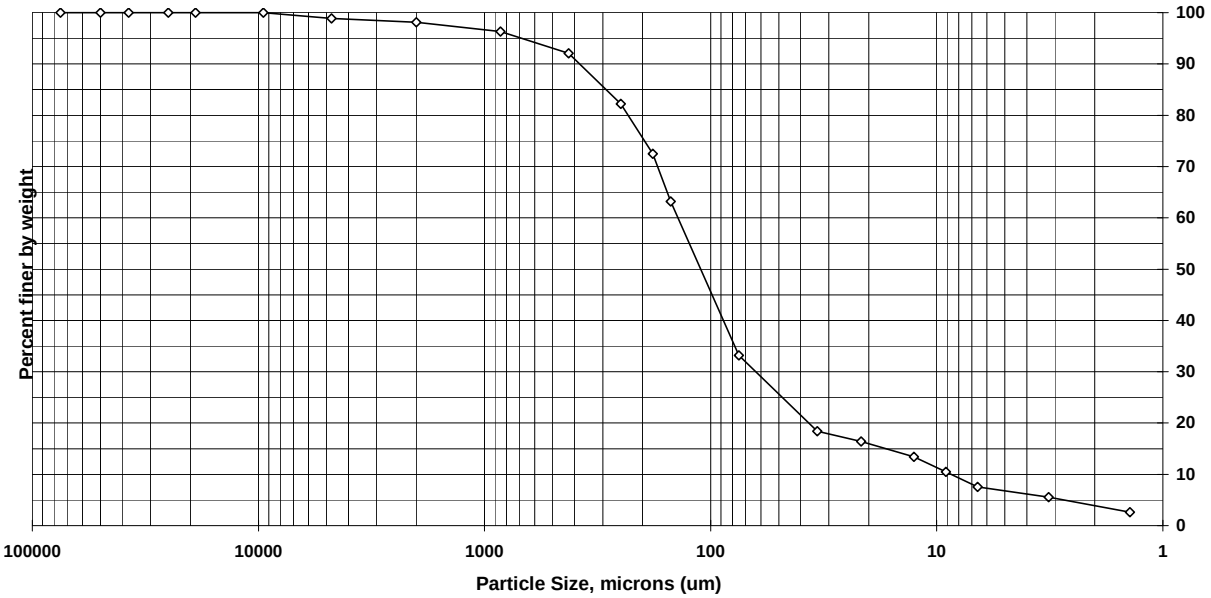
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1336023-02	**Percent Solids:**	55.4%	**Start Date:**	9/27/2013
Lab ID:	580-40462-B-2	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	98.9	1.1
#10	2000	98.1	0.8
#20	850	96.3	1.8
#40	425	92.1	4.2
#60	250	82.2	9.9
#80	180	72.5	9.7
#100	150	63.2	9.3
#200	75	33.2	30.0
Hyd1	33.8	18.4	14.8
Hyd2	21.6	16.4	2.0
Hyd3	12.6	13.4	3.0
Hyd4	9.1	10.5	2.9
Hyd5	6.6	7.5	3.0
Hyd6	3.2	5.6	2.0
Hyd7	1.4	2.6	3.0

Soil Classification	Percent of sample
Gravel	1.1
Sand	65.7
Coarse Sand	0.8
Medium Sand	6.0
Fine Sand	58.9
Silt	25.7
Clay	7.5

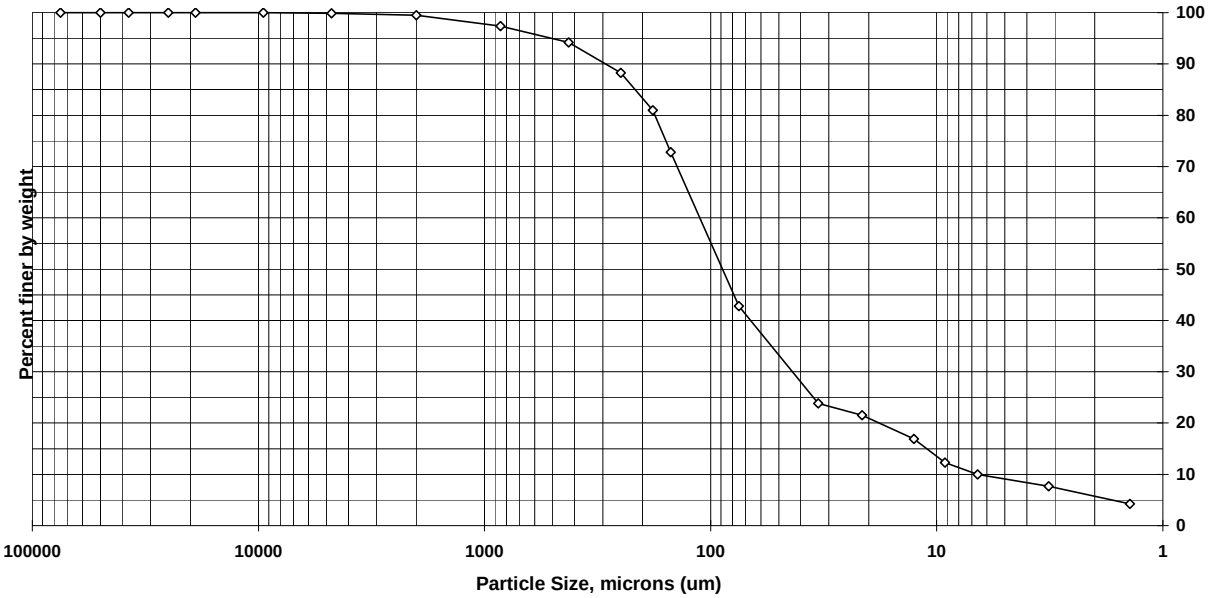
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1336023-03	**Percent Solids:**	49.2%	**Start Date:**	9/27/2013
Lab ID:	580-40462-B-3	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.9	0.1
#10	2000	99.5	0.4
#20	850	97.4	2.1
#40	425	94.2	3.2
#60	250	88.3	5.9
#80	180	81.0	7.3
#100	150	72.8	8.2
#200	75	42.8	30.0
Hyd1	33.4	23.8	19.0
Hyd2	21.4	21.5	2.3
Hyd3	12.6	16.9	4.6
Hyd4	9.2	12.3	4.6
Hyd5	6.6	10.0	2.3
Hyd6	3.2	7.7	2.3
Hyd7	1.4	4.2	3.5

Soil Classification	Percent of sample
Gravel	0.1
Sand	57.1
Coarse Sand	0.4
Medium Sand	5.3
Fine Sand	51.4
Silt	32.8
Clay	10.0

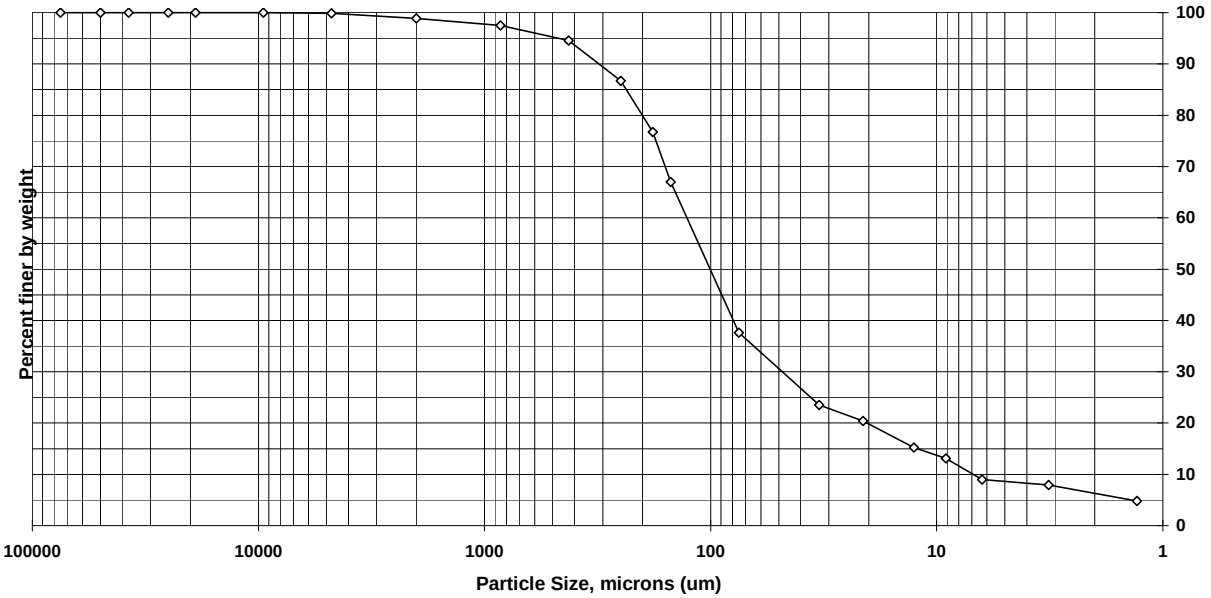
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1336023-04	**Percent Solids:**	57.8%	**Start Date:**	9/27/2013
Lab ID:	580-40462-B-4	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: shell, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.9	0.1
#10	2000	98.9	1.0
#20	850	97.5	1.4
#40	425	94.6	2.9
#60	250	86.7	7.9
#80	180	76.7	10.0
#100	150	67.0	9.7
#200	75	37.6	29.4
Hyd1	33.1	23.5	14.1
Hyd2	21.2	20.4	3.1
Hyd3	12.6	15.2	5.2
Hyd4	9.1	13.1	2.1
Hyd5	6.3	9.0	4.1
Hyd6	3.2	7.9	1.0
Hyd7	1.3	4.8	3.1

Soil Classification	Percent of sample
Gravel	0.1
Sand	62.3
Coarse Sand	1.0
Medium Sand	4.3
Fine Sand	57.0
Silt	28.6
Clay	9.0

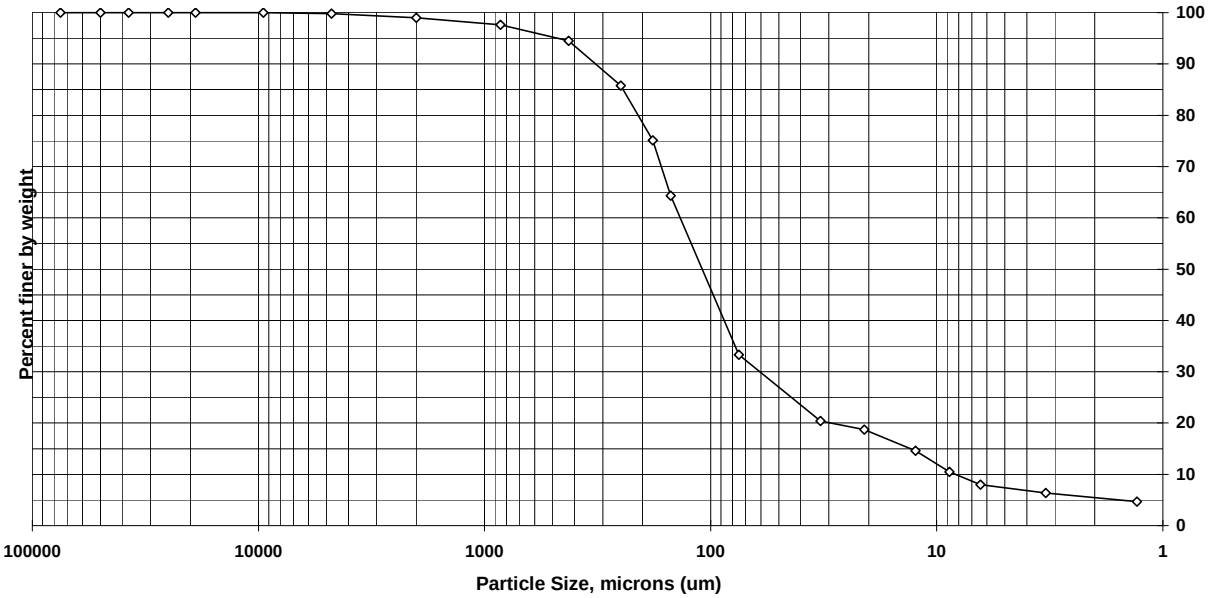
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1336023-05	**Percent Solids:**	61.2%	**Start Date:**	9/27/2013
Lab ID:	580-40462-B-5	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: shell, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.8	0.2
#10	2000	99.0	0.8
#20	850	97.6	1.4
#40	425	94.5	3.1
#60	250	85.8	8.7
#80	180	75.1	10.7
#100	150	64.3	10.8
#200	75	33.3	31.0
Hyd1	32.7	20.4	12.9
Hyd2	20.9	18.7	1.7
Hyd3	12.4	14.6	4.1
Hyd4	8.8	10.5	4.1
Hyd5	6.4	8.0	2.5
Hyd6	3.3	6.3	1.6
Hyd7	1.3	4.7	1.7

Soil Classification	Percent of sample
Gravel	0.2
Sand	66.5
Coarse Sand	0.8
Medium Sand	4.5
Fine Sand	61.2
Silt	25.3
Clay	8.0

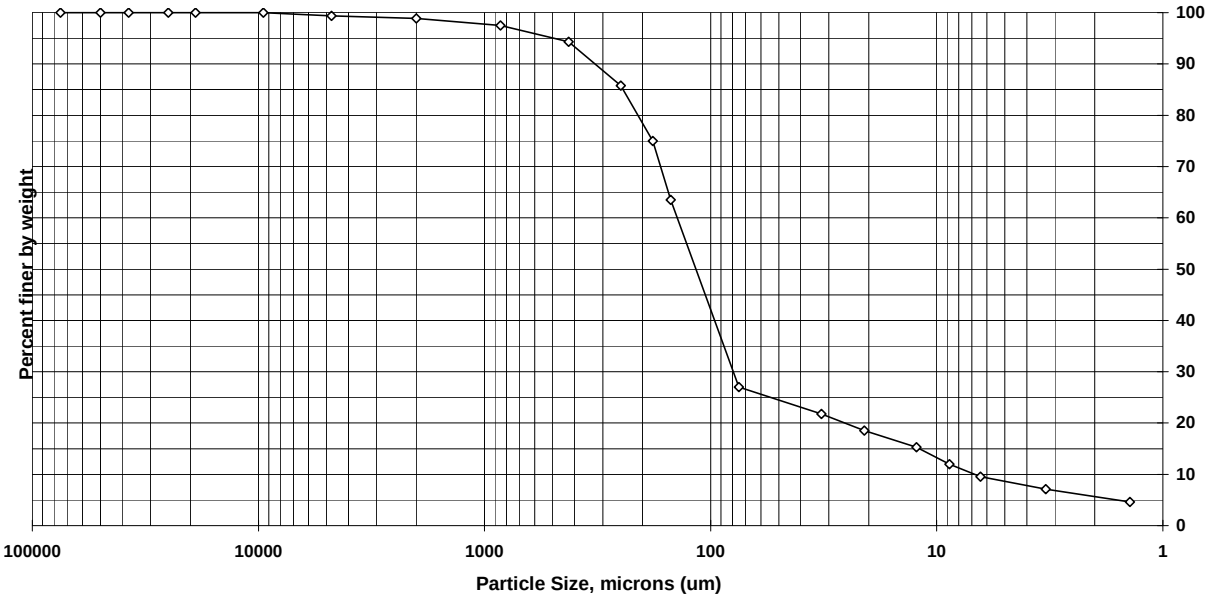
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1336023-06	**Percent Solids:**	58.1%	**Start Date:**	9/27/2013
Lab ID:	580-40462-B-6	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.4	0.6
#10	2000	98.9	0.5
#20	850	97.5	1.4
#40	425	94.3	3.2
#60	250	85.8	8.5
#80	180	75.0	10.8
#100	150	63.5	11.5
#200	75	27.0	36.5
Hyd1	32.4	21.8	5.2
Hyd2	20.9	18.5	3.3
Hyd3	12.3	15.3	3.2
Hyd4	8.8	12.0	3.3
Hyd5	6.4	9.5	2.5
Hyd6	3.3	7.1	2.4
Hyd7	1.4	4.6	2.5

Soil Classification	Percent of sample
Gravel	0.6
Sand	72.4
Coarse Sand	0.5
Medium Sand	4.6
Fine Sand	67.3
Silt	17.5
Clay	9.5

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/21/2013
Client Sample ID	1336023-01	Start Date	09/27/2013 21:18
Lab Sample ID	580-40462-B-1	End Date	10/02/2013 13:11

Dry Weight Determination

Tin Weight	1.01	g
Wet Sample + Tin	35.70	g
Dry Sample + Tin	18.39	g
% Moisture	49.90	%

Non-soil material:	shell, plant, wood
Shape (> #10):	angular
Hardness (> #10):	n/a

Date/Time in oven	09/27/2013 21:20
Date/Time out of oven	09/30/2013 13:46

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		163.96	163.96
Sample Weight (Oven Dried)			82.1

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.97
Sample <#10			81.1
% Passing #10			49.5

Hydrometer Data

Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.39	0.25	g	99.7	Gravel	
#10	2000	462.79	463.51	0.72	g	98.8	Sand	Coarse
#20	850	381.16	382.63	1.47	g	97.0	Sand	Medium
#40	425	352.67	355.53	2.86	g	93.5	Sand	Medium
#60	250	350.72	357.05	6.33	g	85.8	Sand	Fine
#80	180	329.96	337.34	7.38	g	76.8	Sand	Fine
#100	150	327.01	334.74	7.73	g	67.4	Sand	Fine
#200	75	306.20	333.73	27.53	g	33.9	Sand	Fine
				0.00	g	33.9		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	82.1

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0140	22.0	33.4	20.2	Silt	
5	5	1.0125	22.0	21.5	17.3	Silt	
15	15	1.0110	22.0	12.6	14.3	Silt	
30	30	1.0085	22.0	9.1	9.46	Silt	
60	59	1.0075	22.0	6.6	7.5	Silt	
250	256	1.0065	22.0	3.2	5.54	Clay	
1440	1440	1.0050	22.0	1.4	2.61	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1336023-02
Lab Sample ID	580-40462-B-2

Date Received	9/21/2013
Start Date	09/27/2013 21:20
End Date	10/02/2013 13:12

Dry Weight Determination

Tin Weight	1.01	g
Wet Sample + Tin	19.90	g
Dry Sample + Tin	11.48	g
% Moisture	44.57	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:21
Date/Time out of oven	09/30/2013 13:46

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		147.31	147.31
Sample Weight (Oven Dried)			81.6

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			1.53
Sample <#10			80.1
% Passing #10			54.4

Hydrometer Data

Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	489.00	0.86	g	98.9	Gravel	
#10	2000	462.79	463.46	0.67	g	98.1	Sand	Coarse
#20	850	389.90	391.39	1.49	g	96.3	Sand	Medium
#40	425	355.04	358.45	3.41	g	92.1	Sand	Medium
#60	250	346.10	354.19	8.09	g	82.2	Sand	Fine
#80	180	331.92	339.87	7.95	g	72.5	Sand	Fine
#100	150	331.35	338.97	7.62	g	63.2	Sand	Fine
#200	75	320.64	345.12	24.48	g	33.2	Sand	Fine
				0.00	g	33.2		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	81.6

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0130	22.0	33.8	18.4	Silt	
5	5	1.0120	22.0	21.6	16.4	Silt	
15	15	1.0105	22.0	12.6	13.4	Silt	
30	30	1.0090	22.0	9.1	10.5	Silt	
60	58	1.0075	22.0	6.6	7.54	Silt	
250	256	1.0065	22.0	3.2	5.58	Clay	
1440	1440	1.0050	22.0	1.4	2.62	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/21/2013
Client Sample ID	1336023-03	Start Date	09/27/2013 21:22
Lab Sample ID	580-40462-B-3	End Date	10/02/2013 13:29

Dry Weight Determination

Tin Weight	1.02	g
Wet Sample + Tin	25.69	g
Dry Sample + Tin	13.15	g
% Moisture	50.83	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:23
Date/Time out of oven	09/30/2013 13:46

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		141.81	141.81
Sample Weight (Oven Dried)			69.7

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.38
Sample <#10			69.3
% Passing #10			48.9

Hydrometer Data

Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.21	0.07	g	99.9	Gravel	
#10	2000	462.79	463.10	0.31	g	99.5	Sand	Coarse
#20	850	381.16	382.65	1.49	g	97.4	Sand	Medium
#40	425	352.67	354.91	2.24	g	94.2	Sand	Medium
#60	250	350.72	354.83	4.11	g	88.3	Sand	Fine
#80	180	329.96	335.04	5.08	g	81.0	Sand	Fine
#100	150	327.01	332.72	5.71	g	72.8	Sand	Fine
#200	75	306.20	327.13	20.93	g	42.8	Sand	Fine
				0.00	g	42.8		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	69.7

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0140	22.0	33.4	23.8	Silt	
5	5	1.0130	22.0	21.4	21.5	Silt	
15	15	1.0110	22.0	12.6	16.9	Silt	
30	29	1.0090	22.0	9.2	12.3	Silt	
60	58	1.0080	22.0	6.6	9.99	Silt	
250	250	1.0070	22.0	3.2	7.68	Clay	
1440	1434	1.0055	22.0	1.4	4.22	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1336023-04
Lab Sample ID	580-40462-B-4

Date Received	9/21/2013
Start Date	09/27/2013 21:24
End Date	10/02/2013 13:29

Dry Weight Determination

Tin Weight	1.03	g
Wet Sample + Tin	26.72	g
Dry Sample + Tin	15.87	g
% Moisture	42.23	%

Non-soil material:	shell, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:25
Date/Time out of oven	09/30/2013 13:47

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		134.27	134.27
Sample Weight (Oven Dried)			77.6

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.91
Sample <#10			76.7
% Passing #10			57.1

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.25	0.11	g	99.9	Gravel	
#10	2000	462.79	463.59	0.80	g	98.9	Sand	Coarse
#20	850	389.90	391.00	1.10	g	97.5	Sand	Medium
#40	425	355.04	357.31	2.27	g	94.6	Sand	Medium
#60	250	346.10	352.21	6.11	g	86.7	Sand	Fine
#80	180	331.92	339.65	7.73	g	76.7	Sand	Fine
#100	150	331.35	338.88	7.53	g	67.0	Sand	Fine
#200	75	320.64	343.44	22.80	g	37.6	Sand	Fine
				0.00	g	37.6		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	77.6

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0150	22.0	33.1	23.5	Silt	
5	5	1.0135	22.0	21.2	20.4	Silt	
15	15	1.0110	22.0	12.6	15.2	Silt	
30	29	1.0100	22.0	9.1	13.1	Silt	
60	63	1.0080	22.0	6.3	8.97	Silt	
250	250	1.0075	22.0	3.2	7.93	Clay	
1440	1434	1.0060	22.0	1.3	4.83	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/21/2013
Client Sample ID	1336023-05	Start Date	09/27/2013 21:25
Lab Sample ID	580-40462-B-5	End Date	10/02/2013 13:55

Dry Weight Determination

Tin Weight	1.02	g
Wet Sample + Tin	22.81	g
Dry Sample + Tin	14.36	g
% Moisture	38.78	%

Non-soil material:	shell, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:27
Date/Time out of oven	09/30/2013 13:47

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		158.65	158.65
Sample Weight (Oven Dried)			97.1

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.96
Sample <#10			96.1
% Passing #10			60.6

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.32	0.18	g	99.8	Gravel	
#10	2000	462.79	463.57	0.78	g	99.0	Sand	Coarse
#20	850	381.16	382.56	1.40	g	97.6	Sand	Medium
#40	425	352.67	355.71	3.04	g	94.5	Sand	Medium
#60	250	350.72	359.21	8.49	g	85.8	Sand	Fine
#80	180	329.96	340.35	10.39	g	75.1	Sand	Fine
#100	150	327.01	337.50	10.49	g	64.3	Sand	Fine
#200	75	306.20	336.33	30.13	g	33.3	Sand	Fine
				0.00	g	33.3		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	97.1

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0160	22.0	32.7	20.4	Silt	
5	5	1.0150	22.0	20.9	18.7	Silt	
15	15	1.0125	22.0	12.4	14.6	Silt	
30	31	1.0100	22.0	8.8	10.5	Silt	
60	60	1.0085	22.0	6.4	7.99	Silt	
250	240	1.0075	22.0	3.3	6.34	Clay	
1440	1424	1.0065	22.0	1.3	4.69	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1336023-06
Lab Sample ID	580-40462-B-6

Date Received	9/21/2013
Start Date	09/27/2013 21:28
End Date	10/02/2013 14:09

Dry Weight Determination

Tin Weight	1.02	g
Wet Sample + Tin	24.33	g
Dry Sample + Tin	14.57	g
% Moisture	41.87	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:29
Date/Time out of oven	09/30/2013 13:47

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		168.90	168.9
Sample Weight (Oven Dried)			98.2

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			1.05
Sample <#10			97.2
% Passing #10			57.5

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.73	0.59	g	99.4	Gravel	
#10	2000	462.79	463.25	0.46	g	98.9	Sand	Coarse
#20	850	389.90	391.28	1.38	g	97.5	Sand	Medium
#40	425	355.04	358.14	3.10	g	94.3	Sand	Medium
#60	250	346.10	354.43	8.33	g	85.8	Sand	Fine
#80	180	331.92	342.57	10.65	g	75.0	Sand	Fine
#100	150	331.35	342.68	11.33	g	63.5	Sand	Fine
#200	75	320.64	356.44	35.80	g	27.0	Sand	Fine
				0.00	g	27.0		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	98.2

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0170	22.0	32.4	21.8	Silt	
5	5	1.0150	22.0	20.9	18.5	Silt	
15	15	1.0130	22.0	12.3	15.3	Silt	
30	31	1.0110	22.0	8.8	12	Silt	
60	59	1.0095	22.0	6.4	9.54	Silt	
250	234	1.0080	22.0	3.3	7.09	Clay	
1440	1418	1.0065	22.0	1.4	4.63	Clay	

DATA REPORTING QUALIFIERS

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Lab Section	Qualifier	Description
General Chemistry		
	H	Sample was prepped or analyzed beyond the specified holding time

QUALITY CONTROL RESULTS

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Prep Batch: 580-145934					
580-40462-1	1336023-01	T	Solid	Increm, Prep	
580-40462-1DU	Duplicate	T	Solid	Increm, Prep	
580-40462-1MS	Matrix Spike	T	Solid	Increm, Prep	
580-40462-1MSD	Matrix Spike Duplicate	T	Solid	Increm, Prep	
580-40462-2	1336023-02	T	Solid	Increm, Prep	
580-40462-3	1336023-03	T	Solid	Increm, Prep	
580-40462-4	1336023-04	T	Solid	Increm, Prep	
580-40462-5	1336023-05	T	Solid	Increm, Prep	
580-40462-6	1336023-06	T	Solid	Increm, Prep	
Analysis Batch:580-147085					
580-40462-1	1336023-01	T	Solid	9060	
580-40462-1DU	Duplicate	T	Solid	9060	
580-40462-1MS	Matrix Spike	T	Solid	9060	
580-40462-1MSD	Matrix Spike Duplicate	T	Solid	9060	
580-40462-2	1336023-02	T	Solid	9060	
580-40462-3	1336023-03	T	Solid	9060	
580-40462-4	1336023-04	T	Solid	9060	
580-40462-5	1336023-05	T	Solid	9060	
580-40462-6	1336023-06	T	Solid	9060	

Report Basis

T = Total

Geotechnical					
Analysis Batch:200-62025					
580-40462-1	1336023-01	T	Solid	D422	
580-40462-2	1336023-02	T	Solid	D422	
580-40462-3	1336023-03	T	Solid	D422	
580-40462-4	1336023-04	T	Solid	D422	
580-40462-5	1336023-05	T	Solid	D422	
580-40462-6	1336023-06	T	Solid	D422	

Report Basis

T = Total

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-147085

Method: 9060
Preparation: N/A

MS Lab Sample ID:	580-40462-1	Analysis Batch:	580-147085	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	580-145934	Initial Weight/Volume:	0.1029 g
Analysis Date:	10/11/2013 1313			Final Weight/Volume:	0.1029 g
Prep Date:	N/A				
Leach Date:	09/26/2013 1644				

MSD Lab Sample ID:	580-40462-1	Analysis Batch:	580-147085	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	580-145934	Initial Weight/Volume:	0.1068 g
Analysis Date:	10/11/2013 1316			Final Weight/Volume:	0.1068 g
Prep Date:	N/A				
Leach Date:	09/26/2013 1644				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Total Organic Carbon	106	105	50 - 140	8	35		

Duplicate - Batch: 580-147085

Method: 9060
Preparation: N/A

Lab Sample ID:	580-40462-1	Analysis Batch:	580-147085	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	580-145934	Initial Weight/Volume:	
Analysis Date:	10/11/2013 1309	Units:	mg/Kg	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	09/26/2013 1644				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Total Organic Carbon	22000	20100	9	50	

SUBCONTRACT ORDER

Brooks Rand Labs

1336023

70762

SENDING LABORATORY:

Brooks Rand Labs
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
Project Manager: Lydia Greaves

RECEIVING LABORATORY:

Test America - Tacoma
5755 8th Street East
Tacoma, WA 98424
Phone :(253) 922-2310
Fax: (253) 922-5047

580-40462 Chain of Custody

Analysis	Laboratory ID	Comments
Client ID: WP-DU3 (0-4")		
Sample ID: 1336023-01 Soil/Sediment Sampled:08/28/13 18:00		1
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
Client ID: WP-DU3 (4-8")		
Sample ID: 1336023-02 Soil/Sediment Sampled:08/28/13 18:00		2
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU3 (8-12")		
Sample ID: 1336023-03 Soil/Sediment Sampled:08/28/13 18:00		3
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
Client ID: WP-DU4 (0-4")		
Sample ID: 1336023-04 Soil/Sediment Sampled:08/29/13 18:00		4
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
Client ID: WP-DU4 (4-8")		
Sample ID: 1336023-05 Soil/Sediment Sampled:08/29/13 18:00		5
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America

Released By	Date	Received By	Date
Lydia Greaves	9/20/13 11:15	Rachael Bolles	9/21/2013 1050

SUBCONTRACT ORDER

Brooks Rand Labs

1336023

40462

Analysis	Laboratory ID	Comments
Client ID: WP-DU4 (8-12")		
Sample ID: 1336023-06 Soil/Sediment Sampled:08/29/13 18:00		4
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America

~~Cooler/TB~~ Dig/IR cor 1.0°C unc 0.6°C
Cooler Dsc Med Blue/white @ Lab 1050
Wet/Packs Packing other
w/o client Drop

~~Cooler/TB~~ Dig/IR cor 0.7°C unc 0.3°C
Cooler Dsc ~~Med~~ Blue/white @ Lab 1050
Wet/Packs Packing other
w/o client Drop

Released By	Date	Received By	Date
Lydia Thomas	9/20/13 11:15	Rachael Okelly	9/21/13 1050

Login Sample Receipt Checklist

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Login Number: 40462

List Source: TestAmerica Seattle

List Number: 1

Creator: Gamble, Cathy L

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	not present
Sample custody seals, if present, are intact.	N/A	not present
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	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received 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	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Brooks Rand Labs LLC

Job Number: 580-40462-1

Login Number: 40462
List Number: 1
Creator: Gagne, Eric M

List Source: TestAmerica Burlington
List Creation: 09/27/13 03:24 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	622958
Sample custody seals, if present, are 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	4.4ºC. IR GUN ID 181. CF -0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	NO CLIENT LABELS.
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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Job Number: 580-40463-1

Job Description: 1337006

For:
Brooks Rand Labs LLC
3958 6th Avenue NW
Seattle, WA 98107

Attention: Lydia Greaves

Approved for release.
Pam R Johnson
Project Manager I
10/11/2013 4:28 PM

Pam R Johnson, Project Manager I
5755 8th Street East, Tacoma, WA, 98424
(253)922-2310 x112
pamr.johnson@testamericainc.com
10/11/2013

cc: Ms. Elizabeth Madonick

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

Receipt
The samples were received on 9/21/2013 10:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.7º C and 1.0º C.

General Chemistry - Method 9060
The following samples were received with greater than 50% of holding time expired: (580-40463-1), (580-40463-2), (580-40463-3), (580-40463-4), (580-40463-5), (580-40463-6). As such, the laboratory had insufficient time remaining to perform the analysis within holding time.

No other analytical or quality issues were noted.

Geotechnical
No analytical or quality issues were noted.

METHOD SUMMARY

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Organic Carbon, Total (TOC)	TAL SEA	SW846 9060	
Incremental Sample Preparation	TAL SEA		EPA Increm, Prep
Grain Size	TAL BUR	ASTM D422	

Lab References:

TAL BUR = TestAmerica Burlington

TAL SEA = TestAmerica Seattle

Method References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
580-40463-1	1337006-01	Solid	09/03/2013 1800	09/21/2013 1050
580-40463-2	1337006-02	Solid	09/03/2013 1800	09/21/2013 1050
580-40463-3	1337006-03	Solid	09/03/2013 1800	09/21/2013 1050
580-40463-4	1337006-04	Solid	09/04/2013 1800	09/21/2013 1050
580-40463-5	1337006-05	Solid	09/04/2013 1800	09/21/2013 1050
580-40463-6	1337006-06	Solid	09/04/2013 1800	09/21/2013 1050

SAMPLE RESULTS

General Chemistry

Client Sample ID: **1337006-01**

Lab Sample ID: 580-40463-1

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	52000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1340 DryWt Corrected: N

General Chemistry

Client Sample ID: **1337006-02**

Lab Sample ID: 580-40463-2

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	43000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1344 DryWt Corrected: N

General Chemistry

Client Sample ID: **1337006-03**

Lab Sample ID: 580-40463-3

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	51000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1348 DryWt Corrected: N

General Chemistry

Client Sample ID: **1337006-04**

Lab Sample ID: 580-40463-4

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	40000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1352 DryWt Corrected: N

General Chemistry

Client Sample ID: **1337006-05**

Lab Sample ID: 580-40463-5

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	53000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1402 DryWt Corrected: N

General Chemistry

Client Sample ID: **1337006-06**

Lab Sample ID: 580-40463-6

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	46000	H	mg/Kg	250	2000	1.0	9060

Analysis Batch: 580-147085 Analysis Date: 10/11/2013 1406 DryWt Corrected: N

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-01**

Lab Sample ID: 580-40463-1

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	159.17 g
Analysis Date:	09/27/2013 2135			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.7			
Sieve Size #20 - Percent Finer		99.0			
Sieve Size #40 - Percent Finer		97.0			
Sieve Size #60 - Percent Finer		92.4			
Sieve Size #80 - Percent Finer		86.9			
Sieve Size #100 - Percent Finer		81.5			
Sieve Size #200 - Percent Finer		62.3			
Hydrometer Reading 1 - Percent Finer		43.7			
Hydrometer Reading 2 - Percent Finer		37.4			
Hydrometer Reading 3 - Percent Finer		27.3			
Hydrometer Reading 4 - Percent Finer		19.8			
Hydrometer Reading 5 - Percent Finer		16.0			
Hydrometer Reading 6 - Percent Finer		10.9			
Hydrometer Reading 7 - Percent Finer		7.1			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-01**

Lab Sample ID: 580-40463-1

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	159.17 g
Analysis Date:	09/27/2013 2135			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		37.7			
Coarse Sand		0.3			
Medium Sand		2.7			
Fine Sand		34.7			
Silt		46.3			
Clay		16.0			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-01**

Lab Sample ID: 580-40463-1

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-1.txt
Dilution:	1.0			Initial Weight/Volume:	159.17 g
Analysis Date:	09/27/2013 2135			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		30.9			
Hydrometer Reading 2 - Particle Size		20.1			
Hydrometer Reading 3 - Particle Size		12.1			
Hydrometer Reading 4 - Particle Size		8.7			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.1			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-02**

Lab Sample ID: 580-40463-2

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	169.1 g
Analysis Date:	09/27/2013 2137			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.8			
Sieve Size #10 - Percent Finer		99.2			
Sieve Size #20 - Percent Finer		97.6			
Sieve Size #40 - Percent Finer		94.5			
Sieve Size #60 - Percent Finer		87.6			
Sieve Size #80 - Percent Finer		80.1			
Sieve Size #100 - Percent Finer		73.3			
Sieve Size #200 - Percent Finer		51.4			
Hydrometer Reading 1 - Percent Finer		40.4			
Hydrometer Reading 2 - Percent Finer		31.8			
Hydrometer Reading 3 - Percent Finer		23.1			
Hydrometer Reading 4 - Percent Finer		18.1			
Hydrometer Reading 5 - Percent Finer		13.2			
Hydrometer Reading 6 - Percent Finer		8.3			
Hydrometer Reading 7 - Percent Finer		5.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-02**

Lab Sample ID: 580-40463-2

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	169.1 g
Analysis Date:	09/27/2013 2137			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.2			
Sand		48.4			
Coarse Sand		0.6			
Medium Sand		4.7			
Fine Sand		43.1			
Silt		38.2			
Clay		13.2			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-02**

Lab Sample ID: 580-40463-2

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-2.txt
Dilution:	1.0			Initial Weight/Volume:	169.1 g
Analysis Date:	09/27/2013 2137			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		31.2			
Hydrometer Reading 2 - Particle Size		20.6			
Hydrometer Reading 3 - Particle Size		12.3			
Hydrometer Reading 4 - Particle Size		8.6			
Hydrometer Reading 5 - Particle Size		6.4			
Hydrometer Reading 6 - Particle Size		3.1			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-03**

Lab Sample ID: 580-40463-3

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	151.17 g
Analysis Date:	09/27/2013 2139			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		97.7			
Sieve Size #10 - Percent Finer		96.2			
Sieve Size #20 - Percent Finer		93.8			
Sieve Size #40 - Percent Finer		90.2			
Sieve Size #60 - Percent Finer		84.3			
Sieve Size #80 - Percent Finer		78.7			
Sieve Size #100 - Percent Finer		72.9			
Sieve Size #200 - Percent Finer		49.6			
Hydrometer Reading 1 - Percent Finer		35.0			
Hydrometer Reading 2 - Percent Finer		29.9			
Hydrometer Reading 3 - Percent Finer		23.6			
Hydrometer Reading 4 - Percent Finer		18.5			
Hydrometer Reading 5 - Percent Finer		13.5			
Hydrometer Reading 6 - Percent Finer		9.7			
Hydrometer Reading 7 - Percent Finer		5.9			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-03**

Lab Sample ID: 580-40463-3

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	151.17 g
Analysis Date:	09/27/2013 2139			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		2.3			
Sand		48.1			
Coarse Sand		1.5			
Medium Sand		6.0			
Fine Sand		40.6			
Silt		36.1			
Clay		13.5			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-03**

Lab Sample ID: 580-40463-3

Client Matrix: Solid

Date Sampled: 09/03/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-3.txt
Dilution:	1.0			Initial Weight/Volume:	151.17 g
Analysis Date:	09/27/2013 2139			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		32.2			
Hydrometer Reading 2 - Particle Size		20.8			
Hydrometer Reading 3 - Particle Size		12.3			
Hydrometer Reading 4 - Particle Size		8.9			
Hydrometer Reading 5 - Particle Size		6.3			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-04**

Lab Sample ID: 580-40463-4

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	169.04 g
Analysis Date:	09/27/2013 2141			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.8			
Sieve Size #20 - Percent Finer		99.1			
Sieve Size #40 - Percent Finer		97.3			
Sieve Size #60 - Percent Finer		92.9			
Sieve Size #80 - Percent Finer		86.9			
Sieve Size #100 - Percent Finer		80.7			
Sieve Size #200 - Percent Finer		56.7			
Hydrometer Reading 1 - Percent Finer		39.7			
Hydrometer Reading 2 - Percent Finer		30.0			
Hydrometer Reading 3 - Percent Finer		22.7			
Hydrometer Reading 4 - Percent Finer		16.6			
Hydrometer Reading 5 - Percent Finer		13.0			
Hydrometer Reading 6 - Percent Finer		8.1			
Hydrometer Reading 7 - Percent Finer		5.7			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-04**

Lab Sample ID: 580-40463-4

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	169.04 g
Analysis Date:	09/27/2013 2141			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		43.3			
Coarse Sand		0.2			
Medium Sand		2.5			
Fine Sand		40.6			
Silt		43.7			
Clay		13.0			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-04**

Lab Sample ID: 580-40463-4

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-4.txt
Dilution:	1.0			Initial Weight/Volume:	169.04 g
Analysis Date:	09/27/2013 2141			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		31.2			
Hydrometer Reading 2 - Particle Size		20.7			
Hydrometer Reading 3 - Particle Size		12.3			
Hydrometer Reading 4 - Particle Size		8.9			
Hydrometer Reading 5 - Particle Size		6.6			
Hydrometer Reading 6 - Particle Size		3.2			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-05**

Lab Sample ID: 580-40463-5

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	159.91 g
Analysis Date:	09/27/2013 2143			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.7			
Sieve Size #10 - Percent Finer		99.1			
Sieve Size #20 - Percent Finer		97.9			
Sieve Size #40 - Percent Finer		95.2			
Sieve Size #60 - Percent Finer		89.7			
Sieve Size #80 - Percent Finer		83.0			
Sieve Size #100 - Percent Finer		75.9			
Sieve Size #200 - Percent Finer		51.8			
Hydrometer Reading 1 - Percent Finer		39.5			
Hydrometer Reading 2 - Percent Finer		33.3			
Hydrometer Reading 3 - Percent Finer		24.5			
Hydrometer Reading 4 - Percent Finer		18.3			
Hydrometer Reading 5 - Percent Finer		12.1			
Hydrometer Reading 6 - Percent Finer		8.3			
Hydrometer Reading 7 - Percent Finer		5.8			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-05**

Lab Sample ID: 580-40463-5

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	159.91 g
Analysis Date:	09/27/2013 2143			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.3			
Sand		47.9			
Coarse Sand		0.6			
Medium Sand		3.9			
Fine Sand		43.4			
Silt		39.7			
Clay		12.1			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-05**

Lab Sample ID: 580-40463-5

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-5.txt
Dilution:	1.0			Initial Weight/Volume:	159.91 g
Analysis Date:	09/27/2013 2143			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		31.4			
Hydrometer Reading 2 - Particle Size		20.5			
Hydrometer Reading 3 - Particle Size		12.3			
Hydrometer Reading 4 - Particle Size		8.9			
Hydrometer Reading 5 - Particle Size		6.3			
Hydrometer Reading 6 - Particle Size		3.3			
Hydrometer Reading 7 - Particle Size		1.4			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-06**

Lab Sample ID: 580-40463-6

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	169.67 g
Analysis Date:	09/27/2013 2145			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		99.6			
Sieve Size #10 - Percent Finer		99.1			
Sieve Size #20 - Percent Finer		97.9			
Sieve Size #40 - Percent Finer		94.9			
Sieve Size #60 - Percent Finer		88.9			
Sieve Size #80 - Percent Finer		81.5			
Sieve Size #100 - Percent Finer		74.0			
Sieve Size #200 - Percent Finer		50.7			
Hydrometer Reading 1 - Percent Finer		35.3			
Hydrometer Reading 2 - Percent Finer		30.5			
Hydrometer Reading 3 - Percent Finer		24.6			
Hydrometer Reading 4 - Percent Finer		18.6			
Hydrometer Reading 5 - Percent Finer		15.1			
Hydrometer Reading 6 - Percent Finer		9.1			
Hydrometer Reading 7 - Percent Finer		5.6			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-06**

Lab Sample ID: 580-40463-6

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	169.67 g
Analysis Date:	09/27/2013 2145			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.4			
Sand		48.9			
Coarse Sand		0.5			
Medium Sand		4.2			
Fine Sand		44.2			
Silt		35.6			
Clay		15.1			

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Client Sample ID: **1337006-06**

Lab Sample ID: 580-40463-6

Client Matrix: Solid

Date Sampled: 09/04/2013 1800

Date Received: 09/21/2013 1050

D422 Grain Size

Analysis Method:	D422	Analysis Batch:	200-62033	Instrument ID:	D422_import
	N/A	Prep Batch:	N/A	Lab File ID:	580-40463-B-6.txt
Dilution:	1.0			Initial Weight/Volume:	169.67 g
Analysis Date:	09/27/2013 2145			Final Weight/Volume:	
Prep Date:	N/A				

Analyte	DryWt Corrected: N	Result (um)	Qualifier	NONE	NONE
Hydrometer Reading 1 - Particle Size		31.8			
Hydrometer Reading 2 - Particle Size		20.6			
Hydrometer Reading 3 - Particle Size		12.2			
Hydrometer Reading 4 - Particle Size		8.7			
Hydrometer Reading 5 - Particle Size		6.5			
Hydrometer Reading 6 - Particle Size		3.3			
Hydrometer Reading 7 - Particle Size		1.4			

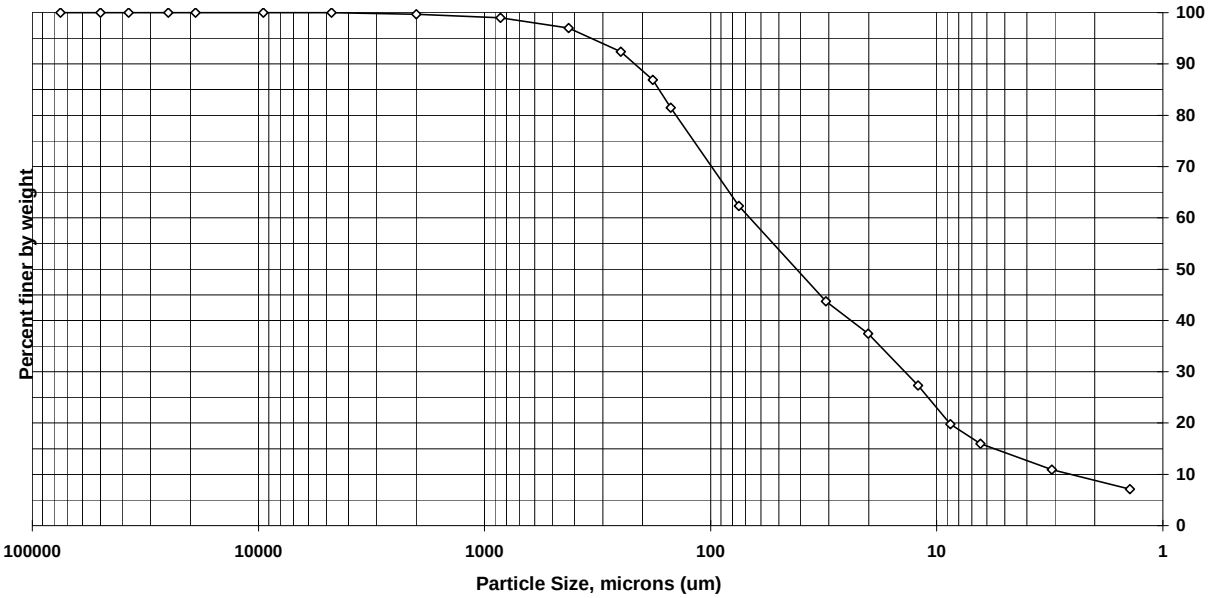
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1337006-01	**Percent Solids:**	40.0%	**Start Date:**	9/27/2013
Lab ID:	580-40463-B-1	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): n/a

Non-soil material: plant, wood

Hardness (> #10): n/a



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.7	0.3
#20	850	99.0	0.7
#40	425	97.0	2.0
#60	250	92.4	4.6
#80	180	86.9	5.5
#100	150	81.5	5.4
#200	75	62.3	19.2
Hyd1	30.9	43.7	18.6
Hyd2	20.1	37.4	6.3
Hyd3	12.1	27.3	10.1
Hyd4	8.7	19.8	7.5
Hyd5	6.4	16.0	3.8
Hyd6	3.1	10.9	5.1
Hyd7	1.4	7.1	3.8

Soil Classification	Percent of sample
Gravel	0.0
Sand	37.7
Coarse Sand	0.3
Medium Sand	2.7
Fine Sand	34.7
Silt	46.3
Clay	16.0

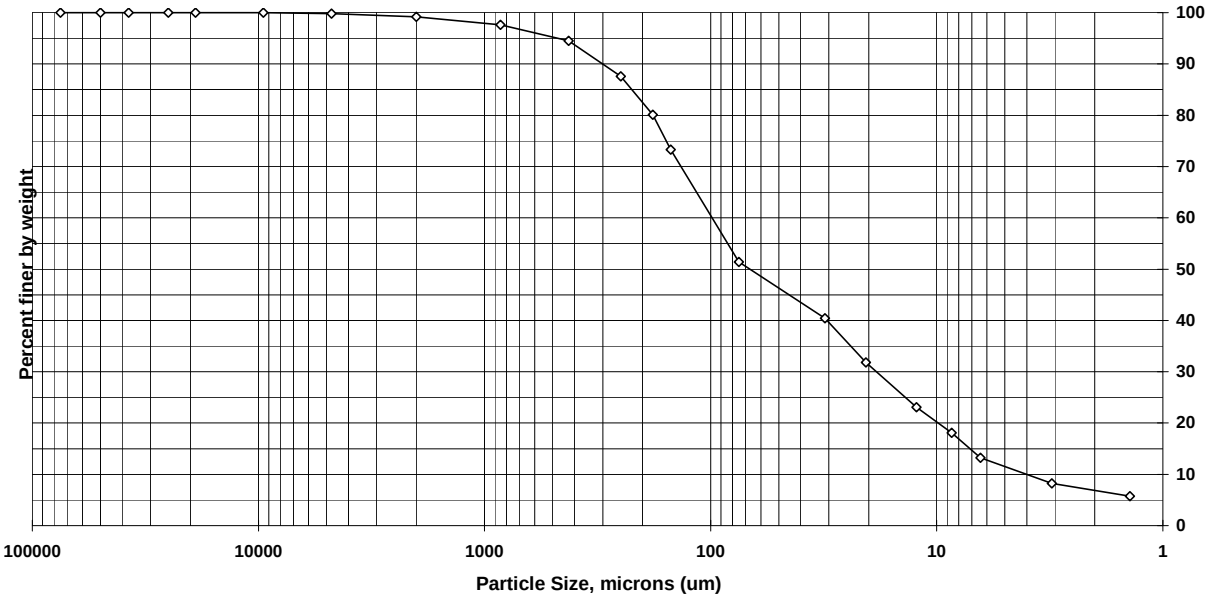
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1337006-02	**Percent Solids:**	38.4%	**Start Date:**	9/27/2013
Lab ID:	580-40463-B-2	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.8	0.2
#10	2000	99.2	0.6
#20	850	97.6	1.6
#40	425	94.5	3.1
#60	250	87.6	6.9
#80	180	80.1	7.5
#100	150	73.3	6.8
#200	75	51.4	21.9
Hyd1	31.2	40.4	11.0
Hyd2	20.6	31.8	8.6
Hyd3	12.3	23.1	8.7
Hyd4	8.6	18.1	5.0
Hyd5	6.4	13.2	4.9
Hyd6	3.1	8.3	5.0
Hyd7	1.4	5.8	2.5

Soil Classification	Percent of sample
Gravel	0.2
Sand	48.4
Coarse Sand	0.6
Medium Sand	4.7
Fine Sand	43.1
Silt	38.2
Clay	13.2

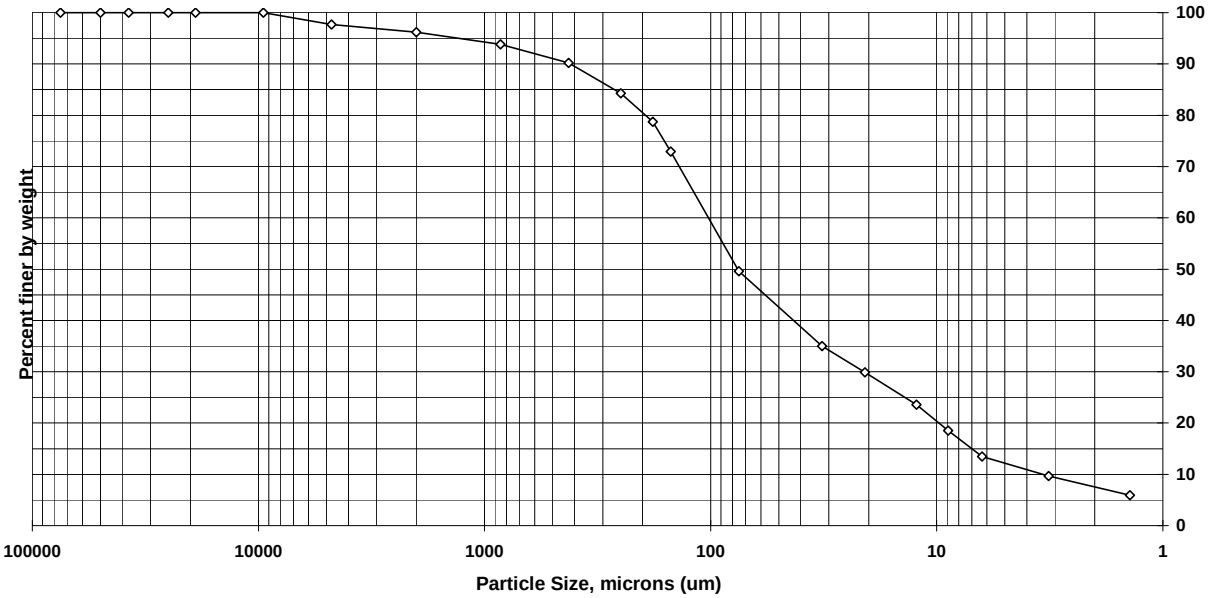
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1337006-03	**Percent Solids:**	42.0%	**Start Date:**	9/27/2013
Lab ID:	580-40463-B-3	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	97.7	2.3
#10	2000	96.2	1.5
#20	850	93.8	2.4
#40	425	90.2	3.6
#60	250	84.3	5.9
#80	180	78.7	5.6
#100	150	72.9	5.8
#200	75	49.6	23.3
Hyd1	32.2	35.0	14.6
Hyd2	20.8	29.9	5.1
Hyd3	12.3	23.6	6.3
Hyd4	8.9	18.5	5.1
Hyd5	6.3	13.5	5.0
Hyd6	3.2	9.7	3.8
Hyd7	1.4	5.9	3.8

Soil Classification	Percent of sample
Gravel	2.3
Sand	48.1
Coarse Sand	1.5
Medium Sand	6.0
Fine Sand	40.6
Silt	36.1
Clay	13.5

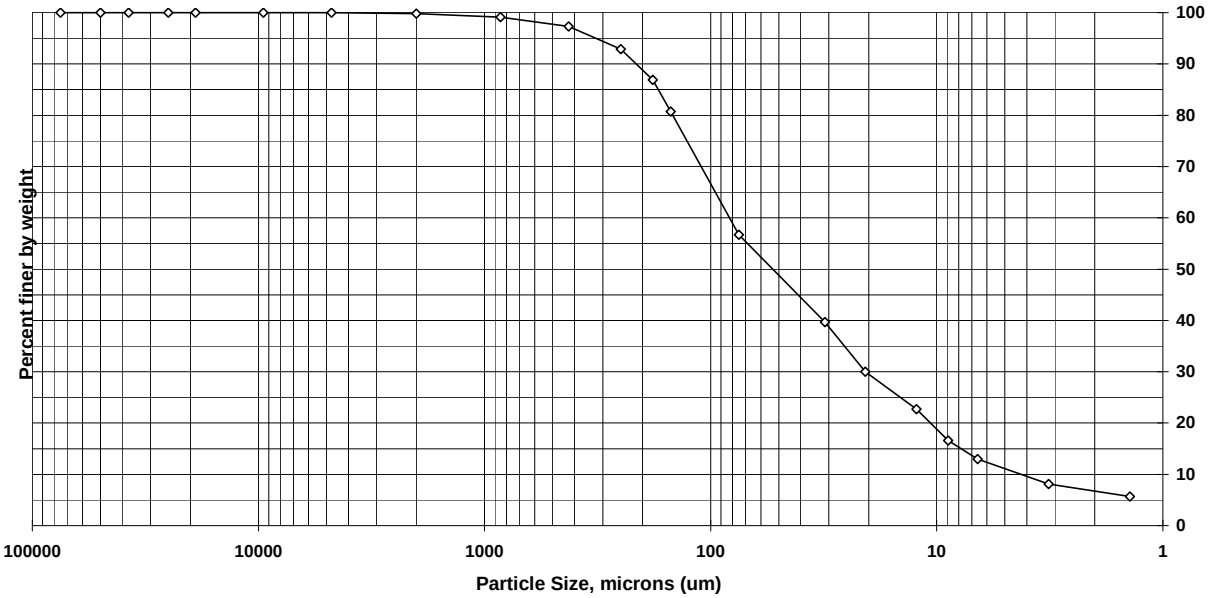
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1337006-04	**Percent Solids:**	39.1%	**Start Date:**	9/27/2013
Lab ID:	580-40463-B-4	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.8	0.2
#20	850	99.1	0.7
#40	425	97.3	1.8
#60	250	92.9	4.4
#80	180	86.9	6.0
#100	150	80.7	6.2
#200	75	56.7	24.0
Hyd1	31.2	39.7	17.0
Hyd2	20.7	30.0	9.7
Hyd3	12.3	22.7	7.3
Hyd4	8.9	16.6	6.1
Hyd5	6.6	13.0	3.6
Hyd6	3.2	8.1	4.9
Hyd7	1.4	5.7	2.4

Soil Classification	Percent of sample
Gravel	0.0
Sand	43.3
Coarse Sand	0.2
Medium Sand	2.5
Fine Sand	40.6
Silt	43.7
Clay	13.0

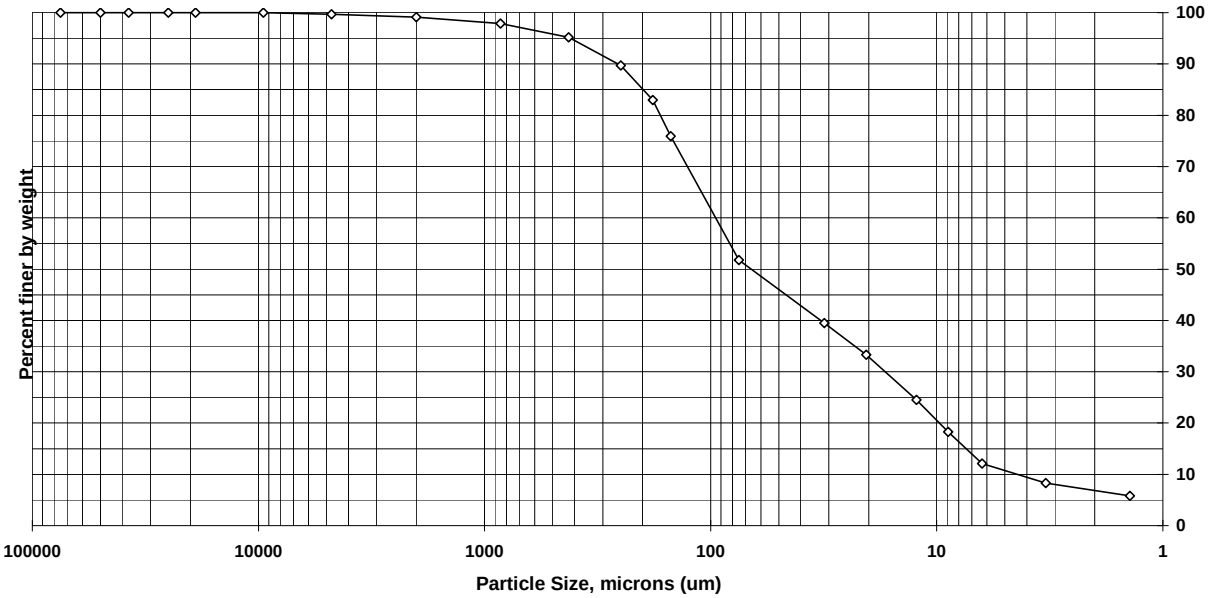
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1337006-05	**Percent Solids:**	40.3%	**Start Date:**	9/27/2013
Lab ID:	580-40463-B-5	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: plant, wood

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.7	0.3
#10	2000	99.1	0.6
#20	850	97.9	1.2
#40	425	95.2	2.7
#60	250	89.7	5.5
#80	180	83.0	6.7
#100	150	75.9	7.1
#200	75	51.8	24.1
Hyd1	31.4	39.5	12.3
Hyd2	20.5	33.3	6.2
Hyd3	12.3	24.5	8.8
Hyd4	8.9	18.3	6.2
Hyd5	6.3	12.1	6.2
Hyd6	3.3	8.3	3.8
Hyd7	1.4	5.8	2.5

Soil Classification	Percent of sample
Gravel	0.3
Sand	47.9
Coarse Sand	0.6
Medium Sand	3.9
Fine Sand	43.4
Silt	39.7
Clay	12.1

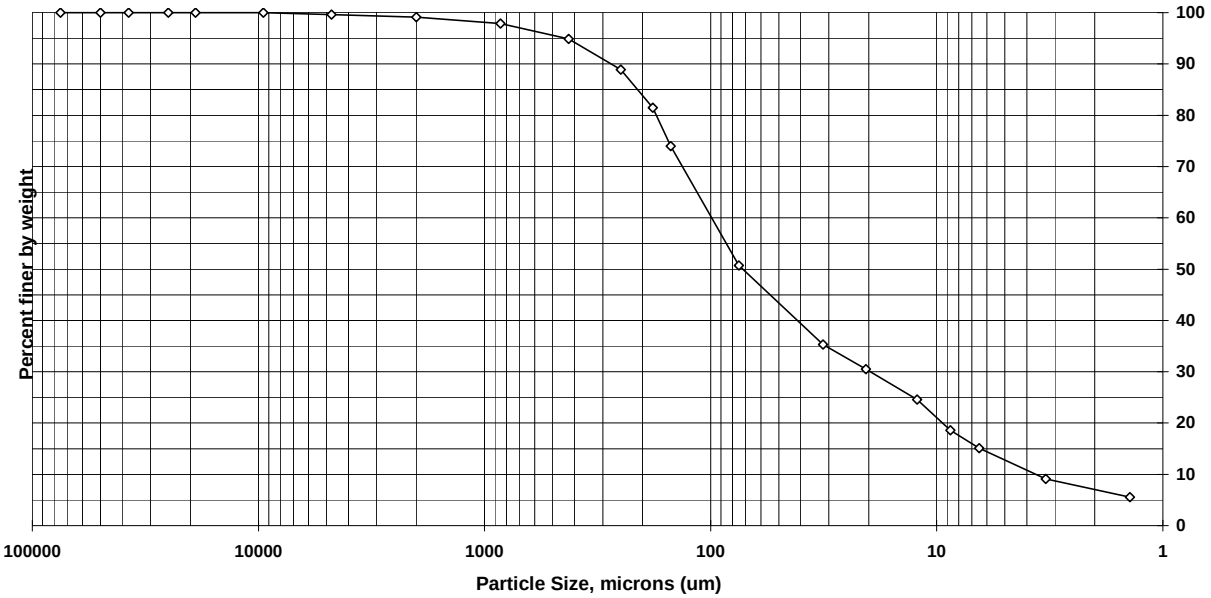
Particle Size of Soils by ASTM D422

				Date Received:	9/21/2013
Sample ID:	1337006-06	**Percent Solids:**	39.8%	**Start Date:**	9/27/2013
Lab ID:	580-40463-B-6	**Specific Gravity:**	2.650	**End Date:**	10/2/2013

Shape (> #10): angular

Non-soil material: wood, shell

Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	99.6	0.4
#10	2000	99.1	0.5
#20	850	97.9	1.2
#40	425	94.9	3.0
#60	250	88.9	6.0
#80	180	81.5	7.4
#100	150	74.0	7.5
#200	75	50.7	23.3
Hyd1	31.8	35.3	15.4
Hyd2	20.6	30.5	4.8
Hyd3	12.2	24.6	5.9
Hyd4	8.7	18.6	6.0
Hyd5	6.5	15.1	3.5
Hyd6	3.3	9.1	6.0
Hyd7	1.4	5.6	3.6

Soil Classification	Percent of sample
Gravel	0.4
Sand	48.9
Coarse Sand	0.5
Medium Sand	4.2
Fine Sand	44.2
Silt	35.6
Clay	15.1

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1337006-01
Lab Sample ID	580-40463-B-1

Date Received	9/21/2013
Start Date	09/27/2013 21:35
End Date	10/02/2013 14:13

Dry Weight Determination

Tin Weight	1.01	g
Wet Sample + Tin	25.43	g
Dry Sample + Tin	10.78	g
% Moisture	59.99	%

Non-soil material:	plant, wood
Shape (> #10):	n/a
Hardness (> #10):	n/a

Date/Time in oven	09/27/2013 21:37
Date/Time out of oven	09/30/2013 13:48

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		159.17	159.17
Sample Weight (Oven Dried)			63.7

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.22
Sample <#10			63.5
% Passing #10			39.9

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750			0.00	g	100.0	Gravel	
#10	2000	462.79	463.01	0.22	g	99.7	Sand	Coarse
#20	850	381.16	381.63	0.47	g	99.0	Sand	Medium
#40	425	352.67	353.92	1.25	g	97.0	Sand	Medium
#60	250	350.72	353.65	2.93	g	92.4	Sand	Fine
#80	180	329.96	333.47	3.51	g	86.9	Sand	Fine
#100	150	327.01	330.46	3.45	g	81.5	Sand	Fine
#200	75	306.20	318.43	12.23	g	62.3	Sand	Fine
				0.00	g	62.3		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	63.7

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0210	22.0	30.9	43.7	Silt	
5	5	1.0185	22.0	20.1	37.4	Silt	
15	15	1.0145	22.0	12.1	27.3	Silt	
30	31	1.0115	22.0	8.7	19.8	Silt	
60	59	1.0100	22.0	6.4	16	Silt	
250	265	1.0080	22.0	3.1	10.9	Clay	
1440	1412	1.0065	22.0	1.4	7.14	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1337006-02
Lab Sample ID	580-40463-B-2

Date Received	9/21/2013
Start Date	09/27/2013 21:37
End Date	10/02/2013 14:24

Dry Weight Determination

Tin Weight	1.03	g
Wet Sample + Tin	25.53	g
Dry Sample + Tin	10.43	g
% Moisture	61.63	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:39
Date/Time out of oven	09/30/2013 13:48

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		169.10	169.1
Sample Weight (Oven Dried)			64.9

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.53
Sample <#10			64.4
% Passing #10			38.1

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.29	0.15	g	99.8	Gravel	
#10	2000	462.79	463.17	0.38	g	99.2	Sand	Coarse
#20	850	389.90	390.95	1.05	g	97.6	Sand	Medium
#40	425	355.04	357.05	2.01	g	94.5	Sand	Medium
#60	250	346.10	350.58	4.48	g	87.6	Sand	Fine
#80	180	331.92	336.78	4.86	g	80.1	Sand	Fine
#100	150	331.35	335.79	4.44	g	73.3	Sand	Fine
#200	75	320.64	334.86	14.22	g	51.4	Sand	Fine
				0.00	g	51.4		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	64.9

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0200	22.0	31.2	40.4	Silt	
5	5	1.0165	22.0	20.6	31.8	Silt	
15	15	1.0130	22.0	12.3	23.1	Silt	
30	32	1.0110	22.0	8.6	18.1	Silt	
60	60	1.0090	22.0	6.4	13.2	Silt	
250	259	1.0070	22.0	3.1	8.25	Clay	
1440	1406	1.0060	22.0	1.4	5.77	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/21/2013
Client Sample ID	1337006-03	Start Date	09/27/2013 21:39
Lab Sample ID	580-40463-B-3	End Date	10/02/2013 14:51

Dry Weight Determination

Tin Weight	0.98	g
Wet Sample + Tin	28.58	g
Dry Sample + Tin	12.57	g
% Moisture	58.01	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:41
Date/Time out of oven	09/30/2013 13:48

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		151.17	151.17
Sample Weight (Oven Dried)			63.5

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			2.39
Sample <#10			61.1
% Passing #10			40.4

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	489.57	1.43	g	97.7	Gravel	
#10	2000	462.79	463.75	0.96	g	96.2	Sand	Coarse
#20	850	381.16	382.66	1.50	g	93.8	Sand	Medium
#40	425	352.67	354.93	2.26	g	90.2	Sand	Medium
#60	250	350.72	354.46	3.74	g	84.3	Sand	Fine
#80	180	329.96	333.54	3.58	g	78.7	Sand	Fine
#100	150	327.01	330.69	3.68	g	72.9	Sand	Fine
#200	75	306.20	321.02	14.82	g	49.6	Sand	Fine
				0.00	g	49.6		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	63.5

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0175	22.0	32.2	35	Silt	
5	5	1.0155	22.0	20.8	29.9	Silt	
15	15	1.0130	22.0	12.3	23.6	Silt	
30	30	1.0110	22.0	8.9	18.5	Silt	
60	63	1.0090	22.0	6.3	13.5	Silt	
250	253	1.0075	22.0	3.2	9.7	Clay	
1440	1400	1.0060	22.0	1.4	5.9	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client		Date Received	9/21/2013
Client Sample ID	1337006-04	Start Date	09/27/2013 21:41
Lab Sample ID	580-40463-B-4	End Date	10/02/2013 14:54

Dry Weight Determination

Tin Weight	1.00	g
Wet Sample + Tin	21.98	g
Dry Sample + Tin	9.20	g
% Moisture	60.92	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:43
Date/Time out of oven	09/30/2013 13:49

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		169.04	169.04
Sample Weight (Oven Dried)			66.1

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.15
Sample <#10			66
% Passing #10			39

Hydrometer Data

Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750			0.00	g	100.0	Gravel	
#10	2000	462.79	462.94	0.15	g	99.8	Sand	Coarse
#20	850	389.90	390.37	0.47	g	99.1	Sand	Medium
#40	425	355.04	356.23	1.19	g	97.3	Sand	Medium
#60	250	346.10	349.03	2.93	g	92.9	Sand	Fine
#80	180	331.92	335.90	3.98	g	86.9	Sand	Fine
#100	150	331.35	335.46	4.11	g	80.7	Sand	Fine
#200	75	320.64	336.51	15.87	g	56.7	Sand	Fine
				0.00	g	56.7		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	66.1

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0200	22.0	31.2	39.7	Silt	
5	5	1.0160	22.0	20.7	30	Silt	
15	15	1.0130	22.0	12.3	22.7	Silt	
30	30	1.0105	22.0	8.9	16.6	Silt	
60	57	1.0090	22.0	6.6	13	Silt	
250	247	1.0070	22.0	3.2	8.1	Clay	
1440	1394	1.0060	22.0	1.4	5.67	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1337006-05
Lab Sample ID	580-40463-B-5

Date Received	9/21/2013
Start Date	09/27/2013 21:43
End Date	10/02/2013 15:12

Dry Weight Determination

Tin Weight	1.01	g
Wet Sample + Tin	26.37	g
Dry Sample + Tin	11.23	g
% Moisture	59.70	%

Non-soil material:	plant, wood
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:45
Date/Time out of oven	09/30/2013 13:49

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		159.91	159.91
Sample Weight (Oven Dried)			64.4

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.54
Sample <#10			63.9
% Passing #10			40

Hydrometer Data	
Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.31	0.17	g	99.7	Gravel	
#10	2000	462.79	463.16	0.37	g	99.1	Sand	Coarse
#20	850	381.16	381.96	0.80	g	97.9	Sand	Medium
#40	425	352.67	354.40	1.73	g	95.2	Sand	Medium
#60	250	350.72	354.28	3.56	g	89.7	Sand	Fine
#80	180	329.96	334.26	4.30	g	83.0	Sand	Fine
#100	150	327.01	331.58	4.57	g	75.9	Sand	Fine
#200	75	306.20	321.75	15.55	g	51.8	Sand	Fine
				0.00	g	51.8		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	64.4

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0195	22.0	31.4	39.5	Silt	
5	5	1.0170	22.0	20.5	33.3	Silt	
15	15	1.0135	22.0	12.3	24.5	Silt	
30	30	1.0110	22.0	8.9	18.3	Silt	
60	63	1.0085	22.0	6.3	12.1	Silt	
250	241	1.0070	22.0	3.3	8.31	Clay	
1440	1388	1.0060	22.0	1.4	5.82	Clay	

TestAmerica Burlington

Sediment Grain Size - D422

Client	
Client Sample ID	1337006-06
Lab Sample ID	580-40463-B-6

Date Received	9/21/2013
Start Date	09/27/2013 21:45
End Date	10/02/2013 15:12

Dry Weight Determination

Tin Weight	1.01	g
Wet Sample + Tin	36.45	g
Dry Sample + Tin	15.10	g
% Moisture	60.24	%

Non-soil material:	wood, shell
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	09/27/2013 21:47
Date/Time out of oven	09/30/2013 13:49

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		169.67	169.67
Sample Weight (Oven Dried)			67.5

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.64
Sample <#10			66.9
% Passing #10			39.4

Hydrometer Data

Serial Number	531857
Calib. Date (mm/dd/yyyy)	03/12/2013
Low Temp (C)	17.0
Reading at Low Temp	1.0045
High Temp (C)	23.0
Reading at High Temp	1.0035
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.007333333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample		% Finer	Classification	Sub Class
3 inch	75000			0.00	g	100.0	Gravel	
2 inch	50000			0.00	g	100.0	Gravel	
1.5 inch	37500			0.00	g	100.0	Gravel	
1 inch	25000			0.00	g	100.0	Gravel	
3/4 inch	19000			0.00	g	100.0	Gravel	
3/8 inch	9500			0.00	g	100.0	Gravel	
#4	4750	488.14	488.44	0.30	g	99.6	Gravel	
#10	2000	462.79	463.13	0.34	g	99.1	Sand	Coarse
#20	850	389.90	390.73	0.83	g	97.9	Sand	Medium
#40	425	355.04	357.09	2.05	g	94.9	Sand	Medium
#60	250	346.10	350.18	4.08	g	88.9	Sand	Fine
#80	180	331.92	336.91	4.99	g	81.5	Sand	Fine
#100	150	331.35	336.38	5.03	g	74.0	Sand	Fine
#200	75	320.64	336.34	15.70	g	50.7	Sand	Fine
				0.00	g	50.7		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	67.5

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0185	22.0	31.8	35.3	Silt	
5	5	1.0165	22.0	20.6	30.5	Silt	
15	15	1.0140	22.0	12.2	24.6	Silt	
30	31	1.0115	22.0	8.7	18.6	Silt	
60	57	1.0100	22.0	6.5	15.1	Silt	
250	235	1.0075	22.0	3.3	9.12	Clay	
1440	1382	1.0060	22.0	1.4	5.55	Clay	

DATA REPORTING QUALIFIERS

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Lab Section	Qualifier	Description
General Chemistry		
	H	Sample was prepped or analyzed beyond the specified holding time

QUALITY CONTROL RESULTS

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Prep Batch: 580-145934					
580-40463-1	1337006-01	T	Solid	Increm, Prep	
580-40463-2	1337006-02	T	Solid	Increm, Prep	
580-40463-3	1337006-03	T	Solid	Increm, Prep	
580-40463-4	1337006-04	T	Solid	Increm, Prep	
580-40463-5	1337006-05	T	Solid	Increm, Prep	
580-40463-6	1337006-06	T	Solid	Increm, Prep	
Analysis Batch:580-147085					
580-40463-1	1337006-01	T	Solid	9060	
580-40463-2	1337006-02	T	Solid	9060	
580-40463-3	1337006-03	T	Solid	9060	
580-40463-4	1337006-04	T	Solid	9060	
580-40463-5	1337006-05	T	Solid	9060	
580-40463-6	1337006-06	T	Solid	9060	

Report Basis
T = Total

Geotechnical					
Analysis Batch:200-62033					
580-40463-1	1337006-01	T	Solid	D422	
580-40463-2	1337006-02	T	Solid	D422	
580-40463-3	1337006-03	T	Solid	D422	
580-40463-4	1337006-04	T	Solid	D422	
580-40463-5	1337006-05	T	Solid	D422	
580-40463-6	1337006-06	T	Solid	D422	

Report Basis
T = Total

SUBCONTRACT ORDER

Brooks Rand Labs

1337006

4/07/13

SENDING LABORATORY:

Brooks Rand Labs
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
Project Manager: Lydia Greaves

RECEIVING LABORATORY:

Test America - Tacoma
5755 8th Street East
Tacoma, WA 98424
Phone :(253) 922-2310
Fax: (253) 922-5047

580-40463 Chain of Custody

Analysis	Laboratory ID	Comments
Client ID: WP-DU6 (0-4")		1
Sample ID: 1337006-01 Soil/Sediment Sampled:09/03/13 18:00		
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
Client ID: WP-DU6 (4-8")		2
Sample ID: 1337006-02 Soil/Sediment Sampled:09/03/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
Client ID: WP-DU6 (8-12")		3
Sample ID: 1337006-03 Soil/Sediment Sampled:09/03/13 18:00		
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
Client ID: WP-DU7 (0-4")		4
Sample ID: 1337006-04 Soil/Sediment Sampled:09/04/13 18:00		
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
Client ID: WP-DU7 (4-8")		5
Sample ID: 1337006-05 Soil/Sediment Sampled:09/04/13 18:00		
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America
SUB - TOC-S		Subcontracted to Test America

Released By	Date	Received By	Date
Lydia Greaves	9/20/13 11:15	Rachael Bailey	9/21/13 1050

SUBCONTRACT ORDER

Brooks Rand Labs

1337006

40463

Analysis	Laboratory ID	Comments
Client ID: WP-DU7 (8-12")		
Sample ID: 1337006-06 **Soil/Sediment** **Sampled:09/04/13 18:00**		4
SUB - TOC-S		Subcontracted to Test America
SUB - Grain_Size		Subcontracted to Test America
SUB - Increment		Subcontracted to Test America

~~Cooler/TB~~ **Dig/IR** **cor** 1.0°C **unc** 0.6°C
Cooler Dsc Med Blue/white @ **Lab** 1050
Wet/Packs **Packing** other
w/o client Drop

~~Cooler/TB~~ **Dig/IR** **cor** 0.7°C **unc** 0.3°C
Cooler Dsc Lg Blue/white @ **Lab** 1050
Wet/Packs **Packing**
w/o client Drop

Released By	Date	Received By	Date
Lydia Greaves	9/20/13 11:15	Rachael Bailes	9/21/13 1050

Login Sample Receipt Checklist

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Login Number: 40463

List Source: TestAmerica Seattle

List Number: 1

Creator: Gamble, Cathy L

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	not present
Sample custody seals, if present, are intact.	N/A	not present
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	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received 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	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Brooks Rand Labs LLC

Job Number: 580-40463-1

Login Number: 40463
List Number: 1
Creator: Gagne, Eric M

List Source: TestAmerica Burlington
List Creation: 09/27/13 03:31 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	622958
Sample custody seals, if present, are 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	4.4ºC. IR GUN ID 181. CF -0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	NO CLIENT LABELS.
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	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

October 31, 2013

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Avenue
Hilo, HI 96720
john.peard@doh.hawaii.gov

RE: Project HDH-HL1301
Client Project: 10351902311 (Waiakea Pond; Tetra Tech Work Order 1097688)

Dear Mr. Peard,

On September 3, 2013, Brooks Rand Labs (BRL) received nine (9) sediment samples. The samples arrived at a temperature of 16.6 °C, above the recommended temperature of 4 ± 2 °C. Each sample was processed following the multi-incremental sampling (MIS) procedure, generating three (3) replicates from each sample, resulting in a total of twenty-seven (27) analytical samples. The samples were logged-in for the analyses of total recoverable arsenic (As), total recoverable iron (Fe), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) according to the chain-of-custody (COC) forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

In addition, fractions of each sample were subcontracted to TestAmerica in Tacoma, Washington, for the analysis of grain size and TOC (also following the MIS procedure).

All results (except for %TS) were qualified **H** for the elevated receiving temperature and due to the risk that the MIS procedure could lead to speciation shifts from the oxidation of the samples.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a dry-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL, the RPD was not calculated (**N/C**).

Total As – Batch B131440
The MS/MSD set prepared on the first replicate of sample *WP-DU2(0-4")* (1336001-10), identified as B131440-MS2 and -MSD2, was spiked at a level that was less than the native As concentration. Therefore, the spike recoveries are not ideal measures of method performance. The recovery for -MS2 was acceptable, but the recovery for -MSD2 was 241%, causing the MS/MSD RPD to be elevated (55%). The RPD for the -DUP2 on this sample was acceptable (RPD = 13%). The As result for sample *WP-DU2(0-4")* (1336001-10) has been reported unqualified, as the spiking level was less than the native concentration; however, it is clear from

these results, as well as the results of the three replicates of this sample (RSD = 24%), that this sample presents some homogeneity issues.

The matrix duplicate (DUP) prepared on the second replicate of sample *WP-DU5 (0-4")* (1336001-20), identified as B131440-DUP3, yielded an RPD of 80%. Therefore, the As result for this sample was qualified **M**.

The third replicate of sample *WP-DU5 (0-4")* (1336001-21) produced an As result that was 10-fold higher than the other two replicates for this sample. All dilutions, calculations, and database entries were re-reviewed, and no errors were found. Selenium was also monitored for during this analysis, and there were no discrepancies between the replicates of this sample for selenium concentration.

Total Fe – Batch B131441
All MS/MSD sets were spiked at levels less than the native Fe concentrations. As such, matrix spike recoveries are not ideal measures of method performance, and no sample results have been qualified on this basis.

The results from the analysis of the MSD prepared on the first replicate of sample *WP-DU1(0-4")* (1336001-01), identified as B131441-MSD1, produced a very low recovery of the internal standard and a high RSD amongst instrument scans. These results are indicative of a possible mis-injection of the sample. No other samples in this batch exhibited the characteristics of a possible mis-injection; therefore, the result for -MSD1 has not been reported.

As(Inorg) – Batch B131459
The matrix duplicate (DUP) prepared on the first replicate of sample *WP-DU2(0-4")* (1336001-10), identified as B131459-DUP2, yielded an RPD of 58%. These results were confirmed by re-analysis of both the native sample and the DUP. Therefore, the inorganic As result for this sample qualified **M**.

The matrix duplicate (DUP) prepared on the third replicate of sample *WP-DU5 (8-12')* (1336001-27), identified as B131459-DUP4, yielded an RPD of 52%. These results were confirmed by re-analysis of both the native sample and the DUP. Therefore, the inorganic As result for this sample qualified **M**.

MMAs and DMAs – Batches B131460 and B131461
These samples were very high in inorganic As relative to the MMAs and DMAs concentrations; therefore, samples for MMAs and DMAs analysis had to be analyzed at significant dilutions to prevent the tailing of the inorganic As peak from interfering with the quantification. This resulted in MS/MSD spiking levels that were very near or below the adjusted sample-specific MRLs in most cases. As all samples produced MMAs results that were less than the MRL and DMAs results were below the MDL, only samples used for MS/MSD sets were qualified. The MMAs and DMAs results for the first replicate of sample *WP-DU1(4-8")* (1336001-04), the first replicate of sample *WP-DU2(0-4")* (1336001-10), the first replicate of sample *WP-DU5 (0-4")* (1336001-19), and the third replicate of sample *WP-DU5 (8-12')* (1336001-27) were qualified **N** due to poor matrix spike recoveries.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Michelle L. Briscoe
President
michelle@brooksrand.com

Tiffany Stilwater
Client Services Manager
tiffany@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU1(0-4")	1336001-01	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(0-4")	1336001-02	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(0-4")	1336001-03	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(4-8")	1336001-04	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(4-8")	1336001-05	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(4-8")	1336001-06	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(8-12")	1336001-07	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(8-12")	1336001-08	Sediment	Sample	08/26/2013	09/03/2013
WP-DU1(8-12")	1336001-09	Sediment	Sample	08/26/2013	09/03/2013
WP-DU2(0-4")	1336001-10	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(0-4")	1336001-11	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(0-4")	1336001-12	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(4-8")	1336001-13	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(4-8")	1336001-14	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(4-8")	1336001-15	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(8-12")	1336001-16	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(8-12")	1336001-17	Sediment	Sample	08/27/2013	09/03/2013
WP-DU2(8-12")	1336001-18	Sediment	Sample	08/27/2013	09/03/2013
WP-DU5 (0-4")	1336001-19	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (0-4")	1336001-20	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (0-4")	1336001-21	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (4-8')	1336001-22	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (4-8')	1336001-23	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (4-8')	1336001-24	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (8-12')	1336001-25	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (8-12')	1336001-26	Sediment	Sample	08/23/2013	09/03/2013
WP-DU5 (8-12')	1336001-27	Sediment	Sample	08/23/2013	09/03/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Soil/Sediment	SM 2540G	09/25/2013	09/30/2013	B131462	N/A
As	Soil/Sediment	EPA 1638 DRC	09/25/2013	10/01/2013	B131440	1300666
As(Inorg)	Soil/Sediment	EPA 1632	10/08/2013	10/09/2013	B131459	1300684
DMAs	Soil/Sediment	EPA 1632	10/08/2013	10/10/2013	B131461	1300686
Fe	Soil/Sediment	EPA 1638 DRC	09/25/2013	09/27/2013	B131441	1300659
MMAs	Soil/Sediment	EPA 1632	10/08/2013	10/10/2013	B131460	1300685

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU1(0-4")										
1336001-01	%TS	Sediment	NA	38.58		0.001	0.003	%	B131462	N/A
1336001-02	%TS	Sediment	NA	40.16		0.001	0.003	%	B131462	N/A
1336001-03	%TS	Sediment	NA	39.71		0.001	0.003	%	B131462	N/A
1336001-01	As	Sediment	dry	399	H	0.14	0.99	mg/kg	B131440	1300666
1336001-02	As	Sediment	dry	365	H	0.12	0.88	mg/kg	B131440	1300666
1336001-03	As	Sediment	dry	288	H	0.13	0.91	mg/kg	B131440	1300666
1336001-01	As(Inorg)	Sediment	dry	214	H	38.8	97.1	mg/kg	B131459	1300684
1336001-02	As(Inorg)	Sediment	dry	191	H	37.2	93.1	mg/kg	B131459	1300684
1336001-03	As(Inorg)	Sediment	dry	167	H	38.9	97.2	mg/kg	B131459	1300684
1336001-01	DMAs	Sediment	dry	1.16	H, U	1.16	3.88	mg/kg	B131461	1300686
1336001-02	DMAs	Sediment	dry	1.12	H, U	1.12	3.72	mg/kg	B131461	1300686
1336001-03	DMAs	Sediment	dry	1.17	H, U	1.17	3.89	mg/kg	B131461	1300686
1336001-01	Fe	Sediment	dry	62400	H	23.1	137	mg/kg	B131441	1300659
1336001-02	Fe	Sediment	dry	55800	H	20.6	123	mg/kg	B131441	1300659
1336001-03	Fe	Sediment	dry	53600	H	21.2	126	mg/kg	B131441	1300659
1336001-01	MMAs	Sediment	dry	0.777	H, U	0.777	2.33	mg/kg	B131460	1300685
1336001-02	MMAs	Sediment	dry	0.745	H, U	0.745	2.23	mg/kg	B131460	1300685
1336001-03	MMAs	Sediment	dry	0.778	H, U	0.778	2.33	mg/kg	B131460	1300685
WP-DU1(4-8")										
1336001-04	%TS	Sediment	NA	41.10		0.001	0.003	%	B131462	N/A
1336001-05	%TS	Sediment	NA	39.87		0.001	0.003	%	B131462	N/A
1336001-06	%TS	Sediment	NA	38.12		0.001	0.003	%	B131462	N/A
1336001-04	As	Sediment	dry	487	H	0.12	0.88	mg/kg	B131440	1300666
1336001-05	As	Sediment	dry	453	H	0.12	0.86	mg/kg	B131440	1300666
1336001-06	As	Sediment	dry	280	H	0.13	0.95	mg/kg	B131440	1300666
1336001-04	As(Inorg)	Sediment	dry	223	H	42.3	106	mg/kg	B131459	1300684
1336001-05	As(Inorg)	Sediment	dry	188	H	4.32	10.8	mg/kg	B131459	1300684
1336001-06	As(Inorg)	Sediment	dry	169	H	21.1	52.8	mg/kg	B131459	1300684
1336001-04	DMAs	Sediment	dry	1.27	H, N, U	1.27	4.23	mg/kg	B131461	1300686
1336001-05	DMAs	Sediment	dry	1.30	H, U	1.30	4.32	mg/kg	B131461	1300686
1336001-06	DMAs	Sediment	dry	1.27	H, U	1.27	4.22	mg/kg	B131461	1300686
1336001-04	Fe	Sediment	dry	20000	H	20.6	123	mg/kg	B131441	1300659
1336001-05	Fe	Sediment	dry	52700	H	20.1	120	mg/kg	B131441	1300659
1336001-06	Fe	Sediment	dry	37800	H	22.2	132	mg/kg	B131441	1300659
1336001-04	MMAs	Sediment	dry	0.846	H, N, U	0.846	2.54	mg/kg	B131460	1300685
1336001-05	MMAs	Sediment	dry	0.865	H, U	0.865	2.59	mg/kg	B131460	1300685
1336001-06	MMAs	Sediment	dry	1.44	H, B	0.845	2.53	mg/kg	B131460	1300685

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU1(8-12")										
1336001-07	%TS	Sediment	NA	41.62		0.001	0.003	%	B131462	N/A
1336001-08	%TS	Sediment	NA	39.48		0.001	0.003	%	B131462	N/A
1336001-09	%TS	Sediment	NA	39.52		0.001	0.003	%	B131462	N/A
1336001-07	As	Sediment	dry	301	H	0.12	0.87	mg/kg	B131440	1300666
1336001-08	As	Sediment	dry	300	H	0.14	1.00	mg/kg	B131440	1300666
1336001-09	As	Sediment	dry	339	H	0.13	0.97	mg/kg	B131440	1300666
1336001-07	As(Inorg)	Sediment	dry	128	H	21.1	52.7	mg/kg	B131459	1300684
1336001-08	As(Inorg)	Sediment	dry	104	H	21.7	54.4	mg/kg	B131459	1300684
1336001-09	As(Inorg)	Sediment	dry	181	H	21.4	53.6	mg/kg	B131459	1300684
1336001-07	DMAs	Sediment	dry	1.26	H, U	1.26	4.21	mg/kg	B131461	1300686
1336001-08	DMAs	Sediment	dry	1.30	H, U	1.30	4.35	mg/kg	B131461	1300686
1336001-09	DMAs	Sediment	dry	1.29	H, U	1.29	4.29	mg/kg	B131461	1300686
1336001-07	Fe	Sediment	dry	56800	H	20.3	121	mg/kg	B131441	1300659
1336001-08	Fe	Sediment	dry	62600	H	23.4	139	mg/kg	B131441	1300659
1336001-09	Fe	Sediment	dry	59600	H	22.5	134	mg/kg	B131441	1300659
1336001-07	MMAs	Sediment	dry	1.07	H, B	0.843	2.53	mg/kg	B131460	1300685
1336001-08	MMAs	Sediment	dry	0.870	H, U	0.870	2.61	mg/kg	B131460	1300685
1336001-09	MMAs	Sediment	dry	0.858	H, U	0.858	2.57	mg/kg	B131460	1300685
WP-DU2(0-4")										
1336001-10	%TS	Sediment	NA	34.77		0.001	0.003	%	B131462	N/A
1336001-11	%TS	Sediment	NA	36.56		0.001	0.003	%	B131462	N/A
1336001-12	%TS	Sediment	NA	38.61		0.001	0.003	%	B131462	N/A
1336001-10	As	Sediment	dry	2140	H	0.14	0.99	mg/kg	B131440	1300666
1336001-11	As	Sediment	dry	2950	H	0.14	1.01	mg/kg	B131440	1300666
1336001-12	As	Sediment	dry	1860	H	0.12	0.86	mg/kg	B131440	1300666
1336001-10	As(Inorg)	Sediment	dry	988	H, M	99.8	250	mg/kg	B131459	1300684
1336001-11	As(Inorg)	Sediment	dry	706	H	45.2	113	mg/kg	B131459	1300684
1336001-12	As(Inorg)	Sediment	dry	513	H	40.3	101	mg/kg	B131459	1300684
1336001-10	DMAs	Sediment	dry	1.50	H, N, U	1.50	4.99	mg/kg	B131461	1300686
1336001-11	DMAs	Sediment	dry	1.36	H, U	1.36	4.52	mg/kg	B131461	1300686
1336001-12	DMAs	Sediment	dry	1.21	H, U	1.21	4.03	mg/kg	B131461	1300686
1336001-10	Fe	Sediment	dry	51100	H	23.0	137	mg/kg	B131441	1300659
1336001-11	Fe	Sediment	dry	49300	H	23.5	140	mg/kg	B131441	1300659
1336001-12	Fe	Sediment	dry	49500	H	20.1	119	mg/kg	B131441	1300659
1336001-10	MMAs	Sediment	dry	0.998	H, N, U	0.998	2.99	mg/kg	B131460	1300685
1336001-11	MMAs	Sediment	dry	0.904	H, U	0.904	2.71	mg/kg	B131460	1300685
1336001-12	MMAs	Sediment	dry	0.806	H, U	0.806	2.42	mg/kg	B131460	1300685

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU2(4-8")										
1336001-13	%TS	Sediment	NA	39.92		0.001	0.003	%	B131462	N/A
1336001-14	%TS	Sediment	NA	42.44		0.001	0.003	%	B131462	N/A
1336001-15	%TS	Sediment	NA	43.39		0.001	0.003	%	B131462	N/A
1336001-13	As	Sediment	dry	708	H	0.13	0.91	mg/kg	B131440	1300666
1336001-14	As	Sediment	dry	661	H	0.12	0.83	mg/kg	B131440	1300666
1336001-15	As	Sediment	dry	759	H	0.11	0.80	mg/kg	B131440	1300666
1336001-13	As(Inorg)	Sediment	dry	311	H	20.7	51.7	mg/kg	B131459	1300684
1336001-14	As(Inorg)	Sediment	dry	274	H	19.3	48.2	mg/kg	B131459	1300684
1336001-15	As(Inorg)	Sediment	dry	239	H	18.9	47.3	mg/kg	B131459	1300684
1336001-13	DMAs	Sediment	dry	1.24	H, U	1.24	4.13	mg/kg	B131461	1300686
1336001-14	DMAs	Sediment	dry	1.16	H, U	1.16	3.85	mg/kg	B131461	1300686
1336001-15	DMAs	Sediment	dry	1.14	H, U	1.14	3.79	mg/kg	B131461	1300686
1336001-13	Fe	Sediment	dry	74300	H	21.3	127	mg/kg	B131441	1300659
1336001-14	Fe	Sediment	dry	52200	H	19.4	115	mg/kg	B131441	1300659
1336001-15	Fe	Sediment	dry	54700	H	18.6	111	mg/kg	B131441	1300659
1336001-13	MMAs	Sediment	dry	0.826	H, U	0.826	2.48	mg/kg	B131460	1300685
1336001-14	MMAs	Sediment	dry	0.771	H, U	0.771	2.31	mg/kg	B131460	1300685
1336001-15	MMAs	Sediment	dry	0.757	H, U	0.757	2.27	mg/kg	B131460	1300685
WP-DU2(8-12")										
1336001-16	%TS	Sediment	NA	39.09		0.001	0.003	%	B131462	N/A
1336001-17	%TS	Sediment	NA	40.03		0.001	0.003	%	B131462	N/A
1336001-18	%TS	Sediment	NA	39.48		0.001	0.003	%	B131462	N/A
1336001-16	As	Sediment	dry	608	H	0.13	0.91	mg/kg	B131440	1300666
1336001-17	As	Sediment	dry	581	H	0.12	0.86	mg/kg	B131440	1300666
1336001-18	As	Sediment	dry	553	H	0.13	0.96	mg/kg	B131440	1300666
1336001-16	As(Inorg)	Sediment	dry	201	H	19.7	49.3	mg/kg	B131459	1300684
1336001-17	As(Inorg)	Sediment	dry	407	H	19.3	48.1	mg/kg	B131459	1300684
1336001-18	As(Inorg)	Sediment	dry	355	H	20.2	50.5	mg/kg	B131459	1300684
1336001-16	DMAs	Sediment	dry	1.18	H, U	1.18	3.94	mg/kg	B131461	1300686
1336001-17	DMAs	Sediment	dry	1.16	H, U	1.16	3.85	mg/kg	B131461	1300686
1336001-18	DMAs	Sediment	dry	1.21	H, U	1.21	4.04	mg/kg	B131461	1300686
1336001-16	Fe	Sediment	dry	51400	H	21.2	126	mg/kg	B131441	1300659
1336001-17	Fe	Sediment	dry	61700	H	20.0	119	mg/kg	B131441	1300659
1336001-18	Fe	Sediment	dry	56000	H	22.4	134	mg/kg	B131441	1300659
1336001-16	MMAs	Sediment	dry	0.789	H, U	0.789	2.37	mg/kg	B131460	1300685
1336001-17	MMAs	Sediment	dry	0.770	H, U	0.770	2.31	mg/kg	B131460	1300685
1336001-18	MMAs	Sediment	dry	0.807	H, U	0.807	2.42	mg/kg	B131460	1300685

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU5 (0-4")										
1336001-19	%TS	Sediment	NA	76.14		0.001	0.003	%	B131462	N/A
1336001-20	%TS	Sediment	NA	75.42		0.001	0.003	%	B131462	N/A
1336001-21	%TS	Sediment	NA	74.28		0.001	0.003	%	B131462	N/A
1336001-19	As	Sediment	dry	58.4	H	0.07	0.52	mg/kg	B131440	1300666
1336001-20	As	Sediment	dry	58.9	H, M	0.07	0.50	mg/kg	B131440	1300666
1336001-21	As	Sediment	dry	509	H	0.06	0.44	mg/kg	B131440	1300666
1336001-19	As(Inorg)	Sediment	dry	43.2	H	3.77	9.41	mg/kg	B131459	1300684
1336001-20	As(Inorg)	Sediment	dry	55.7	H	3.82	9.54	mg/kg	B131459	1300684
1336001-21	As(Inorg)	Sediment	dry	42.1	H	9.97	24.9	mg/kg	B131459	1300684
1336001-19	DMAs	Sediment	dry	0.141	H, N, U	0.141	0.471	mg/kg	B131461	1300686
1336001-20	DMAs	Sediment	dry	0.143	H, U	0.143	0.477	mg/kg	B131461	1300686
1336001-21	DMAs	Sediment	dry	0.150	H, U	0.150	0.499	mg/kg	B131461	1300686
1336001-19	Fe	Sediment	dry	67900	H	12.1	71.8	mg/kg	B131441	1300659
1336001-20	Fe	Sediment	dry	89700	H	11.7	69.9	mg/kg	B131441	1300659
1336001-21	Fe	Sediment	dry	64900	H	10.3	61.3	mg/kg	B131441	1300659
1336001-19	MMAs	Sediment	dry	0.094	H, N, U	0.094	0.282	mg/kg	B131460	1300685
1336001-20	MMAs	Sediment	dry	0.095	H, U	0.095	0.286	mg/kg	B131460	1300685
1336001-21	MMAs	Sediment	dry	0.100	H, U	0.100	0.299	mg/kg	B131460	1300685
WP-DU5 (4-8')										
1336001-22	%TS	Sediment	NA	76.03		0.001	0.003	%	B131462	N/A
1336001-23	%TS	Sediment	NA	74.50		0.001	0.003	%	B131462	N/A
1336001-24	%TS	Sediment	NA	74.68		0.001	0.003	%	B131462	N/A
1336001-22	As	Sediment	dry	488	H	0.07	0.50	mg/kg	B131440	1300666
1336001-23	As	Sediment	dry	138	H	0.06	0.44	mg/kg	B131440	1300666
1336001-24	As	Sediment	dry	593	H	0.06	0.46	mg/kg	B131440	1300666
1336001-22	As(Inorg)	Sediment	dry	84.0	H	11.1	27.6	mg/kg	B131459	1300684
1336001-23	As(Inorg)	Sediment	dry	73.3	H	10.7	26.8	mg/kg	B131459	1300684
1336001-24	As(Inorg)	Sediment	dry	60.6	H	11.2	28.0	mg/kg	B131459	1300684
1336001-22	DMAs	Sediment	dry	0.332	H, U	0.332	1.11	mg/kg	B131461	1300686
1336001-23	DMAs	Sediment	dry	0.322	H, U	0.322	1.07	mg/kg	B131461	1300686
1336001-24	DMAs	Sediment	dry	0.336	H, U	0.336	1.12	mg/kg	B131461	1300686
1336001-22	Fe	Sediment	dry	68100	H	11.8	70.1	mg/kg	B131441	1300659
1336001-23	Fe	Sediment	dry	66200	H	10.2	60.9	mg/kg	B131441	1300659
1336001-24	Fe	Sediment	dry	56400	H	10.7	63.8	mg/kg	B131441	1300659
1336001-22	MMAs	Sediment	dry	0.221	H, U	0.221	0.663	mg/kg	B131460	1300685
1336001-23	MMAs	Sediment	dry	0.215	H, U	0.215	0.644	mg/kg	B131460	1300685
1336001-24	MMAs	Sediment	dry	0.224	H, U	0.224	0.672	mg/kg	B131460	1300685

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU5 (8-12')										
1336001-25	%TS	Sediment	NA	68.62		0.001	0.003	%	B131462	N/A
1336001-26	%TS	Sediment	NA	70.00		0.001	0.003	%	B131462	N/A
1336001-27	%TS	Sediment	NA	68.67		0.001	0.003	%	B131462	N/A
1336001-25	As	Sediment	dry	917	H	0.07	0.49	mg/kg	B131440	1300666
1336001-26	As	Sediment	dry	491	H	0.07	0.49	mg/kg	B131440	1300666
1336001-27	As	Sediment	dry	665	H	0.08	0.57	mg/kg	B131440	1300666
1336001-25	As(Inorg)	Sediment	dry	330	H	11.0	27.5	mg/kg	B131459	1300684
1336001-26	As(Inorg)	Sediment	dry	283	H	12.1	30.3	mg/kg	B131459	1300684
1336001-27	As(Inorg)	Sediment	dry	354	H, M	25.0	62.5	mg/kg	B131459	1300684
1336001-25	DMAs	Sediment	dry	0.331	H, U	0.331	1.10	mg/kg	B131461	1300686
1336001-26	DMAs	Sediment	dry	0.363	H, U	0.363	1.21	mg/kg	B131461	1300686
1336001-27	DMAs	Sediment	dry	0.750	N, H, U	0.750	2.50	mg/kg	B131461	1300686
1336001-25	Fe	Sediment	dry	71900	H	11.5	68.2	mg/kg	B131441	1300659
1336001-26	Fe	Sediment	dry	61800	H	11.4	67.8	mg/kg	B131441	1300659
1336001-27	Fe	Sediment	dry	63200	H	13.2	78.6	mg/kg	B131441	1300659
1336001-25	MMAs	Sediment	dry	0.220	H, U	0.220	0.661	mg/kg	B131460	1300685
1336001-26	MMAs	Sediment	dry	0.242	H, U	0.242	0.726	mg/kg	B131460	1300685
1336001-27	MMAs	Sediment	dry	0.500	H, N, U	0.500	1.50	mg/kg	B131460	1300685

Accuracy & Precision Summary

Batch: B131440
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131440-BS1	**Laboratory Fortified Blank (1310030)**								
	As		500.0	542.1	mg/kg	108%	75-125		
B131440-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	As		10.50	10.69	mg/kg	102%	N/A		
B131440-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	As		1540	1638	mg/kg	106%	75-125		
B131440-DUP1	**Duplicate (1336001-01)**								
	As	399.3		353.8	mg/kg			12%	30
B131440-MS1	**Matrix Spike (1336001-01)**								
	As	399.3	1350	1527	mg/kg	84%	70-130		
B131440-MSD1	**Matrix Spike Duplicate (1336001-01)**								
	As	399.3	1342	1816	mg/kg	106%	70-130	17%	30
B131440-DUP2	**Duplicate (1336001-10)**								
	As	2144		2431	mg/kg			13%	30
B131440-MS2	**Matrix Spike (1336001-10)**								
	As	2144	1399	3292	mg/kg	82%	70-130		
B131440-MSD2	**Matrix Spike Duplicate (1336001-10)**								
	As	2144	1527	5818	mg/kg	*241%*	70-130	*55%*	30
B131440-DUP3	**Duplicate (1336001-20)**								
	As	58.86		138.0	mg/kg			*80%*	30
B131440-MS3	**Matrix Spike (1336001-20)**								
	As	58.86	633.8	705.6	mg/kg	102%	70-130		

Accuracy & Precision Summary

Batch: B131440
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131440-MSD3	**Matrix Spike Duplicate (1336001-20)**								
	As	58.86	712.9	820.2	mg/kg	107%	70-130	15%	30

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131441
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131441-BS1	**Laboratory Fortified Blank (1310030)**								
	Fe		15000	14330	mg/kg	96%	75-125		
B131441-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	Fe		33600	31290	mg/kg	93%	75-125		
B131441-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	Fe		43200	37270	mg/kg	86%	75-125		
B131441-DUP1	**Duplicate (1336001-01)**								
	Fe	62390		58480	mg/kg			6%	30
B131441-MS1	**Matrix Spike (1336001-01)**								
	Fe	62390	40500	81920	mg/kg	*48%*	70-130		
B131441-DUP2	**Duplicate (1336001-10)**								
	Fe	51110		52070	mg/kg			2%	30
B131441-MS2	**Matrix Spike (1336001-10)**								
	Fe	51110	41960	94090	mg/kg	102%	70-130		
B131441-MSD2	**Matrix Spike Duplicate (1336001-10)**								
	Fe	51110	45800	94880	mg/kg	96%	70-130	0.8%	30
B131441-DUP3	**Duplicate (1336001-20)**								
	Fe	89730		77700	mg/kg			14%	30
B131441-MS3	**Matrix Spike (1336001-20)**								
	Fe	89730	19010	84170	mg/kg	NR	70-130		
B131441-MSD3	**Matrix Spike Duplicate (1336001-20)**								
	Fe	89730	21390	75140	mg/kg	NR	70-130	11%	30

Accuracy & Precision Summary

Batch: B131459
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131459-BS1	**Laboratory Fortified Blank (1339012)**								
	As(Inorg)		0.1000	0.103	mg/kg	103%	65-135		
B131459-SRM1	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	17.76	mg/kg	95%	65-135		
B131459-SRM2	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	17.44	mg/kg	94%	65-135		
B131459-DUP1	**Duplicate (1336001-04)**								
	As(Inorg)	223.1		190.1	mg/kg			16%	35
B131459-MS1	**Matrix Spike (1336001-04)**								
	As(Inorg)	223.1	478.0	575.4	mg/kg	74%	65-135		
B131459-MSD1	**Matrix Spike Duplicate (1336001-04)**								
	As(Inorg)	223.1	506.8	630.7	mg/kg	80%	65-135	9%	35
B131459-DUP2	**Duplicate (1336001-10)**								
	As(Inorg)	987.5		544.5	mg/kg			*58%*	35
B131459-MS2	**Matrix Spike (1336001-10)**								
	As(Inorg)	987.5	2094	2721	mg/kg	83%	65-135		
B131459-MSD2	**Matrix Spike Duplicate (1336001-10)**								
	As(Inorg)	987.5	2166	2596	mg/kg	74%	65-135	5%	35
B131459-DUP3	**Duplicate (1336001-19)**								
	As(Inorg)	43.16		36.61	mg/kg			16%	35
B131459-MS3	**Matrix Spike (1336001-19)**								
	As(Inorg)	43.16	73.45	105.1	mg/kg	84%	65-135		

Accuracy & Precision Summary

Batch: B131459
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131459-MSD3	**Matrix Spike Duplicate (1336001-19)**								
	As(Inorg)	43.16	61.83	89.93	mg/kg	76%	65-135	16%	35
B131459-DUP4	**Duplicate (1336001-27)**								
	As(Inorg)	354.0		207.5	mg/kg			*52%*	35
B131459-MS4	**Matrix Spike (1336001-27)**								
	As(Inorg)	354.0	683.1	933.8	mg/kg	85%	65-135		
B131459-MSD4	**Matrix Spike Duplicate (1336001-27)**								
	As(Inorg)	354.0	805.5	990.4	mg/kg	79%	65-135	6%	35

Accuracy & Precision Summary

Batch: B131460
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131460-BS1	**Laboratory Fortified Blank (1337007)**								
	MMAs		0.1000	0.087	mg/kg	87%	60-140		
B131460-DUP1	**Duplicate (1336001-04)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131460-MS1	**Matrix Spike (1336001-04)**								
	MMAs	ND	2.390	0.953	mg/kg	*40%*	60-140		
B131460-MSD1	**Matrix Spike Duplicate (1336001-04)**								
	MMAs	ND	2.534	1.547	mg/kg	61%	60-140	*47%*	25
B131460-DUP2	**Duplicate (1336001-10)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131460-MS2	**Matrix Spike (1336001-10)**								
	MMAs	ND	2.792	1.559	mg/kg	*56%*	60-140		
B131460-MSD2	**Matrix Spike Duplicate (1336001-10)**								
	MMAs	ND	2.888	1.184	mg/kg	*41%*	60-140	*27%*	25
B131460-DUP3	**Duplicate (1336001-19)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131460-MS3	**Matrix Spike (1336001-19)**								
	MMAs	ND	1.469	1.235	mg/kg	84%	60-140		
B131460-MSD3	**Matrix Spike Duplicate (1336001-19)**								
	MMAs	ND	1.237	0.538	mg/kg	*43%*	60-140	*79%*	25
B131460-DUP4	**Duplicate (1336001-27)**								
	MMAs	ND		ND	mg/kg			N/C	25

Accuracy & Precision Summary

Batch: B131460
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131460-MS4	**Matrix Spike (1336001-27)**								
	MMAs	ND	1.366	ND	mg/kg	NR	60-140	N/C	
B131460-MSD4	**Matrix Spike Duplicate (1336001-27)**								
	MMAs	ND	1.611	ND	mg/kg	NR	60-140	N/C	25

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131461
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131461-BS1	**Laboratory Fortified Blank (1337008)**								
	DMAs		0.1000	0.087	mg/kg	87%	60-140		
B131461-DUP1	**Duplicate (1336001-04)**								
	DMAs	ND		ND	mg/kg			N/C	35
B131461-MS1	**Matrix Spike (1336001-04)**								
	DMAs	ND	2.390	1.248	mg/kg	*52%*	60-140		
B131461-MSD1	**Matrix Spike Duplicate (1336001-04)**								
	DMAs	ND	2.534	1.451	mg/kg	*57%*	60-140	15%	35
B131461-DUP2	**Duplicate (1336001-10)**								
	DMAs	ND		ND	mg/kg			N/C	35
B131461-MS2	**Matrix Spike (1336001-10)**								
	DMAs	ND	2.792	1.808	mg/kg	65%	60-140		
B131461-MSD2	**Matrix Spike Duplicate (1336001-10)**								
	DMAs	ND	2.888	ND	mg/kg	NR	60-140	N/C	35
B131461-DUP3	**Duplicate (1336001-19)**								
	DMAs	ND		ND	mg/kg			N/C	35
B131461-MS3	**Matrix Spike (1336001-19)**								
	DMAs	ND	1.469	1.041	mg/kg	71%	60-140		
B131461-MSD3	**Matrix Spike Duplicate (1336001-19)**								
	DMAs	ND	1.237	0.471	mg/kg	*38%*	60-140	*75%*	35
B131461-DUP4	**Duplicate (1336001-27)**								
	DMAs	ND		ND	mg/kg			N/C	35

Accuracy & Precision Summary

Batch: B131461
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131461-MS4	**Matrix Spike (1336001-27)**								
	DMAs	ND	1.366	0.772	mg/kg	*56%*	60-140		
B131461-MSD4	**Matrix Spike Duplicate (1336001-27)**								
	DMAs	ND	1.611	ND	mg/kg	NR	60-140	N/C	35

Accuracy & Precision Summary

Batch: B131462
Lab Matrix: Soil/Sediment
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131462-DUP1	**Duplicate (1336001-07)**						
	%TS	41.62		40.73	%		2% 15
B131462-DUP2	**Duplicate (1336001-10)**						
	%TS	34.77		35.47	%		2% 15
B131462-DUP3	**Duplicate (1336001-19)**						
	%TS	76.14		76.39	%		0.3% 15
B131462-DUP4	**Duplicate (1336001-27)**						
	%TS	68.67		69.05	%		0.6% 15

Method Blanks & Reporting Limits

Batch: B131440
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131440-BLK1	-0.01	mg/kg
B131440-BLK2	-0.02	mg/kg
B131440-BLK3	-0.02	mg/kg
B131440-BLK4	-0.04	mg/kg

Average: -0.02 **Standard Deviation:** 0.01 **MDL:** 0.05
Limit: 0.36 **Limit:** 0.05 **MRL:** 0.36

Method Blanks & Reporting Limits

Batch: B131441
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: Fe 56

Sample	Result	Units
B131441-BLK1	-1.5	mg/kg
B131441-BLK2	-2.1	mg/kg
B131441-BLK3	-2.0	mg/kg
B131441-BLK4	-2.0	mg/kg

Average: -1.9 **Standard Deviation:** 0.3 **MDL:** 4.2
Limit: 25.0 **Limit:** 4.2 **MRL:** 25.0

Method Blanks & Reporting Limits

Batch: B131459
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131459-BLK1	-0.0004	mg/kg
B131459-BLK2	-0.0008	mg/kg
B131459-BLK3	-0.0005	mg/kg
B131459-BLK4	-0.0004	mg/kg

Average: -0.001 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

Method Blanks & Reporting Limits

Batch: B131460
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131460-BLK1	0.00	mg/kg
B131460-BLK2	0.00	mg/kg
B131460-BLK3	0.00	mg/kg
B131460-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

Method Blanks & Reporting Limits

Batch: B131461
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131461-BLK1	-0.0004	mg/kg
B131461-BLK2	-0.0004	mg/kg
B131461-BLK3	-0.0004	mg/kg
B131461-BLK4	-0.0004	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.006
Limit: 0.012 **Limit:** 0.004 **MRL:** 0.020

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131462
Matrix: Soil/Sediment
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131462-BLK1	0.00	%
B131462-BLK2	0.01	%
	Average: 0.01	
	Limit: 0.10	

MDL: 0.001
MRL: 0.003

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336001-01
Sample: WP-DU1(0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-02
Sample: WP-DU1(0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-03
Sample: WP-DU1(0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-04
Sample: WP-DU1(4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-05
Sample: WP-DU1(4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336001-06
Sample: WP-DU1(4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-07
Sample: WP-DU1(8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-08
Sample: WP-DU1(8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-09
Sample: WP-DU1(8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/26/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-10
Sample: WP-DU2(0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336001-11
Sample: WP-DU2(0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-12
Sample: WP-DU2(0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-13
Sample: WP-DU2(4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-14
Sample: WP-DU2(4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-15
Sample: WP-DU2(4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336001-16
Sample: WP-DU2(8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-17
Sample: WP-DU2(8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-18
Sample: WP-DU2(8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/27/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-19
Sample: WP-DU5 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-20
Sample: WP-DU5 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1336001-21
Sample: WP-DU5 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-22
Sample: WP-DU5 (4-8')
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-23
Sample: WP-DU5 (4-8')
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-24
Sample: WP-DU5 (4-8')
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-25
Sample: WP-DU5 (8-12')
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336001-26
Sample: WP-DU5 (8-12')
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336001-27
Sample: WP-DU5 (8-12')
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/23/2013
Received: 09/03/2013
Comments: Regulated soils under USDA permit.

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Shipping Containers

Cooler

Received: September 3, 2013 9:25
Tracking No: 803721087467 via FedEx
Coolant Type: None
Temperature: 16.6 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

Page 1 of 1

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH/HEER
Contact: John Penrod
Client project ID:
PO #: (Quote HDH-HL001)

Address: 1582 Kamehameha Ave. Hilo, HI 96720
Phone #: 1-808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.penrod@doh.hawaii.gov
Fax #:

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: ~~Total Hg, EPA 1631~~	Analyses required: ~~Methyl Hg, EPA 1630~~	Analyses required: (DHC) EPA 1638 ICP-MS Metals (specify) As, Fe	Analyses required: Inorganic As species (specify) MMAO, DMA 1632	Analyses required: % Solids (30-50 grams) SM 2540G	Analyses required: ~~Filtration~~	Analyses required: Other (specify) TOC 9060	Analyses required: Other (specify) Grain Size D422	Comments
1	WP-DU1 (0-4")	8/24/13	6:00pm	JP	Sed	1	–			-frozen-			X	X	X		X	X	use MS subsampling for TOC & grain-size analysis
2	WP-DU1 (4-8")	8/24/13	6:00pm	JP	"	1	–						X	X	X		X	X	
3	WP-DU1 (8-12")	8/24/13	6:00pm	JP	"	1	–						X	X	X		X	X	
4	WP-DU2 (0-4")	8/27/13	6:00pm	JP	"	1	–						X	X	X		X	X	
5	WP-DU2 (4-8")	8/27/13	6:00pm	JP	"	1	–						X	X	X		X	X	
6	WP-DU2 (8-12")	8/27/13	6:00pm	JP	"	1	–						X	X	X		X	X	
7	WP-DU5 (0-4")	8/23/13	6:00pm	JP	"	1	–						X	X	X		X	X	
8	WP-DU5 (4-8")	8/23/13	6:00pm	JP	"	1	–						X	X	X		X	X	
9	WP-DU5 (8-12")	8/23/13	6:00pm	JP	"	1	–						X	X	X		X	X	
10																			

Relinquished by: John Penrod	Date: 8-29-13	Time: 10:00AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/3/13	Time: 0925
Shipping carrier: FedEx	# of coolers:		BRL work order ID:	BRL project ID:	

October 31, 2013

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Avenue
Hilo, HI 96720
john.peard@doh.hawaii.gov

RE: Project HDH-HL1301
Client Project: 10351902311 (Waiakea Pond; Tetra Tech Work Order 1097688)

Dear Mr. Peard,

On September 5, 2013, Brooks Rand Labs (BRL) received three (3) algae samples and six (6) sediment samples. Each sediment sample was processed following the multi-incremental sampling (MIS) procedure, generating three (3) replicates from each sample, resulting in a total of eighteen (18) analytical sediment samples. The sediment samples were logged-in for the analyses of total recoverable arsenic (As), total recoverable iron (Fe), percent total solids (%TS), and arsenic speciation, contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs), according to the chain-of-custody (COC) forms. The algae samples were logged-in for the analyses of total recoverable As, percent total solids (%TS), and arsenic speciation according to the chain-of-custody (COC) forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

In addition, fractions of each sediment sample were subcontracted to TestAmerica in Tacoma, Washington, for the analysis of grain size and TOC (also following the MIS procedure).

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sediment sample results were reported on a dry-weight basis and all algae samples were reported on a wet-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL, the RPD was not calculated (**N/C**).

For the analysis of total As in algae, the matrix spike (MS) prepared on sample *WP-DU1-Algae* (1336023-07), identified as B131501-MS1, yielded a recovery of 148%. Therefore, the As result for this sample was qualified **N**. All remaining QC for this batch is within acceptance criteria; therefore, no further qualification is required.

These sediment samples were very high in inorganic As relative to the MMAs and DMAs concentrations; therefore, samples for MMAs and DMAs analysis had to be analyzed at significant dilutions to prevent the tailing of the inorganic As peak from interfering with the quantification. This resulted in MS/MSD spiking levels that were very near or below the adjusted

sample-specific MRLs in most cases. As all samples produced MMAs results that were less than the MRL and DMAs results were below the MDL, only samples used for MS/MSD sets were qualified. The MMAs and DMAs results for the third replicate of sample *WP-DU3(4-8")* (1336023-13), were qualified **N** due to poor matrix spike recoveries.

Only one QC set was prepared and analyzed for As speciation in the sediments from this work order, but four QC sets were included with the previous work order of sediments (13360001), resulting in the proper frequency of QC samples for the two work orders combined.

Aside from concentration qualifiers, all data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Michelle L. Briscoe
President
michelle@brooksrand.com

Tiffany Stilwater
Client Services Manager
tiffany@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU3 (0-4")	1336023-01	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (4-8")	1336023-02	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (8-12")	1336023-03	Sediment	Sample	08/28/2013	09/05/2013
WP-DU4 (0-4")	1336023-04	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (4-8")	1336023-05	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (8-12")	1336023-06	Sediment	Sample	08/29/2013	09/05/2013
WP-DU1-Algae	1336023-07	Algae	Sample	08/31/2013	09/05/2013
WP-DU2-Algae	1336023-08	Algae	Sample	08/31/2013	09/05/2013
WP-DU3-Algae	1336023-09	Algae	Sample	08/31/2013	09/05/2013
WP-DU3 (0-4")	1336023-10	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (0-4")	1336023-11	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (4-8")	1336023-12	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (4-8")	1336023-13	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (8-12")	1336023-14	Sediment	Sample	08/28/2013	09/05/2013
WP-DU3 (8-12")	1336023-15	Sediment	Sample	08/28/2013	09/05/2013
WP-DU4 (0-4")	1336023-16	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (0-4")	1336023-17	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (4-8")	1336023-18	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (4-8")	1336023-19	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (8-12")	1336023-20	Sediment	Sample	08/29/2013	09/05/2013
WP-DU4 (8-12")	1336023-21	Sediment	Sample	08/29/2013	09/05/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	10/02/2013	10/07/2013	B131565	N/A
As	Biota	EPA 1638 DRC	09/26/2013	10/01/2013	B131501	1300666
As(Inorg)	Biota	EPA 1632	10/22/2013	10/23/2013	B131562	1300720
DMAs	Biota	EPA 1632	10/27/2013	10/28/2013	B131563	1300733
MMAs	Biota	EPA 1632	10/27/2013	10/28/2013	B131564	1300734
%TS	Soil/Sediment	SM 2540G	09/20/2013	09/25/2013	B131466	N/A
As	Soil/Sediment	EPA 1638 DRC	09/23/2013	10/01/2013	B131499	1300666
As(Inorg)	Soil/Sediment	EPA 1632	10/20/2013	10/21/2013	B131463	1300715
DMAs	Soil/Sediment	EPA 1632	10/20/2013	10/22/2013	B131465	1300718
Fe	Soil/Sediment	EPA 1638 DRC	09/23/2013	09/27/2013	B131500	1300659
MMAs	Soil/Sediment	EPA 1632	10/20/2013	10/22/2013	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU1-Algae										
1336023-07	%TS	Algae	NA	12.45		0.01	0.04	%	B131565	N/A
1336023-07	As	Algae	wet	2.86	N	0.014	0.040	mg/kg	B131501	1300666
1336023-07	As(Inorg)	Algae	wet	2.21		0.084	0.209	mg/kg	B131562	1300720
1336023-07	DMAs	Algae	wet	0.175		0.016	0.048	mg/kg	B131563	1300733
1336023-07	MMAs	Algae	wet	0.017	B	0.016	0.048	mg/kg	B131564	1300734
WP-DU2-Algae										
1336023-08	%TS	Algae	NA	11.37		0.01	0.04	%	B131565	N/A
1336023-08	As	Algae	wet	11.3		0.013	0.036	mg/kg	B131501	1300666
1336023-08	As(Inorg)	Algae	wet	6.92		0.333	0.833	mg/kg	B131562	1300720
1336023-08	DMAs	Algae	wet	0.105		0.014	0.042	mg/kg	B131563	1300733
1336023-08	MMAs	Algae	wet	0.014	U	0.014	0.042	mg/kg	B131564	1300734
WP-DU3 (0-4")										
1336023-01	%TS	Sediment	NA	51.18		0.01	0.03	%	B131466	N/A
1336023-10	%TS	Sediment	NA	50.69		0.01	0.03	%	B131466	N/A
1336023-11	%TS	Sediment	NA	50.69		0.01	0.03	%	B131466	N/A
1336023-01	As	Sediment	dry	153		0.10	0.70	mg/kg	B131499	1300666
1336023-10	As	Sediment	dry	211		0.10	0.73	mg/kg	B131499	1300666
1336023-11	As	Sediment	dry	209		0.09	0.62	mg/kg	B131499	1300666
1336023-01	As(Inorg)	Sediment	dry	91.1		6.16	15.4	mg/kg	B131463	1300715
1336023-10	As(Inorg)	Sediment	dry	89.1		7.77	19.4	mg/kg	B131463	1300715
1336023-11	As(Inorg)	Sediment	dry	109		8.29	20.7	mg/kg	B131463	1300715
1336023-01	DMAs	Sediment	dry	0.308	U	0.308	0.925	mg/kg	B131465	1300718
1336023-10	DMAs	Sediment	dry	0.388	U	0.388	1.17	mg/kg	B131465	1300718
1336023-11	DMAs	Sediment	dry	0.414	U	0.414	1.24	mg/kg	B131465	1300718
1336023-01	Fe	Sediment	dry	48500		8.1	48.3	mg/kg	B131500	1300659
1336023-10	Fe	Sediment	dry	61900		8.5	50.4	mg/kg	B131500	1300659
1336023-11	Fe	Sediment	dry	62200		7.2	43.1	mg/kg	B131500	1300659
1336023-01	MMAs	Sediment	dry	0.247	U	0.247	0.740	mg/kg	B131464	1300717
1336023-10	MMAs	Sediment	dry	0.311	U	0.311	0.932	mg/kg	B131464	1300717
1336023-11	MMAs	Sediment	dry	0.332	U	0.332	0.995	mg/kg	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU3 (4-8")										
1336023-02	%TS	Sediment	NA	49.72		0.01	0.03	%	B131466	N/A
1336023-12	%TS	Sediment	NA	48.91		0.01	0.03	%	B131466	N/A
1336023-13	%TS	Sediment	NA	50.96		0.01	0.03	%	B131466	N/A
1336023-02	As	Sediment	dry	216		0.10	0.72	mg/kg	B131499	1300666
1336023-12	As	Sediment	dry	252		0.09	0.65	mg/kg	B131499	1300666
1336023-13	As	Sediment	dry	213		0.09	0.67	mg/kg	B131499	1300666
1336023-02	As(Inorg)	Sediment	dry	107		8.45	21.1	mg/kg	B131463	1300715
1336023-12	As(Inorg)	Sediment	dry	117		7.12	17.8	mg/kg	B131463	1300715
1336023-13	As(Inorg)	Sediment	dry	120		33.9	84.8	mg/kg	B131463	1300715
1336023-02	DMAs	Sediment	dry	0.423	U	0.423	1.27	mg/kg	B131465	1300718
1336023-12	DMAs	Sediment	dry	0.356	U	0.356	1.07	mg/kg	B131465	1300718
1336023-13	DMAs	Sediment	dry	0.848	N, U	0.848	2.54	mg/kg	B131465	1300718
1336023-02	Fe	Sediment	dry	54600		8.4	49.8	mg/kg	B131500	1300659
1336023-12	Fe	Sediment	dry	61200		7.6	45.3	mg/kg	B131500	1300659
1336023-13	Fe	Sediment	dry	67000		7.8	46.2	mg/kg	B131500	1300659
1336023-02	MMAs	Sediment	dry	0.338	U	0.338	1.01	mg/kg	B131464	1300717
1336023-12	MMAs	Sediment	dry	0.285	U	0.285	0.855	mg/kg	B131464	1300717
1336023-13	MMAs	Sediment	dry	0.678	N, U	0.678	2.03	mg/kg	B131464	1300717
WP-DU3 (8-12")										
1336023-03	%TS	Sediment	NA	45.11		0.01	0.03	%	B131466	N/A
1336023-14	%TS	Sediment	NA	44.27		0.01	0.03	%	B131466	N/A
1336023-15	%TS	Sediment	NA	45.30		0.01	0.03	%	B131466	N/A
1336023-03	As	Sediment	dry	257		0.12	0.84	mg/kg	B131499	1300666
1336023-14	As	Sediment	dry	261		0.10	0.72	mg/kg	B131499	1300666
1336023-15	As	Sediment	dry	237		0.10	0.73	mg/kg	B131499	1300666
1336023-03	As(Inorg)	Sediment	dry	173		8.15	20.4	mg/kg	B131463	1300715
1336023-14	As(Inorg)	Sediment	dry	168		8.81	22.0	mg/kg	B131463	1300715
1336023-15	As(Inorg)	Sediment	dry	128		8.52	21.3	mg/kg	B131463	1300715
1336023-03	DMAs	Sediment	dry	0.408	U	0.408	1.22	mg/kg	B131465	1300718
1336023-14	DMAs	Sediment	dry	0.440	U	0.440	1.32	mg/kg	B131465	1300718
1336023-15	DMAs	Sediment	dry	0.426	U	0.426	1.28	mg/kg	B131465	1300718
1336023-03	Fe	Sediment	dry	61000		9.8	58.6	mg/kg	B131500	1300659
1336023-14	Fe	Sediment	dry	60800		8.4	50.0	mg/kg	B131500	1300659
1336023-15	Fe	Sediment	dry	66600		8.5	50.6	mg/kg	B131500	1300659
1336023-03	MMAs	Sediment	dry	0.326	U	0.326	0.978	mg/kg	B131464	1300717
1336023-14	MMAs	Sediment	dry	0.352	U	0.352	1.06	mg/kg	B131464	1300717
1336023-15	MMAs	Sediment	dry	0.341	U	0.341	1.02	mg/kg	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU3-Algae										
1336023-09	%TS	Algae	NA	13.22		0.01	0.04	%	B131565	N/A
1336023-09	As	Algae	wet	1.91		0.014	0.041	mg/kg	B131501	1300666
1336023-09	As(Inorg)	Algae	wet	1.37		0.148	0.371	mg/kg	B131562	1300720
1336023-09	DMAs	Algae	wet	0.163		0.007	0.021	mg/kg	B131563	1300733
1336023-09	MMAs	Algae	wet	0.009	B	0.007	0.021	mg/kg	B131564	1300734
WP-DU4 (0-4")										
1336023-04	%TS	Sediment	NA	54.37		0.01	0.03	%	B131466	N/A
1336023-16	%TS	Sediment	NA	54.75		0.01	0.03	%	B131466	N/A
1336023-17	%TS	Sediment	NA	54.94		0.01	0.03	%	B131466	N/A
1336023-04	As	Sediment	dry	127		0.10	0.71	mg/kg	B131499	1300666
1336023-16	As	Sediment	dry	114		0.10	0.71	mg/kg	B131499	1300666
1336023-17	As	Sediment	dry	194		0.08	0.61	mg/kg	B131499	1300666
1336023-04	As(Inorg)	Sediment	dry	92.2		8.14	20.3	mg/kg	B131463	1300715
1336023-16	As(Inorg)	Sediment	dry	76.3		7.58	18.9	mg/kg	B131463	1300715
1336023-17	As(Inorg)	Sediment	dry	76.8		8.05	20.1	mg/kg	B131463	1300715
1336023-04	DMAs	Sediment	dry	0.407	U	0.407	1.22	mg/kg	B131465	1300718
1336023-16	DMAs	Sediment	dry	0.379	U	0.379	1.14	mg/kg	B131465	1300718
1336023-17	DMAs	Sediment	dry	0.403	U	0.403	1.21	mg/kg	B131465	1300718
1336023-04	Fe	Sediment	dry	66100		8.3	49.1	mg/kg	B131500	1300659
1336023-16	Fe	Sediment	dry	64500		8.3	49.3	mg/kg	B131500	1300659
1336023-17	Fe	Sediment	dry	72300		7.1	42.4	mg/kg	B131500	1300659
1336023-04	MMAs	Sediment	dry	0.326	U	0.326	0.977	mg/kg	B131464	1300717
1336023-16	MMAs	Sediment	dry	0.303	U	0.303	0.909	mg/kg	B131464	1300717
1336023-17	MMAs	Sediment	dry	0.322	U	0.322	0.966	mg/kg	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU4 (4-8")										
1336023-05	%TS	Sediment	NA	58.61		0.01	0.03	%	B131466	N/A
1336023-18	%TS	Sediment	NA	57.57		0.01	0.03	%	B131466	N/A
1336023-19	%TS	Sediment	NA	57.82		0.01	0.03	%	B131466	N/A
1336023-05	As	Sediment	dry	178		0.08	0.56	mg/kg	B131499	1300666
1336023-18	As	Sediment	dry	238		0.08	0.61	mg/kg	B131499	1300666
1336023-19	As	Sediment	dry	143		0.09	0.67	mg/kg	B131499	1300666
1336023-05	As(Inorg)	Sediment	dry	81.4		6.98	17.4	mg/kg	B131463	1300715
1336023-18	As(Inorg)	Sediment	dry	97.9		6.87	17.2	mg/kg	B131463	1300715
1336023-19	As(Inorg)	Sediment	dry	104		6.58	16.4	mg/kg	B131463	1300715
1336023-05	DMAs	Sediment	dry	0.349	U	0.349	1.05	mg/kg	B131465	1300718
1336023-18	DMAs	Sediment	dry	0.343	U	0.343	1.03	mg/kg	B131465	1300718
1336023-19	DMAs	Sediment	dry	0.329	U	0.329	0.986	mg/kg	B131465	1300718
1336023-05	Fe	Sediment	dry	59900		6.6	39.0	mg/kg	B131500	1300659
1336023-18	Fe	Sediment	dry	66700		7.1	42.4	mg/kg	B131500	1300659
1336023-19	Fe	Sediment	dry	70600		7.8	46.5	mg/kg	B131500	1300659
1336023-05	MMAs	Sediment	dry	0.279	U	0.279	0.837	mg/kg	B131464	1300717
1336023-18	MMAs	Sediment	dry	0.275	U	0.275	0.824	mg/kg	B131464	1300717
1336023-19	MMAs	Sediment	dry	0.263	U	0.263	0.789	mg/kg	B131464	1300717
WP-DU4 (8-12")										
1336023-06	%TS	Sediment	NA	58.42		0.01	0.03	%	B131466	N/A
1336023-20	%TS	Sediment	NA	57.01		0.01	0.03	%	B131466	N/A
1336023-21	%TS	Sediment	NA	58.71		0.01	0.03	%	B131466	N/A
1336023-06	As	Sediment	dry	145		0.09	0.63	mg/kg	B131499	1300666
1336023-20	As	Sediment	dry	160		0.09	0.68	mg/kg	B131499	1300666
1336023-21	As	Sediment	dry	165		0.09	0.63	mg/kg	B131499	1300666
1336023-06	As(Inorg)	Sediment	dry	98.1		7.30	18.2	mg/kg	B131463	1300715
1336023-20	As(Inorg)	Sediment	dry	96.5		6.79	17.0	mg/kg	B131463	1300715
1336023-21	As(Inorg)	Sediment	dry	106		6.48	16.2	mg/kg	B131463	1300715
1336023-06	DMAs	Sediment	dry	0.365	U	0.365	1.09	mg/kg	B131465	1300718
1336023-20	DMAs	Sediment	dry	0.339	U	0.339	1.02	mg/kg	B131465	1300718
1336023-21	DMAs	Sediment	dry	0.324	U	0.324	0.971	mg/kg	B131465	1300718
1336023-06	Fe	Sediment	dry	68000		7.4	43.9	mg/kg	B131500	1300659
1336023-20	Fe	Sediment	dry	74800		15.9	94.7	mg/kg	B131500	1300659
1336023-21	Fe	Sediment	dry	71400		14.7	87.3	mg/kg	B131500	1300659
1336023-06	MMAs	Sediment	dry	0.292	U	0.292	0.876	mg/kg	B131464	1300717
1336023-20	MMAs	Sediment	dry	0.271	U	0.271	0.814	mg/kg	B131464	1300717
1336023-21	MMAs	Sediment	dry	0.259	U	0.259	0.777	mg/kg	B131464	1300717

Accuracy & Precision Summary

Batch: B131463
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131463-BS1	**Laboratory Fortified Blank (1339012)**								
	As(Inorg)		0.1000	0.110	mg/kg	110%	65-135		
B131463-SRM1	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	16.76	mg/kg	90%	65-135		
B131463-SRM2	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	19.10	mg/kg	103%	65-135		
B131463-DUP3	**Duplicate (1336023-13)**								
	As(Inorg)	119.7		127.9	mg/kg			7%	35
B131463-MS3	**Matrix Spike (1336023-13)**								
	As(Inorg)	119.7	772.5	910.1	mg/kg	102%	65-135		
B131463-MSD3	**Matrix Spike Duplicate (1336023-13)**								
	As(Inorg)	119.7	762.0	846.3	mg/kg	95%	65-135	7%	35

Accuracy & Precision Summary

Batch: B131464
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131464-BS1	**Laboratory Fortified Blank (1341047)**								
	MMAs		0.1000	0.092	mg/kg	92%	60-140		
B131464-DUP3	**Duplicate (1336023-13)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131464-MS3	**Matrix Spike (1336023-13)**								
	MMAs	ND	3.863	1.718	mg/kg	*44%*	60-140		
B131464-MSD3	**Matrix Spike Duplicate (1336023-13)**								
	MMAs	ND	3.810	2.244	mg/kg	*59%*	60-140	*27%*	25

Accuracy & Precision Summary

Batch: B131465
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131465-BS1	**Laboratory Fortified Blank (1341048)**								
	DMAs		0.1000	0.105	mg/kg	105%	60-140		
B131465-DUP3	**Duplicate (1336023-13)**								
	DMAs	ND		ND	mg/kg			N/C	35
B131465-MS3	**Matrix Spike (1336023-13)**								
	DMAs	ND	3.863	2.177	mg/kg	*56%*	60-140		
B131465-MSD3	**Matrix Spike Duplicate (1336023-13)**								
	DMAs	ND	3.810	2.286	mg/kg	60%	60-140	5%	35

Accuracy & Precision Summary

Batch: B131466
Lab Matrix: Soil/Sediment
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131466-DUP3	**Duplicate (1336023-13)**						
	%TS	50.96		50.99	%		0.05% 15

Accuracy & Precision Summary

Batch: B131499
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131499-BS1	**Laboratory Fortified Blank (1310030)**								
	As		500.0	512.4	mg/kg	102%	75-125		
B131499-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	As		10.50	11.69	mg/kg	111%	N/A		
B131499-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	As		1540	1523	mg/kg	99%	75-125		
B131499-DUP2	**Duplicate (1336023-10)**								
	As	211.5		158.8	mg/kg			28%	30
B131499-MS2	**Matrix Spike (1336023-10)**								
	As	211.5	990.4	1074	mg/kg	87%	70-130		
B131499-MSD2	**Matrix Spike Duplicate (1336023-10)**								
	As	211.5	1063	1269	mg/kg	99%	70-130	17%	30
B131499-DUP3	**Duplicate (1336023-20)**								
	As	160.0		183.9	mg/kg			14%	30
B131499-MS3	**Matrix Spike (1336023-20)**								
	As	160.0	908.0	1085	mg/kg	102%	70-130		
B131499-MSD3	**Matrix Spike Duplicate (1336023-20)**								
	As	160.0	870.1	1045	mg/kg	102%	70-130	4%	30

Accuracy & Precision Summary

Batch: B131500
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131500-BS1	**Laboratory Fortified Blank (1310030)**								
	Fe		15000	14170	mg/kg	94%	75-125		
B131500-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	Fe		33600	33750	mg/kg	100%	75-125		
B131500-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	Fe		43200	36580	mg/kg	85%	75-125		
B131500-DUP2	**Duplicate (1336023-10)**								
	Fe	61860		54640	mg/kg			12%	30
B131500-MS2	**Matrix Spike (1336023-10)**								
	Fe	61860	29710	85690	mg/kg	80%	70-130		
B131500-MSD2	**Matrix Spike Duplicate (1336023-10)**								
	Fe	61860	31890	93060	mg/kg	98%	70-130	8%	30
B131500-DUP3	**Duplicate (1336023-20)**								
	Fe	74830		77350	mg/kg			3%	30
B131500-MS3	**Matrix Spike (1336023-20)**								
	Fe	74830	27240	100900	mg/kg	96%	70-130		
B131500-MSD3	**Matrix Spike Duplicate (1336023-20)**								
	Fe	74830	26100	105600	mg/kg	118%	70-130	5%	30

Accuracy & Precision Summary

Batch: B131501
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131501-BS1	**Laboratory Fortified Blank (1339057)**								
	As		6.000	6.541	mg/kg	109%	75-125		
B131501-SRM1	**Certified Reference Material (1245076, DORM-4)**								
	As		6.880	6.970	mg/kg	101%	75-125		
B131501-SRM2	**Certified Reference Material (0822035, NIST 1547 - peach leaves)**								
	As		0.06000	0.067	mg/kg	112%	75-125		
B131501-DUP1	**Duplicate (1336023-07)**								
	As	2.861		3.546	mg/kg			21%	30
B131501-MS1	**Matrix Spike (1336023-07)**								
	As	2.861	5.769	11.41	mg/kg	*148%*	70-130		
B131501-MSD1	**Matrix Spike Duplicate (1336023-07)**								
	As	2.861	5.792	10.36	mg/kg	129%	70-130	10%	30
B131501-DUP2	**Duplicate (1337007-04)**								
	As	0.666		0.713	mg/kg			7%	30
B131501-MS2	**Matrix Spike (1337007-04)**								
	As	0.666	5.792	7.264	mg/kg	114%	70-130		
B131501-MSD2	**Matrix Spike Duplicate (1337007-04)**								
	As	0.666	5.725	7.424	mg/kg	118%	70-130	2%	30

Accuracy & Precision Summary

Batch: B131562
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131562-BS1	**Laboratory Fortified Blank (1339012)**								
	As(Inorg)		0.1000	0.098	mg/kg	98%	65-135		
B131562-SRM1	**Certified Reference Material (1337024, NIST 1568b)**								
	As(Inorg)		0.09200	0.094	mg/kg	102%	75-125		
B131562-DUP1	**Duplicate (1336023-08)**								
	As(Inorg)	6.923		7.545	mg/kg			9%	35
B131562-PS1	**Post Spike (1336023-08)**								
	As(Inorg)	6.923	8.332	13.71	mg/kg	81%	65-135		

Accuracy & Precision Summary

Batch: B131563
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131563-BS1	**Laboratory Fortified Blank (1341048)**								
	DMAs		0.1000	0.110	mg/kg	110%	60-140		
B131563-DUP1	**Duplicate (1336023-08)**								
	DMAs	0.105		0.136	mg/kg			25%	35
B131563-MS1	**Matrix Spike (1336023-08)**								
	DMAs	0.105	0.08783	0.217	mg/kg	128%	60-140		
B131563-MSD1	**Matrix Spike Duplicate (1336023-08)**								
	DMAs	0.105	0.09227	0.194	mg/kg	97%	60-140	11%	35
B131563-PS1	**Post Spike (1336023-08)**								
	DMAs	0.105	0.1771	0.298	mg/kg	109%	60-140		

Accuracy & Precision Summary

Batch: B131564
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131564-BS1	**Laboratory Fortified Blank (1341047)**								
	MMAs		0.1000	0.086	mg/kg	86%	60-140		
B131564-DUP1	**Duplicate (1336023-08)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131564-MS1	**Matrix Spike (1336023-08)**								
	MMAs	ND	0.08783	0.062	mg/kg	71%	60-140		
B131564-MSD1	**Matrix Spike Duplicate (1336023-08)**								
	MMAs	ND	0.09227	0.056	mg/kg	61%	60-140	10%	25
B131564-PS1	**Post Spike (1336023-08)**								
	MMAs	ND	0.1771	0.171	mg/kg	97%	60-140		

Accuracy & Precision Summary

Batch: B131565
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131565-DUP1	**Duplicate (1336023-08)**						
	%TS	11.37		11.37	%		0.02% 15

Method Blanks & Reporting Limits

Batch: B131463
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131463-BLK1	-0.0005	mg/kg
B131463-BLK2	-0.0009	mg/kg
B131463-BLK3	-0.0006	mg/kg
B131463-BLK4	-0.0009	mg/kg

Average: -0.001 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

Method Blanks & Reporting Limits

Batch: B131464
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131464-BLK1	0.00	mg/kg
B131464-BLK2	0.00	mg/kg
B131464-BLK3	0.00	mg/kg
B131464-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

Method Blanks & Reporting Limits

Batch: B131465
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131465-BLK1	0.00	mg/kg
B131465-BLK2	0.00	mg/kg
B131465-BLK3	0.00	mg/kg
B131465-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.015

Method Blanks & Reporting Limits

Batch: B131466
Matrix: Soil/Sediment
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131466-BLK1	-0.003	%
B131466-BLK2	0.006	%

Average: 0.00
Limit: 1.00

MDL: 0.30
MRL: 1.00

Method Blanks & Reporting Limits

Batch: B131499
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131499-BLK1	-0.02	mg/kg
B131499-BLK2	-0.04	mg/kg
B131499-BLK3	-0.04	mg/kg
B131499-BLK4	-0.04	mg/kg

Average: -0.04 **Standard Deviation:** 0.01 **MDL:** 0.05
Limit: 0.36 **Limit:** 0.05 **MRL:** 0.36

Method Blanks & Reporting Limits

Batch: B131500
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: Fe 56

Sample	Result	Units
B131500-BLK1	-2.3	mg/kg
B131500-BLK2	-2.5	mg/kg
B131500-BLK3	-2.4	mg/kg
B131500-BLK4	-2.6	mg/kg

Average: -2.5 **Standard Deviation:** 0.1 **MDL:** 4.2
Limit: 25.0 **Limit:** 4.2 **MRL:** 25.0

Method Blanks & Reporting Limits

Batch: B131501
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131501-BLK1	0.009	mg/kg
B131501-BLK2	-0.001	mg/kg
B131501-BLK3	-0.002	mg/kg
B131501-BLK4	-0.003	mg/kg

Average: 0.001 **Standard Deviation:** 0.006 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

Method Blanks & Reporting Limits

Batch: B131562
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131562-BLK1	-0.0002	mg/kg
B131562-BLK2	0.0006	mg/kg
B131562-BLK3	0.0006	mg/kg
B131562-BLK4	0.0002	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

Method Blanks & Reporting Limits

Batch: B131563
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131563-BLK1	0.0007	mg/kg
B131563-BLK2	0.001	mg/kg
B131563-BLK3	0.0009	mg/kg
B131563-BLK4	0.002	mg/kg

Average: 0.001 **Standard Deviation:** 0.001 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

Method Blanks & Reporting Limits

Batch: B131564
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131564-BLK1	0.00	mg/kg
B131564-BLK2	0.00	mg/kg
B131564-BLK3	0.00	mg/kg
B131564-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

Method Blanks & Reporting Limits

Batch: B131565
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131565-BLK1	-0.05	%
B131565-BLK2	-0.04	%

Average: -0.05
Limit: 1.00

MDL: 0.30
MRL: 1.00

Sample Containers

Lab ID: 1336023-01
Sample: WP-DU3 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-02
Sample: WP-DU3 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-03
Sample: WP-DU3 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-04
Sample: WP-DU4 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-05
Sample: WP-DU4 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-06
Sample: WP-DU4 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1336023-07
Sample: WP-DU1-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 08/31/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-08
Sample: WP-DU2-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 08/31/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-09
Sample: WP-DU3-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 08/31/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-10
Sample: WP-DU3 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-11
Sample: WP-DU3 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-12
Sample: WP-DU3 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1336023-13
Sample: WP-DU3 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-14
Sample: WP-DU3 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-15
Sample: WP-DU3 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/28/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-16
Sample: WP-DU4 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-17
Sample: WP-DU4 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-18
Sample: WP-DU4 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1336023-19
Sample: WP-DU4 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-20
Sample: WP-DU4 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1336023-21
Sample: WP-DU4 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 08/29/2013
Received: 09/05/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Shipping Containers

Cooler

Received: September 5, 2013 10:30
Tracking No: 803721089448 via FedEx
Coolant Type: Dry Ice
Temperature: -14.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1336023

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH/HEER
Contact: John Pearrd
Client project ID:
PO #: (Quote HDH-HL001)

Address: 1582 Kamehameha Ave. Hilo, HI 96720
Phone #: 1-808-933-9921 or (808) 960-0080

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pearrd@doh.hawaii.gov
Fax #:

Requested TAT in business days:
- ☑ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Date	Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	~~Total Hg, EPA 1631~~	~~Methyl Hg, EPA 1630~~	ICP-MS Metals (specify) (DAC) EPA 1638M As, Fe	Inorganic As / As Se species (specify) MARL DMB 1632	% Solids (30-50 gm) SM-2540G	~~Filtration~~	Other (specify) TOC 9060	~~Other (specify)~~ Grain size D422	Comments
1	WP-DU3 (0-4")	8/28/13	6:00PM	JP	Sed	1	—			Frozen			X	X	X		X	X	Use MIS sub-sampling for TOC & grain size analyses
2	WP-DU3 (4-8")	8/28/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
3	WP-DU3 (8-12")	8/28/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
4	WP-DU4 (0-4")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
5	WP-DU4 (4-8")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
6	WP-DU4 (8-12")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
7	[redacted]																		
8	WP-DU1-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				just total As, not Fe (via ICP-MS on sed.)
9	WP-DU2-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				% solids could be ~~C30-50gm~~ (~~[illegible]~~ for sed.)
10	WP-DU3-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				

Relinquished by: Kevin Kelly	Date: 9/4/13	Time: 1145	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed-EX	# of coolers: 1		BRL work order ID:

Relinquished by:	Date:	Time:
Received at BRL by:	Date: 9/5/13	Time: 1030
BRL work order ID:	BRL project ID:	

October 31, 2013

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Avenue
Hilo, HI 96720
john.peard@doh.hawaii.gov

RE: Project HDH-HL1301
Client Project: 10351902311 (Waiakea Pond; Tetra Tech Work Order 1097688)

Dear Mr. Peard,

On September 10, 2013, Brooks Rand Labs (BRL) received six (6) sediment samples in a cooler with dry ice at a temperature -16.0 °C. Each sample was processed following the multi-incremental sampling (MIS) procedure, generating three (3) replicates from each sample, resulting in a total of eighteen (18) analytical samples. The samples were logged-in for the analyses of total recoverable arsenic (As), total recoverable iron (Fe), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) according to the chain-of-custody (COC) forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

In addition, fractions of each sample were subcontracted to TestAmerica in Tacoma, Washington, for the analysis of grain size and TOC (also following the MIS procedure).

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a dry-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL, the RPD was not calculated (**N/C**).

These samples were very high in inorganic As relative to the MMAs and DMAs concentrations; therefore, samples for MMAs and DMAs analysis had to be analyzed at significant dilutions to prevent the tailing of the inorganic As peak from interfering with the quantification. This resulted in MS/MSD spiking levels that were very near or below the adjusted sample-specific MRLs in most cases. As all samples produced MMAs and DMAs results that were less than the MDL, only samples used for MS/MSD sets were qualified. The MMAs and DMAs results for the first replicate of sample *WP-DU6 (0-4")* (1337006-01) and the second replicate of sample *WP-DU6 (8-12")* (1337006-11) were qualified **N** due to poor matrix spike recoveries.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Michelle L. Briscoe
President
michelle@brooksrand.com

Tiffany Stilwater
Client Services Manager
tiffany@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU6 (0-4")	1337006-01	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (4-8")	1337006-02	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (8-12")	1337006-03	Sediment	Sample	09/03/2013	09/10/2013
WP-DU7 (0-4")	1337006-04	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (4-8")	1337006-05	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (8-12")	1337006-06	Sediment	Sample	09/04/2013	09/10/2013
WP-DU6 (0-4")	1337006-07	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (0-4")	1337006-08	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (4-8")	1337006-09	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (4-8")	1337006-10	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (8-12")	1337006-11	Sediment	Sample	09/03/2013	09/10/2013
WP-DU6 (8-12")	1337006-12	Sediment	Sample	09/03/2013	09/10/2013
WP-DU7 (0-4")	1337006-13	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (0-4")	1337006-14	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (4-8")	1337006-15	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (4-8")	1337006-16	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (8-12")	1337006-17	Sediment	Sample	09/04/2013	09/10/2013
WP-DU7 (8-12")	1337006-18	Sediment	Sample	09/04/2013	09/10/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Soil/Sediment	SM 2540G	09/20/2013	09/25/2013	B131466	N/A
As	Soil/Sediment	EPA 1638 DRC	09/23/2013	10/01/2013	B131499	1300666
As(Inorg)	Soil/Sediment	EPA 1632	10/20/2013	10/21/2013	B131463	1300715
DMAs	Soil/Sediment	EPA 1632	10/20/2013	10/22/2013	B131465	1300718
Fe	Soil/Sediment	EPA 1638 DRC	09/23/2013	09/27/2013	B131500	1300659
MMAs	Soil/Sediment	EPA 1632	10/20/2013	10/22/2013	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU6 (0-4")										
1337006-01	%TS	Sediment	NA	36.15		0.01	0.03	%	B131466	N/A
1337006-07	%TS	Sediment	NA	36.33		0.01	0.03	%	B131466	N/A
1337006-08	%TS	Sediment	NA	35.95		0.01	0.03	%	B131466	N/A
1337006-01	As	Sediment	dry	544		0.13	0.95	mg/kg	B131499	1300666
1337006-07	As	Sediment	dry	443		0.13	0.90	mg/kg	B131499	1300666
1337006-08	As	Sediment	dry	470		0.12	0.88	mg/kg	B131499	1300666
1337006-01	As(Inorg)	Sediment	dry	249		85.6	214	mg/kg	B131463	1300715
1337006-07	As(Inorg)	Sediment	dry	267		19.6	48.9	mg/kg	B131463	1300715
1337006-08	As(Inorg)	Sediment	dry	235		19.2	48.0	mg/kg	B131463	1300715
1337006-01	DMAs	Sediment	dry	1.07	N, U	1.07	3.21	mg/kg	B131465	1300718
1337006-07	DMAs	Sediment	dry	0.978	U	0.978	2.93	mg/kg	B131465	1300718
1337006-08	DMAs	Sediment	dry	0.959	U	0.959	2.88	mg/kg	B131465	1300718
1337006-01	Fe	Sediment	dry	54400		22.1	132	mg/kg	B131500	1300659
1337006-07	Fe	Sediment	dry	51700		21.0	125	mg/kg	B131500	1300659
1337006-08	Fe	Sediment	dry	45900		20.6	123	mg/kg	B131500	1300659
1337006-01	MMAs	Sediment	dry	0.856	N, U	0.856	2.57	mg/kg	B131464	1300717
1337006-07	MMAs	Sediment	dry	0.782	U	0.782	2.35	mg/kg	B131464	1300717
1337006-08	MMAs	Sediment	dry	0.767	U	0.767	2.30	mg/kg	B131464	1300717
WP-DU6 (4-8")										
1337006-02	%TS	Sediment	NA	34.29		0.01	0.03	%	B131466	N/A
1337006-09	%TS	Sediment	NA	34.92		0.01	0.03	%	B131466	N/A
1337006-10	%TS	Sediment	NA	33.85		0.01	0.03	%	B131466	N/A
1337006-02	As	Sediment	dry	592		0.12	0.85	mg/kg	B131499	1300666
1337006-09	As	Sediment	dry	550		0.14	1.00	mg/kg	B131499	1300666
1337006-10	As	Sediment	dry	605		0.14	1.00	mg/kg	B131499	1300666
1337006-02	As(Inorg)	Sediment	dry	251		20.4	51.1	mg/kg	B131463	1300715
1337006-09	As(Inorg)	Sediment	dry	317		23.9	59.8	mg/kg	B131463	1300715
1337006-10	As(Inorg)	Sediment	dry	288		19.9	49.7	mg/kg	B131463	1300715
1337006-02	DMAs	Sediment	dry	1.02	U	1.02	3.06	mg/kg	B131465	1300718
1337006-09	DMAs	Sediment	dry	1.20	U	1.20	3.59	mg/kg	B131465	1300718
1337006-10	DMAs	Sediment	dry	0.993	U	0.993	2.98	mg/kg	B131465	1300718
1337006-02	Fe	Sediment	dry	59300		19.9	118	mg/kg	B131500	1300659
1337006-09	Fe	Sediment	dry	54400		23.4	140	mg/kg	B131500	1300659
1337006-10	Fe	Sediment	dry	50600		23.3	139	mg/kg	B131500	1300659
1337006-02	MMAs	Sediment	dry	0.817	U	0.817	2.45	mg/kg	B131464	1300717
1337006-09	MMAs	Sediment	dry	0.957	U	0.957	2.87	mg/kg	B131464	1300717
1337006-10	MMAs	Sediment	dry	0.794	U	0.794	2.38	mg/kg	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU6 (8-12")										
1337006-03	%TS	Sediment	NA	35.51		0.01	0.03	%	B131466	N/A
1337006-11	%TS	Sediment	NA	35.29		0.01	0.03	%	B131466	N/A
1337006-12	%TS	Sediment	NA	36.86		0.01	0.03	%	B131466	N/A
1337006-03	As	Sediment	dry	551		0.15	1.07	mg/kg	B131499	1300666
1337006-11	As	Sediment	dry	537		0.14	0.98	mg/kg	B131499	1300666
1337006-12	As	Sediment	dry	549		0.13	0.94	mg/kg	B131499	1300666
1337006-03	As(Inorg)	Sediment	dry	282		16.3	40.8	mg/kg	B131463	1300715
1337006-11	As(Inorg)	Sediment	dry	303		84.1	210	mg/kg	B131463	1300715
1337006-12	As(Inorg)	Sediment	dry	306		20.2	50.4	mg/kg	B131463	1300715
1337006-03	DMAs	Sediment	dry	0.816	U	0.816	2.45	mg/kg	B131465	1300718
1337006-11	DMAs	Sediment	dry	1.05	N, U	1.05	3.15	mg/kg	B131465	1300718
1337006-12	DMAs	Sediment	dry	1.01	U	1.01	3.03	mg/kg	B131465	1300718
1337006-03	Fe	Sediment	dry	57600		25.0	149	mg/kg	B131500	1300659
1337006-11	Fe	Sediment	dry	57800		22.8	136	mg/kg	B131500	1300659
1337006-12	Fe	Sediment	dry	62200		22.0	131	mg/kg	B131500	1300659
1337006-03	MMAs	Sediment	dry	0.653	U	0.653	1.96	mg/kg	B131464	1300717
1337006-11	MMAs	Sediment	dry	0.841	N, U	0.841	2.52	mg/kg	B131464	1300717
1337006-12	MMAs	Sediment	dry	0.807	U	0.807	2.42	mg/kg	B131464	1300717
WP-DU7 (0-4")										
1337006-04	%TS	Sediment	NA	37.49		0.01	0.03	%	B131466	N/A
1337006-13	%TS	Sediment	NA	37.27		0.01	0.03	%	B131466	N/A
1337006-14	%TS	Sediment	NA	36.98		0.01	0.03	%	B131466	N/A
1337006-04	As	Sediment	dry	456		0.12	0.83	mg/kg	B131499	1300666
1337006-13	As	Sediment	dry	487		0.13	0.91	mg/kg	B131499	1300666
1337006-14	As	Sediment	dry	427		0.12	0.88	mg/kg	B131499	1300666
1337006-04	As(Inorg)	Sediment	dry	248		21.2	53.0	mg/kg	B131463	1300715
1337006-13	As(Inorg)	Sediment	dry	236		21.0	52.4	mg/kg	B131463	1300715
1337006-14	As(Inorg)	Sediment	dry	262		23.7	59.3	mg/kg	B131463	1300715
1337006-04	DMAs	Sediment	dry	1.06	U	1.06	3.18	mg/kg	B131465	1300718
1337006-13	DMAs	Sediment	dry	1.05	U	1.05	3.14	mg/kg	B131465	1300718
1337006-14	DMAs	Sediment	dry	1.19	U	1.19	3.56	mg/kg	B131465	1300718
1337006-04	Fe	Sediment	dry	51100		19.4	115	mg/kg	B131500	1300659
1337006-13	Fe	Sediment	dry	50500		21.1	126	mg/kg	B131500	1300659
1337006-14	Fe	Sediment	dry	43900		20.6	123	mg/kg	B131500	1300659
1337006-04	MMAs	Sediment	dry	0.849	U	0.849	2.55	mg/kg	B131464	1300717
1337006-13	MMAs	Sediment	dry	0.838	U	0.838	2.52	mg/kg	B131464	1300717
1337006-14	MMAs	Sediment	dry	0.949	U	0.949	2.85	mg/kg	B131464	1300717

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU7 (4-8")										
1337006-05	%TS	Sediment	NA	37.96		0.01	0.03	%	B131466	N/A
1337006-15	%TS	Sediment	NA	38.21		0.01	0.03	%	B131466	N/A
1337006-16	%TS	Sediment	NA	38.06		0.01	0.03	%	B131466	N/A
1337006-05	As	Sediment	dry	584		0.14	1.04	mg/kg	B131499	1300666
1337006-15	As	Sediment	dry	553		0.14	1.04	mg/kg	B131499	1300666
1337006-16	As	Sediment	dry	591		0.14	0.97	mg/kg	B131499	1300666
1337006-05	As(Inorg)	Sediment	dry	308		21.7	54.2	mg/kg	B131463	1300715
1337006-15	As(Inorg)	Sediment	dry	342		22.0	55.0	mg/kg	B131463	1300715
1337006-16	As(Inorg)	Sediment	dry	342		22.9	57.2	mg/kg	B131463	1300715
1337006-05	DMAs	Sediment	dry	1.08	U	1.08	3.25	mg/kg	B131465	1300718
1337006-15	DMAs	Sediment	dry	1.10	U	1.10	3.30	mg/kg	B131465	1300718
1337006-16	DMAs	Sediment	dry	1.14	U	1.14	3.43	mg/kg	B131465	1300718
1337006-05	Fe	Sediment	dry	48300		24.3	144	mg/kg	B131500	1300659
1337006-15	Fe	Sediment	dry	50100		24.3	145	mg/kg	B131500	1300659
1337006-16	Fe	Sediment	dry	56000		22.7	135	mg/kg	B131500	1300659
1337006-05	MMAs	Sediment	dry	0.867	U	0.867	2.60	mg/kg	B131464	1300717
1337006-15	MMAs	Sediment	dry	0.880	U	0.880	2.64	mg/kg	B131464	1300717
1337006-16	MMAs	Sediment	dry	0.916	U	0.916	2.75	mg/kg	B131464	1300717
WP-DU7 (8-12")										
1337006-06	%TS	Sediment	NA	37.39		0.01	0.03	%	B131466	N/A
1337006-17	%TS	Sediment	NA	36.77		0.01	0.03	%	B131466	N/A
1337006-18	%TS	Sediment	NA	37.95		0.01	0.03	%	B131466	N/A
1337006-06	As	Sediment	dry	586		0.14	1.02	mg/kg	B131499	1300666
1337006-17	As	Sediment	dry	688		0.15	1.06	mg/kg	B131499	1300666
1337006-18	As	Sediment	dry	587		0.13	0.94	mg/kg	B131499	1300666
1337006-06	As(Inorg)	Sediment	dry	330		23.6	59.0	mg/kg	B131463	1300715
1337006-17	As(Inorg)	Sediment	dry	370		23.9	59.8	mg/kg	B131463	1300715
1337006-18	As(Inorg)	Sediment	dry	316		19.6	49.1	mg/kg	B131463	1300715
1337006-06	DMAs	Sediment	dry	1.18	U	1.18	3.54	mg/kg	B131465	1300718
1337006-17	DMAs	Sediment	dry	1.20	U	1.20	3.59	mg/kg	B131465	1300718
1337006-18	DMAs	Sediment	dry	0.981	U	0.981	2.94	mg/kg	B131465	1300718
1337006-06	Fe	Sediment	dry	60400		23.7	141	mg/kg	B131500	1300659
1337006-17	Fe	Sediment	dry	56300		24.6	147	mg/kg	B131500	1300659
1337006-18	Fe	Sediment	dry	55900		21.9	130	mg/kg	B131500	1300659
1337006-06	MMAs	Sediment	dry	0.945	U	0.945	2.83	mg/kg	B131464	1300717
1337006-17	MMAs	Sediment	dry	0.956	U	0.956	2.87	mg/kg	B131464	1300717
1337006-18	MMAs	Sediment	dry	0.785	U	0.785	2.36	mg/kg	B131464	1300717

Accuracy & Precision Summary

Batch: B131463
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131463-BS1	**Laboratory Fortified Blank (1339012)**								
	As(Inorg)		0.1000	0.110	mg/kg	110%	65-135		
B131463-SRM1	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	16.76	mg/kg	90%	65-135		
B131463-SRM2	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	19.10	mg/kg	103%	65-135		
B131463-DUP1	**Duplicate (1337006-01)**								
	As(Inorg)	248.9		263.3	mg/kg			6%	35
B131463-MS1	**Matrix Spike (1337006-01)**								
	As(Inorg)	248.9	2470	2485	mg/kg	91%	65-135		
B131463-MSD1	**Matrix Spike Duplicate (1337006-01)**								
	As(Inorg)	248.9	2422	2589	mg/kg	97%	65-135	4%	35
B131463-DUP2	**Duplicate (1337006-11)**								
	As(Inorg)	303.5		335.1	mg/kg			10%	35
B131463-MS2	**Matrix Spike (1337006-11)**								
	As(Inorg)	303.5	2377	2573	mg/kg	95%	65-135		
B131463-MSD2	**Matrix Spike Duplicate (1337006-11)**								
	As(Inorg)	303.5	2885	3165	mg/kg	99%	65-135	21%	35

Accuracy & Precision Summary

Batch: B131464
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131464-BS1	**Laboratory Fortified Blank (1341047)**								
	MMAs		0.1000	0.092	mg/kg	92%	60-140		
B131464-DUP1	**Duplicate (1337006-01)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131464-MS1	**Matrix Spike (1337006-01)**								
	MMAs	ND	4.940	1.591	mg/kg	*32%*	60-140		
B131464-MSD1	**Matrix Spike Duplicate (1337006-01)**								
	MMAs	ND	4.844	1.637	mg/kg	*34%*	60-140	3%	25
B131464-DUP2	**Duplicate (1337006-11)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131464-MS2	**Matrix Spike (1337006-11)**								
	MMAs	ND	4.754	1.347	mg/kg	*28%*	60-140		
B131464-MSD2	**Matrix Spike Duplicate (1337006-11)**								
	MMAs	ND	5.771	1.730	mg/kg	*30%*	60-140	25%	25

Accuracy & Precision Summary

Batch: B131465
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131465-BS1	**Laboratory Fortified Blank (1341048)**								
	DMAs		0.1000	0.105	mg/kg	105%	60-140		
B131465-DUP1	**Duplicate (1337006-01)**								
	DMAs	ND		ND	mg/kg			N/C	35
B131465-MS1	**Matrix Spike (1337006-01)**								
	DMAs	ND	4.940	2.263	mg/kg	*46%*	60-140		
B131465-MSD1	**Matrix Spike Duplicate (1337006-01)**								
	DMAs	ND	4.844	2.720	mg/kg	*56%*	60-140	18%	35
B131465-DUP2	**Duplicate (1337006-11)**								
	DMAs	ND		ND	mg/kg			N/C	35
B131465-MS2	**Matrix Spike (1337006-11)**								
	DMAs	ND	4.754	2.479	mg/kg	*52%*	60-140		
B131465-MSD2	**Matrix Spike Duplicate (1337006-11)**								
	DMAs	ND	5.771	3.264	mg/kg	*57%*	60-140	27%	35

Accuracy & Precision Summary

Batch: B131466
Lab Matrix: Soil/Sediment
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits	
B131466-DUP1	**Duplicate (1337006-01)**							
	%TS	36.15		36.24	%		0.2%	15
B131466-DUP2	**Duplicate (1337006-11)**							
	%TS	35.29		36.30	%		3%	15

Accuracy & Precision Summary

Batch: B131499
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131499-BS1	**Laboratory Fortified Blank (1310030)**								
	As		500.0	512.4	mg/kg	102%	75-125		
B131499-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	As		10.50	11.69	mg/kg	111%	N/A		
B131499-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	As		1540	1523	mg/kg	99%	75-125		
B131499-DUP1	**Duplicate (1337006-01)**								
	As	544.4		497.9	mg/kg			9%	30
B131499-MS1	**Matrix Spike (1337006-01)**								
	As	544.4	1391	1986	mg/kg	104%	70-130		
B131499-MSD1	**Matrix Spike Duplicate (1337006-01)**								
	As	544.4	1340	1894	mg/kg	101%	70-130	5%	30
B131499-DUP4	**Duplicate (1337006-11)**								
	As	536.9		667.3	mg/kg			22%	30
B131499-MS4	**Matrix Spike (1337006-11)**								
	As	536.9	1458	2049	mg/kg	104%	70-130		
B131499-MSD4	**Matrix Spike Duplicate (1337006-11)**								
	As	536.9	1434	2130	mg/kg	111%	70-130	4%	30

Accuracy & Precision Summary

Batch: B131500
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131500-BS1	**Laboratory Fortified Blank (1310030)**								
	Fe		15000	14170	mg/kg	94%	75-125		
B131500-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	Fe		33600	33750	mg/kg	100%	75-125		
B131500-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	Fe		43200	36580	mg/kg	85%	75-125		
B131500-DUP1	**Duplicate (1337006-01)**								
	Fe	54450		55210	mg/kg			1%	30
B131500-MS1	**Matrix Spike (1337006-01)**								
	Fe	54450	41740	94270	mg/kg	95%	70-130		
B131500-MSD1	**Matrix Spike Duplicate (1337006-01)**								
	Fe	54450	40210	94290	mg/kg	99%	70-130	0.03%	30
B131500-DUP4	**Duplicate (1337006-11)**								
	Fe	57760		55740	mg/kg			4%	30
B131500-MS4	**Matrix Spike (1337006-11)**								
	Fe	57760	43730	107000	mg/kg	113%	70-130		
B131500-MSD4	**Matrix Spike Duplicate (1337006-11)**								
	Fe	57760	43020	100000	mg/kg	98%	70-130	7%	30

Method Blanks & Reporting Limits

Batch: B131463
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131463-BLK1	-0.0005	mg/kg
B131463-BLK2	-0.0009	mg/kg
B131463-BLK3	-0.0006	mg/kg
B131463-BLK4	-0.0009	mg/kg

Average: -0.001 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

Method Blanks & Reporting Limits

Batch: B131464
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131464-BLK1	0.00	mg/kg
B131464-BLK2	0.00	mg/kg
B131464-BLK3	0.00	mg/kg
B131464-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

Method Blanks & Reporting Limits

Batch: B131465
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131465-BLK1	0.00	mg/kg
B131465-BLK2	0.00	mg/kg
B131465-BLK3	0.00	mg/kg
B131465-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.015

Method Blanks & Reporting Limits

Batch: B131466
Matrix: Soil/Sediment
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131466-BLK1	-0.003	%
B131466-BLK2	0.006	%

Average: 0.00
Limit: 1.00

MDL: 0.30
MRL: 1.00

Method Blanks & Reporting Limits

Batch: B131499
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131499-BLK1	-0.02	mg/kg
B131499-BLK2	-0.04	mg/kg
B131499-BLK3	-0.04	mg/kg
B131499-BLK4	-0.04	mg/kg

Average: -0.04 **Standard Deviation:** 0.01 **MDL:** 0.05
Limit: 0.36 **Limit:** 0.05 **MRL:** 0.36

Method Blanks & Reporting Limits

Batch: B131500
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: Fe 56

Sample	Result	Units
B131500-BLK1	-2.3	mg/kg
B131500-BLK2	-2.5	mg/kg
B131500-BLK3	-2.4	mg/kg
B131500-BLK4	-2.6	mg/kg

Average: -2.5 **Standard Deviation:** 0.1 **MDL:** 4.2
Limit: 25.0 **Limit:** 4.2 **MRL:** 25.0

Sample Containers

Lab ID: 1337006-01
Sample: WP-DU6 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-02
Sample: WP-DU6 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-03
Sample: WP-DU6 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-04
Sample: WP-DU7 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-05
Sample: WP-DU7 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-06
Sample: WP-DU7 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1337006-07
Sample: WP-DU6 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-08
Sample: WP-DU6 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-09
Sample: WP-DU6 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-10
Sample: WP-DU6 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-11
Sample: WP-DU6 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-12
Sample: WP-DU6 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1337006-13
Sample: WP-DU7 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-14
Sample: WP-DU7 (0-4")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-15
Sample: WP-DU7 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-16
Sample: WP-DU7 (4-8")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-17
Sample: WP-DU7 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1337006-18
Sample: WP-DU7 (8-12")
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/04/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Shipping Containers

Cooler

Received: September 10, 2013 9:10
Tracking No: 803721089172 via FedEx
Coolant Type: Dry Ice
Temperature: -16.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1337006

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech / HDOH Hazel Office
Contact: Kevin Kelly / John Penrod
Client project ID: 1035190231 1
PO #: (Quote: HDH-HL001)

Address: 737 Bishop St., Suite 3010
Honolulu, HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
John.penrod@doh.hawaii.gov
Fax #:

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: ~~Total Hg, EPA 1631~~	Analyses required: ~~Methyl Hg, EPA 1630~~	Analyses required: ICP-MS Metals (specify) (inc) EPA 1638 M Total As & Fe	Analyses required: Inorganic As and As species (specify) MMA, DMA EPA 1632	Analyses required: % Solids (30-50 gm) SM-2540G	Analyses required: ~~Filtration~~	Analyses required: Other (specify) TOC 9060	Analyses required: Other (specify) Grain Size D422	Comments
1	WP-DU6 (0-4")	9/3/13	6:00pm	JP	Sed	1	–			Frozen			X	X	X		X	X	Use MI3 sub-sampling for TOC and Grain size analyses
2	WP-DU6 (4-8")	9/3/13	6:00pm	JP	Sed	1	–						X	X	X		X	X	
3	WP-DU6 (8-12")	9/3/13	6:00pm	JP	Sed	1	–						X	X	X		X	X	
4	WP-DU7 (0-4in.)	9/4/13	6:00pm	JP	Sed	1	–						X	X	X		X	X	
5	WP-DU7 (4-8in.)	9/4/13	6:00pm	JP	Sed	1	–						X	X	X		X	X	
6	WP-DU7 (8-12in.)	9/4/13	6:00pm	JP	Sed	1	–						X	X	X		X	X	
7																			
8																			
9																			
10																			

Relinquished by: JP	Date: 9/9/13	Time: AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/10/13	Time: 0910
Shipping carrier: FEDEX	# of coolers: 1		BRL work order ID:	BRL project ID:	

Appendix F

Biota Laboratory Reports

October 7, 2013

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Ave
Hilo, HI 96720
John.peard@doh.hawaii.gov

RE: Project HDH-HL1301 Client Project: 10351902311

Dear Mr. Peard,

On August 29, 2013, Brooks Rand Labs (BRL) received sixteen (16) fish, two (2) gills, two (2) organs and two (2) scales samples. The samples were logged-in for the analyses of total arsenic (As), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) according to the chain-of-custody forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a wet-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL the RPD was not calculated (**N/C**).

The recovery criteria limits did not apply to specific elements when the standard reference materials (SRMs) only listed information values. The recovery limits were not applicable (N/A).

Total As – Batch B131423
The matrix spike (MS) performed on sample *MC-W-S-J-3* (1335036-11) had a 135% recovery just above the acceptance criteria at 130%. The associated matrix spike duplicate (MSD) recovered within acceptance criteria at 116%. The MS and MSD met recovery criteria with a relative percent difference (RPD) of 16%. Due to the elevated MS recovery, the sample result was qualified **N**.

As(Inorg) – Batch B131418
The native result for sample *MC-S-S-A-1* (1335036-15) and the associated DUP result yielded a 41% RPD, not meeting BRL's acceptance criteria for duplicate precision. As such, the sample result was qualified **M** for duplicate imprecision. It was noted that the sample matrix was scales, which typically pose homogeneity issues.

In addition, the MS/MSD set performed on sample *MC-S-S-A-1* (1335036-15) was spiked at a level less than the native sample. The recoveries are not considered valid indicators of data

quality. However, these results are reported as a demonstration of precision. No qualifications were made based on the MS/MSD recoveries.

DMAs – Batch B131420
The recovery of SRM NIST1568b (SRM2) was low at 34%. Historically, the recovery of this SRM2 is 43%. The SRM2 is also a rice flour, as is SRM1. Neither SRM is matrix matched to the fish (whole, scales, and organs) samples prepared in the batch. Another SRM certified for DMAs wasn't available. The blank spike and all matrix spikes recovered well, suggesting that the method is effectively extracting DMA for the fish samples. No results were qualified.

MMAs – Batch B131419
The MMAs were only recoverable when analyzed at a higher volume. This was not always possible due to a high As(Inorg) peak and DMAs peak. Two samples were impacted by the large As(Inorg) peak to a point where they could not be accurately integrated. As, the results for samples *MC-W-S-J-2* (1335036-10) and *VE-O-S-A-1* (1335036-21) were qualified **J** and should be considered estimates.

The native result for sample *VE-O-S-A-1* (1335036-21) and its associated DUP result yielded a RPD above the acceptance limit (107%). The sample result and the associated DUP met the secondary criteria of being less than 5x the MRL and within 2x the MRL of each other. No qualifications were necessary.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Lydia Greaves
Project Manager
lydia@brooksrand.com

Tiffany Stilwater
Client Services Manager
tiffany@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

3958 6th Avenue NW Seattle WA 98107 · P(206) 632-6206 · F(206) 632-6017 · brl@brooksrand.com · www.brooksrand.com

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
MC-W-S-A-1	1335036-01	fish	Sample	08/14/2013	08/29/2013
MC-W-S-A-2	1335036-02	fish	Sample	08/14/2013	08/29/2013
MC-W-S-A-3	1335036-03	fish	Sample	08/14/2013	08/29/2013
MC-W-S-A-4	1335036-04	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-1	1335036-05	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-2	1335036-06	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-3	1335036-07	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-4	1335036-08	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-1	1335036-09	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-2	1335036-10	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-3	1335036-11	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-4	1335036-12	fish	Sample	08/14/2013	08/29/2013
MC-G-S-A-1	1335036-13	Gills	Sample	08/14/2013	08/29/2013
MC-O-S-A-1	1335036-14	Organs	Sample	08/14/2013	08/29/2013
MC-S-S-A-1	1335036-15	Scales	Sample	08/14/2013	08/29/2013
VE-E-S-A-1	1335036-16	fish	Sample	08/14/2013	08/29/2013
VE-E-S-A-2	1335036-17	fish	Sample	08/14/2013	08/29/2013
VE-E-S-A-3	1335036-18	fish	Sample	08/14/2013	08/29/2013
VE-E-S-A-4	1335036-19	fish	Sample	08/14/2013	08/29/2013
VE-G-S-A-1	1335036-20	Gills	Sample	08/14/2013	08/29/2013
VE-O-S-A-1	1335036-21	Organs	Sample	08/14/2013	08/29/2013
VE-S-S-A-1	1335036-22	Scales	Sample	08/14/2013	08/29/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	09/17/2013	09/20/2013	B131444	N/A
As	Biota	EPA 1638 DRC	09/17/2013	09/25/2013	B131423	1300653
As(Inorg)	Biota	EPA 1632	09/17/2013	09/18/2013	B131418	1300636
DMAs	Biota	EPA 1632	09/24/2013	09/25/2013	B131420	1300652
MMAs	Biota	EPA 1632	09/24/2013	09/25/2013	B131419	1300651

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Client PM: John Peard

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-E-S-A-1										
1335036-05	%TS	fish	NA	32.63		0.01	0.04	%	B131444	N/A
1335036-05	As	fish	wet	1.72		0.014	0.041	mg/kg	B131423	1300653
1335036-05	As(Inorg)	fish	wet	0.010		0.003	0.008	mg/kg	B131418	1300636
1335036-05	DMAs	fish	wet	0.049		0.004	0.011	mg/kg	B131420	1300652
1335036-05	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651
MC-E-S-A-2										
1335036-06	%TS	fish	NA	31.73		0.01	0.04	%	B131444	N/A
1335036-06	As	fish	wet	2.01		0.013	0.037	mg/kg	B131423	1300653
1335036-06	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131418	1300636
1335036-06	DMAs	fish	wet	0.035		0.004	0.011	mg/kg	B131420	1300652
1335036-06	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651
MC-E-S-A-3										
1335036-07	%TS	fish	NA	33.60		0.01	0.04	%	B131444	N/A
1335036-07	As	fish	wet	2.32		0.013	0.038	mg/kg	B131423	1300653
1335036-07	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131418	1300636
1335036-07	DMAs	fish	wet	0.057		0.004	0.012	mg/kg	B131420	1300652
1335036-07	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
MC-E-S-A-4										
1335036-08	%TS	fish	NA	39.44		0.01	0.04	%	B131444	N/A
1335036-08	As	fish	wet	1.85		0.013	0.038	mg/kg	B131423	1300653
1335036-08	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131418	1300636
1335036-08	DMAs	fish	wet	0.087		0.004	0.011	mg/kg	B131420	1300652
1335036-08	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651
MC-G-S-A-1										
1335036-13	%TS	Gills	NA	25.73		0.01	0.04	%	B131444	N/A
1335036-13	As	Gills	wet	2.02		0.015	0.042	mg/kg	B131423	1300653
1335036-13	As(Inorg)	Gills	wet	0.025		0.004	0.010	mg/kg	B131418	1300636
1335036-13	DMAs	Gills	wet	0.130		0.014	0.042	mg/kg	B131420	1300652
1335036-13	MMAs	Gills	wet	0.014	U	0.014	0.042	mg/kg	B131419	1300651

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-O-S-A-1										
1335036-14	%TS	Organs	NA	33.53		0.01	0.04	%	B131444	N/A
1335036-14	As	Organs	wet	3.78		0.013	0.037	mg/kg	B131423	1300653
1335036-14	As(Inorg)	Organs	wet	0.176		0.004	0.009	mg/kg	B131418	1300636
1335036-14	DMAs	Organs	wet	0.122		0.004	0.011	mg/kg	B131420	1300652
1335036-14	MMAs	Organs	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651
MC-S-S-A-1										
1335036-15	%TS	Scales	NA	59.57		0.01	0.04	%	B131444	N/A
1335036-15	As	Scales	wet	0.185		0.013	0.038	mg/kg	B131423	1300653
1335036-15	As(Inorg)	Scales	wet	0.130	M	0.008	0.020	mg/kg	B131418	1300636
1335036-15	DMAs	Scales	wet	0.006	B	0.004	0.011	mg/kg	B131420	1300652
1335036-15	MMAs	Scales	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651
MC-W-S-A-1										
1335036-01	%TS	fish	NA	27.47		0.01	0.04	%	B131444	N/A
1335036-01	As	fish	wet	1.39		0.014	0.039	mg/kg	B131423	1300653
1335036-01	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131418	1300636
1335036-01	DMAs	fish	wet	0.199		0.004	0.012	mg/kg	B131420	1300652
1335036-01	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
MC-W-S-A-2										
1335036-02	%TS	fish	NA	31.61		0.01	0.04	%	B131444	N/A
1335036-02	As	fish	wet	2.15		0.014	0.040	mg/kg	B131423	1300653
1335036-02	As(Inorg)	fish	wet	0.009		0.003	0.008	mg/kg	B131418	1300636
1335036-02	DMAs	fish	wet	0.031		0.004	0.012	mg/kg	B131420	1300652
1335036-02	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
MC-W-S-A-3										
1335036-03	%TS	fish	NA	30.19		0.01	0.04	%	B131444	N/A
1335036-03	As	fish	wet	1.88		0.014	0.039	mg/kg	B131423	1300653
1335036-03	As(Inorg)	fish	wet	0.004	U	0.004	0.011	mg/kg	B131418	1300636
1335036-03	DMAs	fish	wet	0.272		0.004	0.011	mg/kg	B131420	1300652
1335036-03	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-W-S-A-4										
1335036-04	%TS	fish	NA	28.25		0.01	0.04	%	B131444	N/A
1335036-04	As	fish	wet	1.71		0.012	0.035	mg/kg	B131423	1300653
1335036-04	As(Inorg)	fish	wet	0.024		0.003	0.009	mg/kg	B131418	1300636
1335036-04	DMAs	fish	wet	0.186		0.004	0.012	mg/kg	B131420	1300652
1335036-04	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
MC-W-S-J-1										
1335036-09	%TS	fish	NA	34.43		0.01	0.04	%	B131444	N/A
1335036-09	As	fish	wet	3.32		0.013	0.037	mg/kg	B131423	1300653
1335036-09	As(Inorg)	fish	wet	0.159		0.004	0.010	mg/kg	B131418	1300636
1335036-09	DMAs	fish	wet	0.043		0.004	0.012	mg/kg	B131420	1300652
1335036-09	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
MC-W-S-J-2										
1335036-10	%TS	fish	NA	24.63		0.01	0.04	%	B131444	N/A
1335036-10	As	fish	wet	4.21		0.015	0.042	mg/kg	B131423	1300653
1335036-10	As(Inorg)	fish	wet	1.46		0.067	0.169	mg/kg	B131418	1300636
1335036-10	DMAs	fish	wet	0.053		0.004	0.012	mg/kg	B131420	1300652
1335036-10	MMAs	fish	wet	0.011	J, B	0.004	0.012	mg/kg	B131419	1300651
MC-W-S-J-3										
1335036-11	%TS	fish	NA	23.69		0.01	0.04	%	B131444	N/A
1335036-11	As	fish	wet	1.88	N	0.014	0.039	mg/kg	B131423	1300653
1335036-11	As(Inorg)	fish	wet	0.865		0.014	0.035	mg/kg	B131418	1300636
1335036-11	DMAs	fish	wet	0.088		0.004	0.012	mg/kg	B131420	1300652
1335036-11	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
MC-W-S-J-4										
1335036-12	%TS	fish	NA	25.62		0.01	0.04	%	B131444	N/A
1335036-12	As	fish	wet	1.66		0.013	0.037	mg/kg	B131423	1300653
1335036-12	As(Inorg)	fish	wet	0.051		0.004	0.009	mg/kg	B131418	1300636
1335036-12	DMAs	fish	wet	0.195		0.004	0.012	mg/kg	B131420	1300652
1335036-12	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-E-S-A-1										
1335036-16	%TS	fish	NA	29.53		0.01	0.04	%	B131444	N/A
1335036-16	As	fish	wet	1.53		0.015	0.043	mg/kg	B131423	1300653
1335036-16	As(Inorg)	fish	wet	0.060		0.004	0.010	mg/kg	B131418	1300636
1335036-16	DMAs	fish	wet	0.057		0.003	0.010	mg/kg	B131420	1300652
1335036-16	MMAs	fish	wet	0.003	U	0.003	0.010	mg/kg	B131419	1300651
VE-E-S-A-2										
1335036-17	%TS	fish	NA	35.33		0.01	0.04	%	B131444	N/A
1335036-17	As	fish	wet	2.41		0.015	0.042	mg/kg	B131423	1300653
1335036-17	As(Inorg)	fish	wet	0.004	U	0.004	0.009	mg/kg	B131418	1300636
1335036-17	DMAs	fish	wet	0.071		0.004	0.012	mg/kg	B131420	1300652
1335036-17	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
VE-E-S-A-3										
1335036-18	%TS	fish	NA	28.98		0.01	0.04	%	B131444	N/A
1335036-18	As	fish	wet	0.819		0.014	0.039	mg/kg	B131423	1300653
1335036-18	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131418	1300636
1335036-18	DMAs	fish	wet	0.033		0.004	0.011	mg/kg	B131420	1300652
1335036-18	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651
VE-E-S-A-4										
1335036-19	%TS	fish	NA	30.01		0.01	0.04	%	B131444	N/A
1335036-19	As	fish	wet	1.52		0.014	0.040	mg/kg	B131423	1300653
1335036-19	As(Inorg)	fish	wet	0.017		0.003	0.009	mg/kg	B131418	1300636
1335036-19	DMAs	fish	wet	0.054		0.004	0.012	mg/kg	B131420	1300652
1335036-19	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651
VE-G-S-A-1										
1335036-20	%TS	Gills	NA	27.44		0.01	0.04	%	B131444	N/A
1335036-20	As	Gills	wet	1.44		0.014	0.039	mg/kg	B131423	1300653
1335036-20	As(Inorg)	Gills	wet	0.199		0.004	0.010	mg/kg	B131418	1300636
1335036-20	DMAs	Gills	wet	0.126		0.004	0.011	mg/kg	B131420	1300652
1335036-20	MMAs	Gills	wet	0.004	U	0.004	0.011	mg/kg	B131419	1300651

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-O-S-A-1										
1335036-21	%TS	Organs	NA	32.62		0.01	0.04	%	B131444	N/A
1335036-21	As	Organs	wet	8.85		0.013	0.038	mg/kg	B131423	1300653
1335036-21	As(Inorg)	Organs	wet	4.49		0.142	0.355	mg/kg	B131418	1300636
1335036-21	DMAs	Organs	wet	0.121		0.011	0.034	mg/kg	B131420	1300652
1335036-21	MMAs	Organs	wet	0.018	J, B	0.011	0.034	mg/kg	B131419	1300651
VE-S-S-A-1										
1335036-22	%TS	Scales	NA	71.73		0.01	0.04	%	B131444	N/A
1335036-22	As	Scales	wet	0.270		0.014	0.039	mg/kg	B131423	1300653
1335036-22	As(Inorg)	Scales	wet	0.161		0.015	0.037	mg/kg	B131418	1300636
1335036-22	DMAs	Scales	wet	0.006	B	0.004	0.012	mg/kg	B131420	1300652
1335036-22	MMAs	Scales	wet	0.004	U	0.004	0.012	mg/kg	B131419	1300651

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Accuracy & Precision Summary

Batch: B131418
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131418-BS1	**Laboratory Fortified Blank (1334004)**								
	As(Inorg)		0.1000	0.108	mg/kg	108%	65-135		
B131418-SRM1	**Certified Reference Material (1321020, MESS-3)**								
	As(Inorg)		18.62	20.89	mg/kg	112%	65-135		
B131418-SRM2	**Certified Reference Material (1204034, NIST 1568a Rice Flour)**								
	As(Inorg)		0.1040	0.096	mg/kg	93%	N/A		
B131418-SRM3	**Certified Reference Material (1337024, NIST 1568b)**								
	As(Inorg)		0.09200	0.102	mg/kg	111%	75-125		
B131418-DUP1	**Duplicate (1335036-01)**								
	As(Inorg)	ND		0.006	mg/kg			N/C	35
B131418-MS1	**Matrix Spike (1335036-01)**								
	As(Inorg)	ND	0.09259	0.085	mg/kg	92%	65-135		
B131418-MSD1	**Matrix Spike Duplicate (1335036-01)**								
	As(Inorg)	ND	0.09940	0.096	mg/kg	96%	65-135	12%	35
B131418-DUP2	**Duplicate (1335036-13)**								
	As(Inorg)	0.025		0.028	mg/kg			11%	35
B131418-MS2	**Matrix Spike (1335036-13)**								
	As(Inorg)	0.025	0.1407	0.147	mg/kg	86%	65-135		
B131418-MSD2	**Matrix Spike Duplicate (1335036-13)**								
	As(Inorg)	0.025	0.1337	0.140	mg/kg	86%	65-135	5%	35
B131418-DUP3	**Duplicate (1335036-15)**								
	As(Inorg)	0.130		0.086	mg/kg			*41%*	35

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Accuracy & Precision Summary

Batch: B131418
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131418-MS3	**Matrix Spike (1335036-15)**								
	As(Inorg)	0.130	0.09042	0.155	mg/kg	*27%*	65-135		
B131418-MSD3	**Matrix Spike Duplicate (1335036-15)**								
	As(Inorg)	0.130	0.08547	0.164	mg/kg	*40%*	65-135	6%	35

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Accuracy & Precision Summary

Batch: B131419
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131419-BS1	**Laboratory Fortified Blank (1337007)**						
	MMAs		0.1000	0.078	mg/kg	78% 60-140	
B131419-PS1	**Post Spike (1335036-05)**						
	MMAs	ND	0.04673	0.029	mg/kg	62% 60-140	
B131419-DUP1	**Duplicate (1335036-13)**						
	MMAs	ND		ND	mg/kg		N/C 25
B131419-MS1	**Matrix Spike (1335036-13)**						
	MMAs	ND	0.08803	0.119	mg/kg	135% 60-140	
B131419-MSD1	**Matrix Spike Duplicate (1335036-13)**						
	MMAs	ND	0.09634	0.128	mg/kg	133% 60-140	8% 25
B131419-DUP2	**Duplicate (1335036-15)**						
	MMAs	ND		ND	mg/kg		N/C 25
B131419-MS2	**Matrix Spike (1335036-15)**						
	MMAs	ND	0.09434	0.058	mg/kg	61% 60-140	
B131419-MSD2	**Matrix Spike Duplicate (1335036-15)**						
	MMAs	ND	0.08772	0.061	mg/kg	69% 60-140	5% 25
B131419-DUP3	**Duplicate (1335036-21)**						
	MMAs	0.018		0.059	mg/kg		*107%* 25
B131419-MS3	**Matrix Spike (1335036-21)**						
	MMAs	0.018	0.3472	0.312	mg/kg	85% 60-140	
B131419-MSD3	**Matrix Spike Duplicate (1335036-21)**						
	MMAs	0.018	0.3736	0.363	mg/kg	92% 60-140	15% 25

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Accuracy & Precision Summary

Batch: B131420
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131420-BS1	**Laboratory Fortified Blank (1337008)**								
	DMAs		0.1000	0.093	mg/kg	93%	60-140		
B131420-SRM1	**Certified Reference Material (1204034, NIST 1568a Rice Flour)**								
	DMAs		0.1750	0.059	mg/kg	34%	N/A		
B131420-SRM2	**Certified Reference Material (1337024, NIST 1568b)**								
	DMAs		0.1800	0.061	mg/kg	*34%*	75-125		
B131420-PS1	**Post Spike (1335036-05)**								
	DMAs	0.049	0.04673	0.100	mg/kg	109%	60-140		
B131420-DUP1	**Duplicate (1335036-13)**								
	DMAs	0.130		0.148	mg/kg			13%	35
B131420-MS1	**Matrix Spike (1335036-13)**								
	DMAs	0.130	1.056	1.019	mg/kg	84%	60-140		
B131420-MSD1	**Matrix Spike Duplicate (1335036-13)**								
	DMAs	0.130	1.156	1.077	mg/kg	82%	60-140	6%	35
B131420-DUP2	**Duplicate (1335036-15)**								
	DMAs	0.006		ND	mg/kg			N/C	35
B131420-MS2	**Matrix Spike (1335036-15)**								
	DMAs	0.006	0.09434	0.081	mg/kg	80%	60-140		
B131420-MSD2	**Matrix Spike Duplicate (1335036-15)**								
	DMAs	0.006	0.08772	0.068	mg/kg	71%	60-140	17%	35
B131420-DUP3	**Duplicate (1335036-21)**								
	DMAs	0.121		0.129	mg/kg			7%	35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131420
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131420-MS3	**Matrix Spike (1335036-21)**						
	DMAs	0.121	1.041	1.006	mg/kg	85% 60-140	
B131420-MSD3	**Matrix Spike Duplicate (1335036-21)**						
	DMAs	0.121	1.121	1.152	mg/kg	92% 60-140	14% 35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131423
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131423-BS1	**Laboratory Fortified Blank (1338064)**								
	As		10.00	10.74	mg/kg	107%	75-125		
B131423-SRM1	**Certified Reference Material (1245076, DORM-4)**								
	As		6.880	6.601	mg/kg	96%	75-125		
B131423-SRM2	**Certified Reference Material (1201032, DOLT-4 Dogfish Liver Certified for TM)**								
	As		9.660	8.932	mg/kg	92%	75-125		
B131423-DUP1	**Duplicate (1334025-01)**								
	As	4.158		4.016	mg/kg			3%	30
B131423-MS1	**Matrix Spike (1334025-09)**								
	As	3.569	10.10	14.40	mg/kg	107%	70-130		
B131423-MS2	**Matrix Spike (1334025-30)**								
	As	0.392	10.37	11.90	mg/kg	111%	70-130		
B131423-DUP4	**Duplicate (1335036-01)**								
	As	1.394		1.405	mg/kg			0.8%	30
B131423-MS4	**Matrix Spike (1335036-01)**								
	As	1.394	9.634	11.99	mg/kg	110%	70-130		
B131423-MSD4	**Matrix Spike Duplicate (1335036-01)**								
	As	1.394	10.10	12.21	mg/kg	107%	70-130	2%	30
B131423-DUP3	**Duplicate (1335036-11)**								
	As	1.879		2.105	mg/kg			11%	30
B131423-MS3	**Matrix Spike (1335036-11)**								
	As	1.879	9.671	14.92	mg/kg	*135%*	70-130		

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131423
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131423-MSD3	**Matrix Spike Duplicate (1335036-11)**								
	As	1.879	9.381	12.77	mg/kg	116%	70-130	16%	30

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131444
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131444-DUP1	**Duplicate (1335036-01)**						
	%TS	27.47		26.69	%		3% 15
B131444-DUP2	**Duplicate (1335036-13)**						
	%TS	25.73		26.10	%		1% 15
B131444-DUP3	**Duplicate (1335036-15)**						
	%TS	59.57		56.95	%		4% 15

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131418
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131418-BLK1	0.000001	mg/kg
B131418-BLK2	-0.0003	mg/kg
B131418-BLK3	-0.0003	mg/kg
B131418-BLK4	-0.0004	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131419
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131419-BLK1	0.00	mg/kg
B131419-BLK2	0.00	mg/kg
B131419-BLK3	0.00	mg/kg
B131419-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131420
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131420-BLK1	0.003	mg/kg
B131420-BLK2	0.00	mg/kg
B131420-BLK3	0.00	mg/kg
B131420-BLK4	0.00	mg/kg

Average: 0.001 **Standard Deviation:** 0.002 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131423
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131423-BLK1	-0.002	mg/kg
B131423-BLK2	-0.004	mg/kg
B131423-BLK3	-0.005	mg/kg
B131423-BLK4	-0.0006	mg/kg

Average: -0.003 **Standard Deviation:** 0.002 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131444
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131444-BLK1	-0.008	%
B131444-BLK2	-0.05	%

Average: -0.03
Limit: 0.04

MDL: 0.01
MRL: 0.04

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-01
Sample: MC-W-S-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-02
Sample: MC-W-S-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-03
Sample: MC-W-S-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-04
Sample: MC-W-S-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-05
Sample: MC-E-S-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-06
Sample: MC-E-S-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-07
Sample: MC-E-S-A-3

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-08
Sample: MC-E-S-A-4

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-09
Sample: MC-W-S-J-1

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-10
Sample: MC-W-S-J-2

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-11
Sample: MC-W-S-J-3

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-12
Sample: MC-W-S-J-4

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-13
Sample: MC-G-S-A-1
Report Matrix: Gills
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-14
Sample: MC-O-S-A-1
Report Matrix: Organs
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-15
Sample: MC-S-S-A-1
Report Matrix: Scales
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-16
Sample: VE-E-S-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-17
Sample: VE-E-S-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-18
Sample: VE-E-S-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-19
Sample: VE-E-S-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-20
Sample: VE-G-S-A-1
Report Matrix: Gills
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-21
Sample: VE-O-S-A-1
Report Matrix: Organs
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-22
Sample: VE-S-S-A-1
Report Matrix: Scales
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Shipping Containers

Cooler

Received: August 29, 2013 9:45
Tracking No: 803023953239 via FedEx
Coolant Type: Dry Ice
Temperature: -31.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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Chain of Custody Record

1335036

White: LAB COPY
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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St. Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As (As) Se species (specify) EPA 1638, Modified SM2540G	% Solids	Filtration	MMAs and DMAs Other (specify) EPA 1632	Inorganic As Other (specify) EPA 1632	Comments
1	MC-W-S-A-1	8/14/13	1200	KK	BIO	1	NA	X						X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping.
2	MC-W-S-A-2	8-14	1200	KK	BIO	1		X						X	X		X	X	
3	MC-W-S-A-3	8-14	1200	KK	BIO	1		X						X	X		X	X	
4	MC-W-S-A-4	8-14	1200	KK	BIO	1		X						X	X		X	X	
5	MC-E-S-A-1	8-14	1200	KK	BIO	1		X						X	X		X	X	
6	MC-E-S-A-2	8-14	1200	KK	BIO	1		X						X	X		X	X	
7	MC-E-S-A-3	8-14	1200	KK	BIO	1		X						X	X		X	X	
8	MC-E-S-A-4	8-14	1200	KK	BIO	1		X						X	X		X	X	
9	MC-W-S-J-1	8-14	1200	KK	BIO	1		X						X	X		X	X	
10	MC-W-S-J-2	8-14	1200	KK	BIO	1	NA	X						X	X		X	X	

Relinquished by: KK	Date: 8-26-13	Time: 1145	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: CA
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 8/29/13	Time: 0945
BRL project ID:	

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Chain of Custody Record

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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103519023.11
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: kevin.kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As (As/Se species (specify) EPA 1638, modified)	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Analyses required: Inorganic As Other (specify) EPA 1632	Comments
1	MC-W-S-J-3	8-14	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping
2	MC-W-S-J-4	8-14	1200	KK	BIO	1								X	X		X	X	
3	MC-G-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
4	MC-O-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
5	MC-S-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
6	VE-E-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
7	VE-E-S-A-2	8-14	1200	KK	BIO	1								X	X		X	X	
8	VE-E-S-A-3	8-14	1200	KK	BIO	1								X	X		X	X	
9	VE-E-S-A-4	8-14	1200	KK	BIO	1								X	X		X	X	
10	VE-G-S-A-1	8-14	1200	KK	BIO	1	NA							X	X		X	X	

Relinquished by: KKelly	Date: 8-28-13	Time: 1148	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 8/29/13	Time: 0945
BRL project ID:	

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Fax: 206-632-6017
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Chain of Custody Record

1335036

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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035190231 1
PO #:

Address: 737 Bishop St, Suite 3200 Honolulu HI 96813
Phone #: 808 441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-[illegible]-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / Se species (specify) EPA 1632, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Analyses required: Inorganic As Other (specify) EPA 1632	Comments
1	VE-0-S-A-1	8-14	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping
2	VE-S-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by:	Date: 8-28-13	Time: 1145	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 8/29/13	Time: 0945
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:	BRL project ID:	

October 17, 2013

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Ave
Hilo, HI 96720
John.peard@doh.hawaii.gov

RE: Project HDH-HL1301 Client Project: 10351902311

Dear Mr. Peard,

On September 3, 2013, Brooks Rand Labs (BRL) received forty-two (42) bitoa samples. The samples were logged-in for the analyses of total arsenic (As), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) according to the chain-of-custody (COC) forms. Due to a shipping issue, all samples were received at 18.3°C, well above the required 0 – 4 °C. All sample results were qualified **H** as the temperature requirement was not met. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

Several samples had slightly different sample IDs on the labels versus the COC forms. Sample IDs from the labels were used.

Label Sample ID	COC Sample ID
SS-GI-S-A-2	SS-GI-S-A-1
SS-HP-S-2	SS-H-S-A-2
SS-HP-S-A-3	SS-H-S-A-3
SS-HP-S-A-4	SS-H-S-A-4
SS-HP-S-A-5	SS-H-S-A-5
SS-HP-S-A-6	SS-H-S-A-6

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a wet-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL the RPD was not calculated (**N/C**).

The recovery criteria limits did not apply to specific elements when the standard reference materials (SRMs) only listed information values. The recovery limits were not applicable (N/A or 0-200).

Total As – Batch B131442
All matrix spike/matrix spike duplicate (MS/MSD) sets were spiked at a level less than the native sample and the recoveries were not considered valid indicators of data quality. However, these results are reported as a demonstration of precision. When the spiking levels were ≤ 25% of the native sample concentrations, the recoveries were not reported (**NR**). No sample results were qualified on the basis of the MS or MSD recoveries.

As(Inorg) – Batch B131469
The native result for sample *SS-W-S-J-4* (1336005-09) and the associated DUP result yielded a 132% RPD, not meeting BRL's acceptance criteria for duplicate precision. In addition, the native result of sample *SS-E-S-A-1* (1336005-15) was greater than the MRL, while the associated DUP was not detectable. The samples and DUPs were re-analyzed and confirmed the initial concentrations. As such, the As(Inorg) sample results were qualified **M** for duplicate imprecision. The associated matrix spikes also had elevated RPDs due to either the MS or the MSD not meeting acceptance criteria. This was thought to be related to the duplicate imprecision instead of inaccuracy and no further qualifications were necessary. It was noted that both samples met duplicate precision criteria for DMAs and MMAs.

MMAs – Batch B131467
The MMAs were only recoverable when analyzed at a higher volume. This was not always possible due to a high As(Inorg) peak and DMAs peak. One sample was impacted by the large As(Inorg) peak to a point where it could not be accurately integrated. As such, the result for sample *VE-W-S-A-1* (1336005-05) was qualified **J** and should be considered an estimate.

The recovery of SRM DORM-4 was low at 34%. The SRM is not certified for MMA and it would meet secondary criteria in that the result and the certified value were within 5x the MRL and within 2x of each other. No qualifications were necessary.

DMAs – Batch B131468
The recovery of SRM NIST1568b (SRM2) was low at 26%. The SRM2 is also a rice flour, as is the SRM1. Neither SRM matrix matched the fish samples prepared in the batch. Another SRM certified for DMAs was not available. The blank spike and all matrix spikes recovered well, suggesting that the method is effectively extracting DMA for the fish samples. No results were qualified.

The MS/MSD set performed on sample *SS-W-S-J-4* (1336005-09) was spiked at a level less than the native sample and the recoveries were not considered valid indicators of data quality. However, these results are reported as a demonstration of precision. No sample results were qualified on the basis of the MS or MSD recoveries.

As(Inorg) – Batch B131471
The native result for sample *VE-E-K-A-1* (1336005-36) and its associated DUP result yielded a RPD above the acceptance limit (42%). The sample result and the associated DUP met the secondary criteria of being less than 5x the MRL and within 2x the MRL of each other. No qualifications were necessary.

MMAs – Batch B131472
The MS/MSD set performed on sample *VE-E-K-A-1* (1336005-36) had low recoveries (47% and 51%, respectively). Due to this, the sample was qualified **N** for inaccuracy.

The MMAs were only recoverable when analyzed at a higher volume. This was not always possible due to a high As(Inorg) peak and DMAs peak. Several samples were impacted by the large peaks to a point where they could not be accurately integrated. As such, these results were qualified **J** and should be considered estimates.

DMAs – Batch B131473

The recovery of SRM NIST1568b (SRM2) was low at 17%. The SRM2 is also a rice flour, as is the SRM1. Neither SRM matrix matched the fish samples prepared in the batch. Another SRM certified for DMAs was not available. The blank spike and all matrix spikes recovered well, suggesting that the method is effectively extracting DMA for the fish samples. No results were qualified.

One of the continuing calibration verification (CCV) standards had an elevated recovery at 133%. All samples bracketed by this sample were qualified **J** due to a potential high bias. This means that the DMAs results for these samples may be higher than actually present in the sample. It was noted that for all affected samples, the DMAs results were no more than 10% of the total As result and this potential high bias is minimal to the overall As results.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Lydia Greaves
Project Manager
lydia@brooksrand.com

Tiffany Stilwater
Client Services Manager
tiffany@brooksrand.com

Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
VE-W-S-J-1	1336005-01	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-J-2	1336005-02	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-J-3	1336005-03	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-J-4	1336005-04	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-1	1336005-05	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-2	1336005-06	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-3	1336005-07	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-4	1336005-08	Biota	Sample	08/14/2013	09/03/2013
SS-W-S-J-4	1336005-09	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-5	1336005-10	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-7	1336005-11	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-8	1336005-12	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-9	1336005-13	Biota	Sample	08/22/2013	09/03/2013
SS-W-S-J-10	1336005-14	Biota	Sample	08/22/2013	09/03/2013
SS-E-S-A-1	1336005-15	Biota	Sample	08/14/2013	09/03/2013
SS-E-S-A-2	1336005-16	Biota	Sample	08/20/2013	09/03/2013
SS-E-S-A-3	1336005-17	Biota	Sample	08/20/2013	09/03/2013
SS-E-S-A-4	1336005-18	Biota	Sample	08/20/2013	09/03/2013
SS-E-S-A-5	1336005-19	Biota	Sample	08/15/2013	09/03/2013
SS-E-S-A-6	1336005-20	Biota	Sample	08/22/2013	09/03/2013
SS-H-S-A-1	1336005-21	Biota	Sample	08/15/2013	09/03/2013
SS-GI-S-A-2	1336005-22	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-2	1336005-23	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-3	1336005-24	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-4	1336005-25	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-5	1336005-26	Biota	Sample	08/15/2013	09/03/2013
SS-HP-S-A-6	1336005-27	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-1	1336005-28	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-2	1336005-29	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-3	1336005-30	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-4	1336005-31	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-1	1336005-32	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-2	1336005-33	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-3	1336005-34	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-4	1336005-35	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-1	1336005-36	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-2	1336005-37	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-3	1336005-38	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-4	1336005-39	Biota	Sample	08/21/2013	09/03/2013
VE-G-K-A-1	1336005-40	Biota	Sample	08/21/2013	09/03/2013
VE-O-K-A-1	1336005-41	Biota	Sample	08/21/2013	09/03/2013

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
VE-S-K-A-1	1336005-42	Biota	Sample	08/21/2013	09/03/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	09/26/2013	09/30/2013	B131470	N/A
%TS	Biota	SM 2540G	09/26/2013	09/30/2013	B131474	N/A
As	Biota	EPA 1638 DRC	09/24/2013	09/25/2013	B131442	1300653
As(Inorg)	Biota	EPA 1632	09/26/2013	09/27/2013	B131469	1300658
As(Inorg)	Biota	EPA 1632	10/13/2013	10/14/2013	B131471	1300695
DMAs	Biota	EPA 1632	10/10/2013	10/11/2013	B131468	1300692
DMAs	Biota	EPA 1632	10/14/2013	10/15/2013	B131473	1300700
MMAs	Biota	EPA 1632	10/10/2013	10/11/2013	B131467	1300691
MMAs	Biota	EPA 1632	10/14/2013	10/15/2013	B131472	1300699

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-E-S-A-1										
1336005-15	%TS	Biota	NA	10.90		0.01	0.04	%	B131470	N/A
1336005-15	As	Biota	wet	0.890	H	0.013	0.037	mg/kg	B131442	1300653
1336005-15	As(Inorg)	Biota	wet	0.052	H, M	0.008	0.019	mg/kg	B131469	1300658
1336005-15	DMAs	Biota	wet	0.284	H	0.016	0.047	mg/kg	B131468	1300692
1336005-15	MMAs	Biota	wet	0.016	H, U	0.016	0.047	mg/kg	B131467	1300691
SS-E-S-A-2										
1336005-16	%TS	Biota	NA	14.09		0.01	0.04	%	B131470	N/A
1336005-16	As	Biota	wet	0.874	H	0.013	0.036	mg/kg	B131442	1300653
1336005-16	As(Inorg)	Biota	wet	0.120	H	0.008	0.020	mg/kg	B131469	1300658
1336005-16	DMAs	Biota	wet	0.188	H	0.014	0.042	mg/kg	B131468	1300692
1336005-16	MMAs	Biota	wet	0.014	H, U	0.014	0.042	mg/kg	B131467	1300691
SS-E-S-A-3										
1336005-17	%TS	Biota	NA	19.08		0.01	0.04	%	B131470	N/A
1336005-17	As	Biota	wet	1.18	H	0.014	0.039	mg/kg	B131442	1300653
1336005-17	As(Inorg)	Biota	wet	0.012	H	0.004	0.009	mg/kg	B131469	1300658
1336005-17	DMAs	Biota	wet	0.259	H	0.016	0.049	mg/kg	B131468	1300692
1336005-17	MMAs	Biota	wet	0.016	H, U	0.016	0.049	mg/kg	B131467	1300691
SS-E-S-A-4										
1336005-18	%TS	Biota	NA	10.33		0.01	0.04	%	B131470	N/A
1336005-18	As	Biota	wet	0.696	H	0.014	0.040	mg/kg	B131442	1300653
1336005-18	As(Inorg)	Biota	wet	0.050	H	0.004	0.010	mg/kg	B131469	1300658
1336005-18	DMAs	Biota	wet	0.219	H	0.013	0.038	mg/kg	B131468	1300692
1336005-18	MMAs	Biota	wet	0.013	H, U	0.013	0.038	mg/kg	B131467	1300691
SS-E-S-A-5										
1336005-19	%TS	Biota	NA	19.42		0.01	0.04	%	B131470	N/A
1336005-19	As	Biota	wet	2.07	H	0.015	0.042	mg/kg	B131442	1300653
1336005-19	As(Inorg)	Biota	wet	0.010	H	0.004	0.009	mg/kg	B131469	1300658
1336005-19	DMAs	Biota	wet	0.795	H	0.015	0.046	mg/kg	B131468	1300692
1336005-19	MMAs	Biota	wet	0.015	H, U	0.015	0.046	mg/kg	B131467	1300691

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-E-S-A-6										
1336005-20	%TS	Biota	NA	15.64		0.02	0.05	%	B131474	N/A
1336005-20	As	Biota	wet	0.675	H	0.014	0.039	mg/kg	B131442	1300653
1336005-20	As(Inorg)	Biota	wet	0.028	H	0.008	0.020	mg/kg	B131471	1300695
1336005-20	DMAs	Biota	wet	0.122	H	0.004	0.011	mg/kg	B131473	1300700
1336005-20	MMAs	Biota	wet	0.004	H, U	0.004	0.011	mg/kg	B131472	1300699
SS-GI-S-A-2										
1336005-22	%TS	Biota	NA	39.94		0.02	0.05	%	B131474	N/A
1336005-22	As	Biota	wet	4.00	H	0.013	0.038	mg/kg	B131442	1300653
1336005-22	As(Inorg)	Biota	wet	2.35	H	0.183	0.458	mg/kg	B131471	1300695
1336005-22	DMAs	Biota	wet	0.318	H	0.010	0.030	mg/kg	B131473	1300700
1336005-22	MMAs	Biota	wet	0.010	U, H	0.010	0.030	mg/kg	B131472	1300699
SS-HP-S-A-2										
1336005-23	%TS	Biota	NA	19.96		0.02	0.05	%	B131474	N/A
1336005-23	As	Biota	wet	2.74	H	0.013	0.037	mg/kg	B131442	1300653
1336005-23	As(Inorg)	Biota	wet	0.243	H	0.017	0.042	mg/kg	B131471	1300695
1336005-23	DMAs	Biota	wet	0.632	H	0.008	0.024	mg/kg	B131473	1300700
1336005-23	MMAs	Biota	wet	0.008	H, J, U	0.008	0.024	mg/kg	B131472	1300699
SS-HP-S-A-3										
1336005-24	%TS	Biota	NA	21.34		0.02	0.05	%	B131474	N/A
1336005-24	As	Biota	wet	2.54	H	0.015	0.042	mg/kg	B131442	1300653
1336005-24	As(Inorg)	Biota	wet	0.058	H	0.016	0.040	mg/kg	B131471	1300695
1336005-24	DMAs	Biota	wet	0.418	H	0.007	0.020	mg/kg	B131473	1300700
1336005-24	MMAs	Biota	wet	0.007	H, J, U	0.007	0.020	mg/kg	B131472	1300699
SS-HP-S-A-4										
1336005-25	%TS	Biota	NA	14.17		0.02	0.05	%	B131474	N/A
1336005-25	As	Biota	wet	2.69	H	0.013	0.036	mg/kg	B131442	1300653
1336005-25	As(Inorg)	Biota	wet	2.43	H	0.154	0.384	mg/kg	B131471	1300695
1336005-25	DMAs	Biota	wet	0.511	H	0.008	0.025	mg/kg	B131473	1300700
1336005-25	MMAs	Biota	wet	0.008	H, J, U	0.008	0.025	mg/kg	B131472	1300699

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-HP-S-A-5										
1336005-26	%TS	Biota	NA	25.44		0.02	0.05	%	B131474	N/A
1336005-26	As	Biota	wet	1.37	H	0.013	0.036	mg/kg	B131442	1300653
1336005-26	As(Inorg)	Biota	wet	0.047	H	0.016	0.040	mg/kg	B131471	1300695
1336005-26	DMAs	Biota	wet	0.494	H	0.008	0.023	mg/kg	B131473	1300700
1336005-26	MMAs	Biota	wet	0.011	H, B	0.008	0.023	mg/kg	B131472	1300699
SS-HP-S-A-6										
1336005-27	%TS	Biota	NA	13.17		0.02	0.05	%	B131474	N/A
1336005-27	As	Biota	wet	3.95	H	0.012	0.035	mg/kg	B131442	1300653
1336005-27	As(Inorg)	Biota	wet	0.152	H	0.015	0.037	mg/kg	B131471	1300695
1336005-27	DMAs	Biota	wet	1.04	H	0.016	0.048	mg/kg	B131473	1300700
1336005-27	MMAs	Biota	wet	0.016	H, J, U	0.016	0.048	mg/kg	B131472	1300699
SS-H-S-A-1										
1336005-21	%TS	Biota	NA	20.24		0.02	0.05	%	B131474	N/A
1336005-21	As	Biota	wet	2.94	H	0.012	0.034	mg/kg	B131442	1300653
1336005-21	As(Inorg)	Biota	wet	0.086	H	0.008	0.019	mg/kg	B131471	1300695
1336005-21	DMAs	Biota	wet	0.635	H	0.016	0.049	mg/kg	B131473	1300700
1336005-21	MMAs	Biota	wet	0.016	U, H	0.016	0.049	mg/kg	B131472	1300699
SS-W-S-J-10										
1336005-14	%TS	Biota	NA	30.95		0.01	0.04	%	B131470	N/A
1336005-14	As	Biota	wet	2.45	H	0.015	0.042	mg/kg	B131442	1300653
1336005-14	As(Inorg)	Biota	wet	0.348	H	0.008	0.020	mg/kg	B131469	1300658
1336005-14	DMAs	Biota	wet	0.639	H	0.013	0.040	mg/kg	B131468	1300692
1336005-14	MMAs	Biota	wet	0.013	H, U	0.013	0.040	mg/kg	B131467	1300691
SS-W-S-J-4										
1336005-09	%TS	Biota	NA	16.31		0.01	0.04	%	B131470	N/A
1336005-09	As	Biota	wet	1.04	H	0.012	0.036	mg/kg	B131442	1300653
1336005-09	As(Inorg)	Biota	wet	0.114	H, M	0.008	0.019	mg/kg	B131469	1300658
1336005-09	DMAs	Biota	wet	0.380	H	0.008	0.024	mg/kg	B131468	1300692
1336005-09	MMAs	Biota	wet	0.008	H, U	0.008	0.024	mg/kg	B131467	1300691

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PM: Lydia Greaves

Client PM: John Peard

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-W-S-J-5										
1336005-10	%TS	Biota	NA	37.29		0.01	0.04	%	B131470	N/A
1336005-10	As	Biota	wet	1.39	H	0.013	0.037	mg/kg	B131442	1300653
1336005-10	As(Inorg)	Biota	wet	0.184	H	0.007	0.018	mg/kg	B131469	1300658
1336005-10	DMAs	Biota	wet	0.311	H	0.008	0.023	mg/kg	B131468	1300692
1336005-10	MMAs	Biota	wet	0.007	H, B	0.004	0.011	mg/kg	B131467	1300691
SS-W-S-J-7										
1336005-11	%TS	Biota	NA	30.02		0.01	0.04	%	B131470	N/A
1336005-11	As	Biota	wet	6.01	H	0.012	0.035	mg/kg	B131442	1300653
1336005-11	As(Inorg)	Biota	wet	0.246	H	0.007	0.017	mg/kg	B131469	1300658
1336005-11	DMAs	Biota	wet	0.989	H	0.014	0.042	mg/kg	B131468	1300692
1336005-11	MMAs	Biota	wet	0.007	H, U	0.007	0.021	mg/kg	B131467	1300691
SS-W-S-J-8										
1336005-12	%TS	Biota	NA	36.78		0.01	0.04	%	B131470	N/A
1336005-12	As	Biota	wet	2.97	H	0.013	0.037	mg/kg	B131442	1300653
1336005-12	As(Inorg)	Biota	wet	0.214	H	0.008	0.020	mg/kg	B131469	1300658
1336005-12	DMAs	Biota	wet	0.986	H	0.037	0.110	mg/kg	B131468	1300692
1336005-12	MMAs	Biota	wet	0.007	H, U	0.007	0.022	mg/kg	B131467	1300691
SS-W-S-J-9										
1336005-13	%TS	Biota	NA	34.67		0.01	0.04	%	B131470	N/A
1336005-13	As	Biota	wet	1.23	H	0.013	0.038	mg/kg	B131442	1300653
1336005-13	As(Inorg)	Biota	wet	0.142	H	0.007	0.019	mg/kg	B131469	1300658
1336005-13	DMAs	Biota	wet	0.363	H	0.014	0.043	mg/kg	B131468	1300692
1336005-13	MMAs	Biota	wet	0.014	H, U	0.014	0.043	mg/kg	B131467	1300691
VE-E-K-A-1										
1336005-36	%TS	Biota	NA	25.75		0.02	0.05	%	B131474	N/A
1336005-36	As	Biota	wet	0.482	H	0.014	0.041	mg/kg	B131442	1300653
1336005-36	As(Inorg)	Biota	wet	0.013	H	0.003	0.009	mg/kg	B131471	1300695
1336005-36	DMAs	Biota	wet	0.035	H, J	0.004	0.011	mg/kg	B131473	1300700
1336005-36	MMAs	Biota	wet	0.004	H, N, U	0.004	0.011	mg/kg	B131472	1300699

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Client PM: John Peard

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-E-K-A-2										
1336005-37	%TS	Biota	NA	23.78		0.02	0.05	%	B131474	N/A
1336005-37	As	Biota	wet	0.763	H	0.014	0.040	mg/kg	B131442	1300653
1336005-37	As(Inorg)	Biota	wet	0.018	H	0.004	0.009	mg/kg	B131471	1300695
1336005-37	DMAs	Biota	wet	0.071	H, J	0.004	0.011	mg/kg	B131473	1300700
1336005-37	MMAs	Biota	wet	0.004	H, U	0.004	0.011	mg/kg	B131472	1300699
VE-E-K-A-3										
1336005-38	%TS	Biota	NA	27.64		0.02	0.05	%	B131474	N/A
1336005-38	As	Biota	wet	0.706	H	0.014	0.040	mg/kg	B131442	1300653
1336005-38	As(Inorg)	Biota	wet	0.041	H	0.004	0.010	mg/kg	B131471	1300695
1336005-38	DMAs	Biota	wet	0.041	H, J	0.004	0.012	mg/kg	B131473	1300700
1336005-38	MMAs	Biota	wet	0.004	U, H	0.004	0.012	mg/kg	B131472	1300699
VE-E-K-A-4										
1336005-39	%TS	Biota	NA	25.48		0.02	0.05	%	B131474	N/A
1336005-39	As	Biota	wet	0.730	H	0.014	0.039	mg/kg	B131442	1300653
1336005-39	As(Inorg)	Biota	wet	0.030	H	0.004	0.010	mg/kg	B131471	1300695
1336005-39	DMAs	Biota	wet	0.074	H, J	0.004	0.011	mg/kg	B131473	1300700
1336005-39	MMAs	Biota	wet	0.004	H, U	0.004	0.011	mg/kg	B131472	1300699
VE-G-K-A-1										
1336005-40	%TS	Biota	NA	28.48		0.01	0.04	%	B131470	N/A
1336005-40	As	Biota	wet	0.979	H	0.014	0.041	mg/kg	B131442	1300653
1336005-40	As(Inorg)	Biota	wet	0.119	H	0.008	0.021	mg/kg	B131469	1300658
1336005-40	DMAs	Biota	wet	0.050	H	0.004	0.012	mg/kg	B131468	1300692
1336005-40	MMAs	Biota	wet	0.004	H, U	0.004	0.012	mg/kg	B131467	1300691
VE-O-K-A-1										
1336005-41	%TS	Biota	NA	35.33		0.01	0.04	%	B131470	N/A
1336005-41	As	Biota	wet	2.41	H	0.013	0.036	mg/kg	B131442	1300653
1336005-41	As(Inorg)	Biota	wet	0.487	H	0.008	0.019	mg/kg	B131469	1300658
1336005-41	DMAs	Biota	wet	0.047	H	0.004	0.011	mg/kg	B131468	1300692
1336005-41	MMAs	Biota	wet	0.005	H, B	0.004	0.011	mg/kg	B131467	1300691

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-S-K-A-1										
1336005-42	%TS	Biota	NA	76.37		0.01	0.04	%	B131470	N/A
1336005-42	As	Biota	wet	0.580	H	0.014	0.040	mg/kg	B131442	1300653
1336005-42	As(Inorg)	Biota	wet	0.419	H	0.013	0.034	mg/kg	B131469	1300658
1336005-42	DMAs	Biota	wet	0.007	H, B	0.004	0.011	mg/kg	B131468	1300692
1336005-42	MMAs	Biota	wet	0.004	H, U	0.004	0.011	mg/kg	B131467	1300691
VE-W-K-A-1										
1336005-28	%TS	Biota	NA	32.40		0.02	0.05	%	B131474	N/A
1336005-28	As	Biota	wet	1.72	H	0.014	0.039	mg/kg	B131442	1300653
1336005-28	As(Inorg)	Biota	wet	0.443	H	0.014	0.036	mg/kg	B131471	1300695
1336005-28	DMAs	Biota	wet	0.115	H	0.004	0.011	mg/kg	B131473	1300700
1336005-28	MMAs	Biota	wet	0.008	H, B	0.004	0.011	mg/kg	B131472	1300699
VE-W-K-A-2										
1336005-29	%TS	Biota	NA	36.03		0.02	0.05	%	B131474	N/A
1336005-29	As	Biota	wet	1.79	H	0.014	0.040	mg/kg	B131442	1300653
1336005-29	As(Inorg)	Biota	wet	0.501	H	0.016	0.040	mg/kg	B131471	1300695
1336005-29	DMAs	Biota	wet	0.054	H	0.004	0.011	mg/kg	B131473	1300700
1336005-29	MMAs	Biota	wet	0.005	H, B	0.004	0.011	mg/kg	B131472	1300699
VE-W-K-A-3										
1336005-30	%TS	Biota	NA	34.88		0.02	0.05	%	B131474	N/A
1336005-30	As	Biota	wet	1.76	H	0.012	0.036	mg/kg	B131442	1300653
1336005-30	As(Inorg)	Biota	wet	0.216	H	0.015	0.038	mg/kg	B131471	1300695
1336005-30	DMAs	Biota	wet	0.026	H, J	0.004	0.012	mg/kg	B131473	1300700
1336005-30	MMAs	Biota	wet	0.004	H, U	0.004	0.012	mg/kg	B131472	1300699
VE-W-K-A-4										
1336005-31	%TS	Biota	NA	31.35		0.02	0.05	%	B131474	N/A
1336005-31	As	Biota	wet	1.43	H	0.013	0.036	mg/kg	B131442	1300653
1336005-31	As(Inorg)	Biota	wet	0.334	H	0.016	0.041	mg/kg	B131471	1300695
1336005-31	DMAs	Biota	wet	0.061	H, J	0.004	0.012	mg/kg	B131473	1300700
1336005-31	MMAs	Biota	wet	0.004	H, J, U	0.004	0.012	mg/kg	B131472	1300699

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-W-K-J-1										
1336005-32	%TS	Biota	NA	30.52		0.02	0.05	%	B131474	N/A
1336005-32	As	Biota	wet	2.42	H	0.013	0.036	mg/kg	B131442	1300653
1336005-32	As(Inorg)	Biota	wet	0.493	H	0.016	0.039	mg/kg	B131471	1300695
1336005-32	DMAs	Biota	wet	0.120	H, J	0.004	0.012	mg/kg	B131473	1300700
1336005-32	MMAs	Biota	wet	0.004	H, J, U	0.004	0.012	mg/kg	B131472	1300699
VE-W-K-J-2										
1336005-33	%TS	Biota	NA	29.73		0.02	0.05	%	B131474	N/A
1336005-33	As	Biota	wet	1.90	H	0.014	0.039	mg/kg	B131442	1300653
1336005-33	As(Inorg)	Biota	wet	0.384	H	0.016	0.039	mg/kg	B131471	1300695
1336005-33	DMAs	Biota	wet	0.050	H, J	0.004	0.012	mg/kg	B131473	1300700
1336005-33	MMAs	Biota	wet	0.004	H, U	0.004	0.012	mg/kg	B131472	1300699
VE-W-K-J-3										
1336005-34	%TS	Biota	NA	30.10		0.02	0.05	%	B131474	N/A
1336005-34	As	Biota	wet	1.09	H	0.014	0.040	mg/kg	B131442	1300653
1336005-34	As(Inorg)	Biota	wet	0.390	H	0.015	0.037	mg/kg	B131471	1300695
1336005-34	DMAs	Biota	wet	0.042	H, J	0.003	0.010	mg/kg	B131473	1300700
1336005-34	MMAs	Biota	wet	0.004	H, J, B	0.003	0.010	mg/kg	B131472	1300699
VE-W-K-J-4										
1336005-35	%TS	Biota	NA	33.22		0.02	0.05	%	B131474	N/A
1336005-35	As	Biota	wet	1.89	H	0.014	0.040	mg/kg	B131442	1300653
1336005-35	As(Inorg)	Biota	wet	0.582	H	0.016	0.041	mg/kg	B131471	1300695
1336005-35	DMAs	Biota	wet	0.071	J, H	0.004	0.012	mg/kg	B131473	1300700
1336005-35	MMAs	Biota	wet	0.008	H, B	0.004	0.012	mg/kg	B131472	1300699
VE-W-S-A-1										
1336005-05	%TS	Biota	NA	31.76		0.01	0.04	%	B131470	N/A
1336005-05	As	Biota	wet	4.52	H	0.013	0.037	mg/kg	B131442	1300653
1336005-05	As(Inorg)	Biota	wet	4.60	H	0.079	0.197	mg/kg	B131469	1300658
1336005-05	DMAs	Biota	wet	0.114	H	0.007	0.020	mg/kg	B131468	1300692
1336005-05	MMAs	Biota	wet	0.068	H, J	0.007	0.020	mg/kg	B131467	1300691

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-W-S-A-2										
1336005-06	%TS	Biota	NA	29.14		0.01	0.04	%	B131470	N/A
1336005-06	As	Biota	wet	1.60	H	0.014	0.040	mg/kg	B131442	1300653
1336005-06	As(Inorg)	Biota	wet	0.069	H	0.015	0.037	mg/kg	B131469	1300658
1336005-06	DMAs	Biota	wet	0.158	H	0.007	0.022	mg/kg	B131468	1300692
1336005-06	MMAs	Biota	wet	0.007	H, U	0.007	0.022	mg/kg	B131467	1300691
VE-W-S-A-3										
1336005-07	%TS	Biota	NA	34.69		0.01	0.04	%	B131470	N/A
1336005-07	As	Biota	wet	1.44	H	0.013	0.038	mg/kg	B131442	1300653
1336005-07	As(Inorg)	Biota	wet	0.019	H	0.004	0.009	mg/kg	B131469	1300658
1336005-07	DMAs	Biota	wet	0.092	H	0.003	0.010	mg/kg	B131468	1300692
1336005-07	MMAs	Biota	wet	0.003	H, U	0.003	0.010	mg/kg	B131467	1300691
VE-W-S-A-4										
1336005-08	%TS	Biota	NA	33.43		0.01	0.04	%	B131470	N/A
1336005-08	As	Biota	wet	1.67	H	0.013	0.037	mg/kg	B131442	1300653
1336005-08	As(Inorg)	Biota	wet	0.035	H	0.004	0.009	mg/kg	B131469	1300658
1336005-08	DMAs	Biota	wet	0.170	H	0.004	0.011	mg/kg	B131468	1300692
1336005-08	MMAs	Biota	wet	0.004	H, U	0.004	0.011	mg/kg	B131467	1300691
VE-W-S-J-1										
1336005-01	%TS	Biota	NA	33.27		0.01	0.04	%	B131470	N/A
1336005-01	As	Biota	wet	1.49	H	0.014	0.039	mg/kg	B131442	1300653
1336005-01	As(Inorg)	Biota	wet	0.075	H	0.004	0.009	mg/kg	B131469	1300658
1336005-01	DMAs	Biota	wet	0.199	H	0.016	0.048	mg/kg	B131468	1300692
1336005-01	MMAs	Biota	wet	0.016	H, U	0.016	0.048	mg/kg	B131467	1300691
VE-W-S-J-2										
1336005-02	%TS	Biota	NA	34.50		0.01	0.04	%	B131470	N/A
1336005-02	As	Biota	wet	2.36	H	0.014	0.040	mg/kg	B131442	1300653
1336005-02	As(Inorg)	Biota	wet	0.036	H	0.003	0.008	mg/kg	B131469	1300658
1336005-02	DMAs	Biota	wet	0.216	H	0.007	0.021	mg/kg	B131468	1300692
1336005-02	MMAs	Biota	wet	0.007	H, U	0.007	0.021	mg/kg	B131467	1300691

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-W-S-J-3										
1336005-03	%TS	Biota	NA	33.58		0.01	0.04	%	B131470	N/A
1336005-03	As	Biota	wet	2.53	H	0.014	0.041	mg/kg	B131442	1300653
1336005-03	As(Inorg)	Biota	wet	0.063	H	0.004	0.009	mg/kg	B131469	1300658
1336005-03	DMAs	Biota	wet	0.207	H	0.007	0.021	mg/kg	B131468	1300692
1336005-03	MMAs	Biota	wet	0.007	H, U	0.007	0.021	mg/kg	B131467	1300691
VE-W-S-J-4										
1336005-04	%TS	Biota	NA	34.64		0.01	0.04	%	B131470	N/A
1336005-04	As	Biota	wet	1.69	H	0.014	0.039	mg/kg	B131442	1300653
1336005-04	As(Inorg)	Biota	wet	0.097	H	0.004	0.010	mg/kg	B131469	1300658
1336005-04	DMAs	Biota	wet	0.137	H	0.007	0.020	mg/kg	B131468	1300692
1336005-04	MMAs	Biota	wet	0.007	H, U	0.007	0.020	mg/kg	B131467	1300691

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Accuracy & Precision Summary

Batch: B131442
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131442-BS1	**Laboratory Fortified Blank (1339029)**								
	As		0.4000	0.362	mg/kg	91%	75-125		
B131442-SRM1	**Certified Reference Material (1245076, DORM-4)**								
	As		6.880	6.198	mg/kg	90%	75-125		
B131442-SRM2	**Certified Reference Material (1201032, DOLT-4 Dogfish Liver Certified for TM)**								
	As		9.660	7.974	mg/kg	83%	75-125		
B131442-DUP1	**Duplicate (1336005-01)**								
	As	1.486		1.519	mg/kg			2%	30
B131442-MS1	**Matrix Spike (1336005-01)**								
	As	1.486	0.3663	2.190	mg/kg	NR	70-130		
B131442-MSD1	**Matrix Spike Duplicate (1336005-01)**								
	As	1.486	0.3466	2.008	mg/kg	NR	70-130	9%	30
B131442-DUP2	**Duplicate (1336005-10)**								
	As	1.389		1.404	mg/kg			1%	30
B131442-MS2	**Matrix Spike (1336005-10)**								
	As	1.389	0.3623	2.107	mg/kg	*198%*	70-130		
B131442-MSD2	**Matrix Spike Duplicate (1336005-10)**								
	As	1.389	0.3604	1.687	mg/kg	83%	70-130	22%	30
B131442-DUP3	**Duplicate (1336005-20)**								
	As	0.675		0.751	mg/kg			11%	30
B131442-MS3	**Matrix Spike (1336005-20)**								
	As	0.675	0.3839	1.120	mg/kg	116%	70-130		

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131442
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131442-MSD3	**Matrix Spike Duplicate (1336005-20)**								
	As	0.675	0.3643	1.094	mg/kg	115%	70-130	2%	30
B131442-DUP4	**Duplicate (1336005-30)**								
	As	1.760		1.477	mg/kg			17%	30
B131442-MS4	**Matrix Spike (1336005-30)**								
	As	1.760	0.4008	1.886	mg/kg	NR	70-130		
B131442-MSD4	**Matrix Spike Duplicate (1336005-30)**								
	As	1.760	0.3817	1.515	mg/kg	NR	70-130	22%	30
B131442-DUP5	**Duplicate (1336005-42)**								
	As	0.580		0.564	mg/kg			3%	30
B131442-MS5	**Matrix Spike (1336005-42)**								
	As	0.580	0.4008	0.855	mg/kg	*68%*	70-130		
B131442-MSD5	**Matrix Spike Duplicate (1336005-42)**								
	As	0.580	0.3960	0.889	mg/kg	78%	70-130	4%	30

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131467
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131467-BS1	**Laboratory Fortified Blank (1341047)**						
	MMAs		0.1000	0.084	mg/kg	84% 60-140	
B131467-SRM3	**Certified Reference Material (1245076, DORM-4)**						
	MMAs		0.06000	0.020	mg/kg	34% 0-200	
B131467-DUP1	**Duplicate (1336005-01)**						
	MMAs	ND		ND	mg/kg		N/C 25
B131467-MS1	**Matrix Spike (1336005-01)**						
	MMAs	ND	0.1012	0.095	mg/kg	93% 60-140	
B131467-MSD1	**Matrix Spike Duplicate (1336005-01)**						
	MMAs	ND	0.09785	0.099	mg/kg	101% 60-140	4% 25
B131467-DUP2	**Duplicate (1336005-09)**						
	MMAs	ND		ND	mg/kg		N/C 25
B131467-MS2	**Matrix Spike (1336005-09)**						
	MMAs	ND	0.09328	0.067	mg/kg	71% 60-140	
B131467-MSD2	**Matrix Spike Duplicate (1336005-09)**						
	MMAs	ND	0.09881	0.077	mg/kg	78% 60-140	15% 25
B131467-DUP3	**Duplicate (1336005-15)**						
	MMAs	ND		ND	mg/kg		N/C 25
B131467-MS3	**Matrix Spike (1336005-15)**						
	MMAs	ND	0.08636	0.081	mg/kg	93% 60-140	
B131467-MSD3	**Matrix Spike Duplicate (1336005-15)**						
	MMAs	ND	0.09174	0.087	mg/kg	94% 60-140	7% 25

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131468
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131468-BS2	**Laboratory Fortified Blank (1341048)**								
	DMAs		0.1000	0.107	mg/kg	107%	60-140		
B131468-SRM1	**Certified Reference Material (1204034, NIST 1568a Rice Flour)**								
	DMAs		0.1750	0.082	mg/kg	47%	N/A		
B131468-SRM2	**Certified Reference Material (1337024, NIST 1568b)**								
	DMAs		0.1800	0.047	mg/kg	*26%*	75-125		
B131468-DUP1	**Duplicate (1336005-01)**								
	DMAs	0.199		0.157	mg/kg			23%	35
B131468-MS1	**Matrix Spike (1336005-01)**								
	DMAs	0.199	0.6073	0.756	mg/kg	92%	60-140		
B131468-MSD1	**Matrix Spike Duplicate (1336005-01)**								
	DMAs	0.199	0.5871	0.744	mg/kg	93%	60-140	2%	35
B131468-DUP2	**Duplicate (1336005-09)**								
	DMAs	0.380		0.349	mg/kg			9%	35
B131468-MS2	**Matrix Spike (1336005-09)**								
	DMAs	0.380	0.1866	0.501	mg/kg	65%	60-140		
B131468-MSD2	**Matrix Spike Duplicate (1336005-09)**								
	DMAs	0.380	0.1976	0.489	mg/kg	*55%*	60-140	2%	35
B131468-DUP4	**Duplicate (1336005-15)**								
	DMAs	0.284		0.207	mg/kg			31%	35
B131468-MS3	**Matrix Spike (1336005-15)**								
	DMAs	0.284	0.3454	0.532	mg/kg	72%	60-140		

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131468
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131468-MSD3	**Matrix Spike Duplicate (1336005-15)**						
	DMAs	0.284	0.3670	0.541	mg/kg	70% 60-140	2% 35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131469
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131469-BS1	**Laboratory Fortified Blank (1339012)**								
	As(Inorg)		0.1000	0.096	mg/kg	96%	65-135		
B131469-SRM1	**Certified Reference Material (1204034, NIST 1568a Rice Flour)**								
	As(Inorg)		0.1040	0.101	mg/kg	97%	N/A		
B131469-SRM2	**Certified Reference Material (1337024, NIST 1568b)**								
	As(Inorg)		0.09200	0.101	mg/kg	110%	75-125		
B131469-SRM3	**Certified Reference Material (1245076, DORM-4)**								
	As(Inorg)		0.3300	0.217	mg/kg	66%	N/A		
B131469-DUP1	**Duplicate (1336005-01)**								
	As(Inorg)	0.075		0.069	mg/kg			8%	35
B131469-MS1	**Matrix Spike (1336005-01)**								
	As(Inorg)	0.075	0.09174	0.135	mg/kg	66%	65-135		
B131469-MSD1	**Matrix Spike Duplicate (1336005-01)**								
	As(Inorg)	0.075	0.08651	0.180	mg/kg	121%	65-135	29%	35
B131469-DUP2	**Duplicate (1336005-09)**								
	As(Inorg)	0.114		0.556	mg/kg			*132%*	35
B131469-MS2	**Matrix Spike (1336005-09)**								
	As(Inorg)	0.114	0.1459	0.482	mg/kg	*252%*	65-135		
B131469-MSD2	**Matrix Spike Duplicate (1336005-09)**								
	As(Inorg)	0.114	0.1389	0.207	mg/kg	67%	65-135	*80%*	35
B131469-DUP3	**Duplicate (1336005-15)**								
	As(Inorg)	0.052		ND	mg/kg			N/C	35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131469
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131469-MS3	**Matrix Spike (1336005-15)**								
	As(Inorg)	0.052	0.1391	0.208	mg/kg	112%	65-135		
B131469-MSD3	**Matrix Spike Duplicate (1336005-15)**								
	As(Inorg)	0.052	0.1293	0.117	mg/kg	*50%*	65-135	*56%*	35

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Project ID: HDH-HL1301
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Client PM: John Peard

Accuracy & Precision Summary

Batch: B131470
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131470-DUP1	**Duplicate (1336005-01)**						
	%TS	33.27		34.51	%		4% 15
B131470-DUP2	**Duplicate (1336005-09)**						
	%TS	16.31		17.49	%		7% 15
B131470-DUP3	**Duplicate (1336005-15)**						
	%TS	10.90		11.10	%		2% 15

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131471
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131471-BS1	**Laboratory Fortified Blank (1339012)**						
	As(Inorg)		0.1000	0.104	mg/kg	104% 65-135	
B131471-SRM1	**Certified Reference Material (1337024, NIST 1568b)**						
	As(Inorg)		0.09200	0.104	mg/kg	113% 75-125	
B131471-DUP1	**Duplicate (1336005-21)**						
	As(Inorg)	0.086		0.109	mg/kg		24% 35
B131471-MS1	**Matrix Spike (1336005-21)**						
	As(Inorg)	0.086	0.1842	0.205	mg/kg	65% 65-135	
B131471-MSD1	**Matrix Spike Duplicate (1336005-21)**						
	As(Inorg)	0.086	0.1931	0.220	mg/kg	69% 65-135	7% 35
B131471-DUP2	**Duplicate (1336005-36)**						
	As(Inorg)	0.013		0.020	mg/kg		*42%* 35
B131471-MS2	**Matrix Spike (1336005-36)**						
	As(Inorg)	0.013	0.1692	0.151	mg/kg	81% 65-135	
B131471-MSD2	**Matrix Spike Duplicate (1336005-36)**						
	As(Inorg)	0.013	0.1799	0.147	mg/kg	74% 65-135	2% 35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131472
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131472-BS1	**Laboratory Fortified Blank (1341047)**								
	MMAs		0.1000	0.078	mg/kg	78%	60-140		
B131472-DUP1	**Duplicate (1336005-21)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131472-MS1	**Matrix Spike (1336005-21)**								
	MMAs	ND	0.09470	0.073	mg/kg	77%	60-140		
B131472-MSD1	**Matrix Spike Duplicate (1336005-21)**								
	MMAs	ND	0.1020	0.089	mg/kg	87%	60-140	20%	25
B131472-DUP2	**Duplicate (1336005-36)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131472-MS2	**Matrix Spike (1336005-36)**								
	MMAs	ND	0.08576	0.040	mg/kg	*47%*	60-140		
B131472-MSD2	**Matrix Spike Duplicate (1336005-36)**								
	MMAs	ND	0.09671	0.050	mg/kg	*51%*	60-140	22%	25

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131473
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131473-BS2	**Laboratory Fortified Blank (1341048)**								
	DMAs		0.1000	0.111	mg/kg	111%	60-140		
B131473-SRM1	**Certified Reference Material (1337024, NIST 1568b)**								
	DMAs		0.1800	0.031	mg/kg	*17%*	75-125		
B131473-DUP1	**Duplicate (1336005-21)**								
	DMAs	0.635		0.603	mg/kg			5%	35
B131473-MS1	**Matrix Spike (1336005-21)**								
	DMAs	0.635	0.4735	1.034	mg/kg	84%	60-140		
B131473-MSD1	**Matrix Spike Duplicate (1336005-21)**								
	DMAs	0.635	0.5102	1.136	mg/kg	98%	60-140	9%	35
B131473-DUP2	**Duplicate (1336005-36)**								
	DMAs	0.035		0.039	mg/kg			11%	35
B131473-MS2	**Matrix Spike (1336005-36)**								
	DMAs	0.035	0.08576	0.126	mg/kg	105%	60-140		
B131473-MSD2	**Matrix Spike Duplicate (1336005-36)**								
	DMAs	0.035	0.09671	0.138	mg/kg	107%	60-140	10%	35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B131474
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131474-DUP1	**Duplicate (1336005-21)**						
	%TS	20.24		19.97	%		1% 15
B131474-DUP2	**Duplicate (1336005-36)**						
	%TS	25.75		27.43	%		6% 15

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131442
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131442-BLK1	-0.003	mg/kg
B131442-BLK2	-0.004	mg/kg
B131442-BLK3	-0.005	mg/kg
B131442-BLK4	-0.004	mg/kg

Average: -0.004 **Standard Deviation:** 0.001 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131467
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131467-BLK1	0.00	mg/kg
B131467-BLK2	0.00	mg/kg
B131467-BLK3	0.00	mg/kg
B131467-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131468
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131468-BLK1	0.001	mg/kg
B131468-BLK2	0.0008	mg/kg
B131468-BLK3	0.0007	mg/kg
B131468-BLK4	0.001	mg/kg

Average: 0.001 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131469
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131469-BLK1	0.0002	mg/kg
B131469-BLK2	0.0002	mg/kg
B131469-BLK3	0.00005	mg/kg
B131469-BLK4	0.0002	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131470
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131470-BLK1	-0.004	%
B131470-BLK2	0.02	%

Average: 0.01
Limit: 0.04

MDL: 0.01
MRL: 0.04

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131471
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131471-BLK1	-0.0002	mg/kg
B131471-BLK2	-0.00008	mg/kg
B131471-BLK3	-0.0002	mg/kg
B131471-BLK4	0.0001	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131472
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131472-BLK1	0.002	mg/kg
B131472-BLK2	0.00	mg/kg
B131472-BLK3	0.00	mg/kg
B131472-BLK4	0.00	mg/kg

Average: 0.001 **Standard Deviation:** 0.001 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131473
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131473-BLK1	0.001	mg/kg
B131473-BLK2	0.0009	mg/kg
B131473-BLK3	0.0007	mg/kg
B131473-BLK4	0.0003	mg/kg

Average: 0.001 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B131474
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131474-BLK1	0.00	%
B131474-BLK2	-0.05	%

Average: -0.03
Limit: 0.05

MDL: 0.02
MRL: 0.05

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-01
Sample: VE-W-S-J-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-02
Sample: VE-W-S-J-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-03
Sample: VE-W-S-J-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-04
Sample: VE-W-S-J-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-05
Sample: VE-W-S-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-06
Sample: VE-W-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-07
Sample: VE-W-S-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-08
Sample: VE-W-S-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-09
Sample: SS-W-S-J-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-10
Sample: SS-W-S-J-5
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-11
Sample: SS-W-S-J-7
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-12
Sample: SS-W-S-J-8
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-13
Sample: SS-W-S-J-9
Report Matrix: Biota
Sample Type: Sample
Collected: 08/22/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-14
Sample: SS-W-S-J-10
Report Matrix: Biota
Sample Type: Sample
Collected: 08/22/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-15
Sample: SS-E-S-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-16
Sample: SS-E-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-17
Sample: SS-E-S-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-18
Sample: SS-E-S-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-19
Sample: SS-E-S-A-5
Report Matrix: Biota
Sample Type: Sample
Collected: 08/15/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-20
Sample: SS-E-S-A-6
Report Matrix: Biota
Sample Type: Sample
Collected: 08/22/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-21
Sample: SS-H-S-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/15/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-22
Sample: SS-GI-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-23
Sample: SS-HP-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-24
Sample: SS-HP-S-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-25
Sample: SS-HP-S-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-26
Sample: SS-HP-S-A-5
Report Matrix: Biota
Sample Type: Sample
Collected: 08/15/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-27
Sample: SS-HP-S-A-6
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-28
Sample: VE-W-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-29
Sample: VE-W-K-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-30
Sample: VE-W-K-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-31
Sample: VE-W-K-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-32
Sample: VE-W-K-J-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-33
Sample: VE-W-K-J-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-34
Sample: VE-W-K-J-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-35
Sample: VE-W-K-J-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-36
Sample: VE-E-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-37
Sample: VE-E-K-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-38
Sample: VE-E-K-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-39
Sample: VE-E-K-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-40
Sample: VE-G-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-41
Sample: VE-O-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-42
Sample: VE-S-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Shipping Containers

Cooler

Received: September 3, 2013 9:25
Tracking No: 803721093039 via FedEx
Coolant Type: None
Temperature: 18.3 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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Chain of Custody Record

1336005

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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #: ~~103S1902311~~

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As / Se species (specify) EPA 1632, Modified	% Solids SM2540G	Filtered ~~Total As~~	Inorganic Other (specify) EPA 1632	Inorganic As Other (specify) EPA 1632	Comments
1	VE-W-S-J-1	8-14	1200	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples kept frozen until shipped.
2	VE-W-S-J-2	8-14	1200	KK	B10	1								X	X		X	X	
3	VE-W-S-J-3	8-14	1200	KK	B10	1								X	X		X	X	
4	VE-W-S-J-4	8-14	1200	KK	B10	1								X	X		X	X	
5	VE-W-S-A-1	8-14	1200	KK	B10	1								X	X		X	X	
6	VE-W-S-A-2	8-14	1200	KK	B10	1								X	X		X	X	
7	VE-W-S-A-3	8-14	1200	KK	B10	1								X	X		X	X	
8	VE-W-S-A-4	8-14	1200	KK	B10	1								X	X		X	X	
9	SS-W-S-J-4	8-20	1000	KK	B10	1								X	X		X	X	
10	SS-W-S-J-5	8-20	1000	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date: ____ Time: ____
Date: 9/3/13 Time: 0925
BRL project ID: ____

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Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St., Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- ☒ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / As Se species (specify) EPA 1632 modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	SS-W-S-J-7	8-20	1000	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples kept frozen until shipped.
2	SS-W-S-J-8	8-20	1000	KK	B10	1								X	X		X	X	
3	SS-W-S-J-9	8-22	1000	KK	B10	1								X	X		X	X	
4	SS-W-S-J-10	8-22	1000	KK	B10	1								X	X		X	X	
5	SS-E-S-A-1	8-14	1000	KK	B10	1								X	X		X	X	
6	SS-E-S-A-2	8-20	1000	KK	B10	1								X	X		X	X	
7	SS-E-S-A-3	8-20	1000	KK	B10	1								X	X		X	X	
8	SS-E-S-A-4	8-20	1000	KK	B10	1								X	X		X	X	
9	SS-E-S-A-5	8-15	1000	KK	B10	1								X	X		X	X	
10	SS-E-S-A-6	8-22	1000	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx 1	# of coolers: 1		BRL work order ID:

Date: Time:
Date: 9/3/13 Time: 0925
BRL project ID:

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Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 1035901902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / Se species (specify) EPA 1638, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	SS-H-S-A-1	8-15	1000	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples frozen until shipped
2	SS-G1-S-A-1	8-20	1000	KK	B10	1								X	X		X	X	
3	SS-H-S-A-2	8-20	1000	KK	B10	1								X	X		X	X	
4	SS-H-S-A-3	8-20	1000	KK	B10	1								X	X		X	X	
5	SS-H-S-A-4	8-20	1000	KK	B10	1								X	X		X	X	
6	SS-H-S-A-5	8-15	1000	KK	B10	1								X	X		X	X	
7	SS-H-S-A-6	8-21	800	KK	B10	1								X	X		X	X	
8	VE-W-K-A-1	8-21	1200	KK	B10	1								X	X		X	X	
9	VE-W-K-A-2	8-21	1200	KK	B10	1								X	X		X	X	
10	VE-W-K-A-3	8-21	1200	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8.29.13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 9/3/13	Time: 0925
BRL project ID:	

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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035990231 1
PO #:

Address: 737 Bishop St, Suite 3010
Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
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Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: (As) / Se species (specify) Total As EPA 1632, Methods	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	VE-W-K-A-4	8-21	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples frozen until shipped.
2	VE-W-K-J-1	8-21	1200	KK	BIO	1								X	X		X	X	
3	VE-W-K-J-2	8-21	1200	KK	BIO	1								X	X		X	X	
4	VE-W-K-J-3	8-21	1200	KK	BIO	1								X	X		X	X	
5	VE-W-K-J-4	8-21	1200	KK	BIO	1								X	X		X	X	
6	VE-E-K-A-1	8-21	1200	KK	BIO	1								X	X		X	X	
7	VE-E-K-A-2	8-21	1200	KK	BIO	1								X	X		X	X	
8	VE-E-K-A-3	8-21	1200	KK	BIO	1								X	X		X	X	
9	VE-E-K-A-4	8-21	1200	KK	BIO	1								X	X		X	X	
10	VE-G-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	
Received by:	Date:	Time:	
Shipping carrier: FedEx	# of coolers: 1		

Relinquished by:	Date:	Time:
Received at BRL by:	Date: 9/3/13	Time: 0925
BRL work order ID:	BRL project ID:	

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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 0351902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-[redacted]-836-1689

Requested TAT in business days:
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- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As Se species (specify) EPA 1632, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify)	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	VEO-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	Homogenization Via BRL SOP BR-0106, Samples frozen until shipped
2	VES-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: Kevin Kelly	Date: 8-21-13	Time: 1100	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/3/13	Time: 0925
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:	BRL project ID:	

FedEx Express NEW Package US Airb

FedEx Tracking Number 8037 [redacted] 3039

1 From

Date 8-29-13 [redacted]

Sender's Name Kevin Kell Phone 808 352-0742

Company Tetra Tech, Inc

Address 737 Bishop St Suite 3010

Dept./Floor/Suite/Room

City Honolulu State HI ZIP 96813

2 Your Internal Billing Referen

3 To

Recipient's Name B Lydia * Phone

Company Brooks Rand Lab

Address 3958 6th Ave NW

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Seattle State WA ZIP 98107

HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8037 2109 3039

4 Express Packa

NOTE: Service order ha

Next Business Da

FedEx First Overni Earliest next business mor locations. Friday shipment Monday unless SATURDA

FedEx Priority Ove Next business morning.* F delivered on Monday unle is selected.

FedEx Standard O Next business afternoon.* Saturday Delivery NOT av

5 Packaging

FedEx Envelope*

6 Special Hand

SATURDAY Deliv NOT available for FedEx

No Signature Re Package may be left wit obtaining a signature for

Does this shipment contain dangerous goods?

One box must be checked.

No

Yes As per attached Shipper's Declaration.

Yes Shipper's Declaration not required.

Dry Ice Dry ice, 9, UN 1845 5 kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender Acct. No. in Section 1 will be billed.

Recipient

Third Party

Credit Card

Cash/Check

Obtain recip. Acct. No.

[redacted]

Total Packages 1 Total Weight 31 lbs.

[redacted] Credit Card Auth.

†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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BROOKS RAND LABS
3958 6TH AVE NW

SEATTLE WA 98107
(206) 632-6206
INV:
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DEPT:

BILL SENDER

BRL Report 336005

FedEx Express

TRK# 0200 8037 2109 3039

FRI - 30 AUG 10:30A
PRIORITY OVERNIGHT
ICE
98107
WA-US SEA

WV BFIA

Not Lift ps

October 31, 2013

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Avenue
Hilo, HI 96720
john.peard@doh.hawaii.gov

RE: Project HDH-HL1301
Client Project: 10351902311 (Waiakea Pond; Tetra Tech Work Order 1097688)

Dear Mr. Peard,

On September 10, 2013, Brooks Rand Labs (BRL) received sixteen (16) biota samples. The samples arrived on dry ice at a temperature of -10.0 °C. The samples were logged-in for the analyses of total recoverable arsenic (As), percent total solids (%TS), and arsenic speciation, contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs), according to the chain-of-custody (COC) forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a dry-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL, the RPD was not calculated (**N/C**).

Based on our internal research, it is possible some of the arsenobetaine (an organic form of As) found in biota samples can be converted to DMAs during the sample digestion process, resulting in a potential high bias for DMAs results.

Only one QC set was prepared and analyzed for this work order, but an additional QC set was included with the previous work order of biota samples (13360023), resulting in the proper frequency of QC samples for the two work orders combined (2 sets for 19 samples).

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Michelle L. Briscoe
President
michelle@brooksrand.com

Tiffany Stilwater
Client Services Manager
tiffany@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
WP-DU-4-Algae	1337007-01	Algae	Sample	09/03/2013	09/10/2013
WP-DU-5-Algae	1337007-02	Algae	Sample	09/03/2013	09/10/2013
LW-DU-C-Algae	1337007-03	Algae	Sample	09/03/2013	09/10/2013
MC-W-C-A-1	1337007-04	fish	Sample	09/03/2013	09/10/2013
MC-W-C-A-2	1337007-05	fish	Sample	09/03/2013	09/10/2013
MC-W-C-A-3	1337007-06	fish	Sample	09/03/2013	09/10/2013
MC-W-C-A-4	1337007-07	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-1	1337007-08	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-2	1337007-09	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-3	1337007-10	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-4	1337007-11	fish	Sample	09/03/2013	09/10/2013
MC-G-C-A-1	1337007-12	fish	Sample	09/03/2013	09/10/2013
MC-O-C-A-1	1337007-13	fish	Sample	09/03/2013	09/10/2013
MC-S-C-A-1	1337007-14	fish	Sample	09/03/2013	09/10/2013
SS-W-C-J-1	1337007-15	fish	Sample	08/28/2013	09/10/2013
SS-W-C-J-2	1337007-16	fish	Sample	08/28/2013	09/10/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	10/02/2013	10/07/2013	B131565	N/A
As	Biota	EPA 1638 DRC	09/26/2013	10/01/2013	B131501	1300666
As(Inorg)	Biota	EPA 1632	10/22/2013	10/23/2013	B131562	1300720
DMAs	Biota	EPA 1632	10/27/2013	10/28/2013	B131563	1300733
MMAs	Biota	EPA 1632	10/27/2013	10/28/2013	B131564	1300734

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
LW-DU-C-Algae										
1337007-03	%TS	Algae	NA	10.30		0.01	0.04	%	B131565	N/A
1337007-03	As	Algae	wet	0.426		0.013	0.036	mg/kg	B131501	1300666
1337007-03	As(Inorg)	Algae	wet	0.004	U	0.004	0.009	mg/kg	B131562	1300720
1337007-03	DMAs	Algae	wet	0.126		0.004	0.012	mg/kg	B131563	1300733
1337007-03	MMAs	Algae	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734
MC-E-C-A-1										
1337007-08	%TS	fish	NA	32.71		0.01	0.04	%	B131565	N/A
1337007-08	As	fish	wet	0.553		0.013	0.037	mg/kg	B131501	1300666
1337007-08	As(Inorg)	fish	wet	0.004	U	0.004	0.009	mg/kg	B131562	1300720
1337007-08	DMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131563	1300733
1337007-08	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734
MC-E-C-A-2										
1337007-09	%TS	fish	NA	36.19		0.01	0.04	%	B131565	N/A
1337007-09	As	fish	wet	0.793		0.013	0.038	mg/kg	B131501	1300666
1337007-09	As(Inorg)	fish	wet	0.004	U	0.004	0.009	mg/kg	B131562	1300720
1337007-09	DMAs	fish	wet	0.010	B	0.004	0.011	mg/kg	B131563	1300733
1337007-09	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131564	1300734
MC-E-C-A-3										
1337007-10	%TS	fish	NA	29.36		0.01	0.04	%	B131565	N/A
1337007-10	As	fish	wet	0.608		0.013	0.037	mg/kg	B131501	1300666
1337007-10	As(Inorg)	fish	wet	0.003	U	0.003	0.009	mg/kg	B131562	1300720
1337007-10	DMAs	fish	wet	0.012		0.003	0.010	mg/kg	B131563	1300733
1337007-10	MMAs	fish	wet	0.003	U	0.003	0.010	mg/kg	B131564	1300734
MC-E-C-A-4										
1337007-11	%TS	fish	NA	34.67		0.01	0.04	%	B131565	N/A
1337007-11	As	fish	wet	1.12		0.013	0.037	mg/kg	B131501	1300666
1337007-11	As(Inorg)	fish	wet	0.003	U	0.003	0.009	mg/kg	B131562	1300720
1337007-11	DMAs	fish	wet	0.023		0.004	0.012	mg/kg	B131563	1300733
1337007-11	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-G-C-A-1										
1337007-12	%TS	fish	NA	29.41		0.01	0.04	%	B131565	N/A
1337007-12	As	fish	wet	0.981		0.012	0.035	mg/kg	B131501	1300666
1337007-12	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131562	1300720
1337007-12	DMAs	fish	wet	0.031		0.004	0.011	mg/kg	B131563	1300733
1337007-12	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131564	1300734
MC-O-C-A-1										
1337007-13	%TS	fish	NA	35.33		0.01	0.04	%	B131565	N/A
1337007-13	As	fish	wet	1.97		0.013	0.038	mg/kg	B131501	1300666
1337007-13	As(Inorg)	fish	wet	0.003	U	0.003	0.009	mg/kg	B131562	1300720
1337007-13	DMAs	fish	wet	0.048		0.004	0.011	mg/kg	B131563	1300733
1337007-13	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131564	1300734
MC-S-C-A-1										
1337007-14	%TS	fish	NA	57.76		0.01	0.04	%	B131565	N/A
1337007-14	As	fish	wet	0.130		0.014	0.040	mg/kg	B131501	1300666
1337007-14	As(Inorg)	fish	wet	0.003	U	0.003	0.009	mg/kg	B131562	1300720
1337007-14	DMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131563	1300733
1337007-14	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734
MC-W-C-A-1										
1337007-04	%TS	fish	NA	36.81		0.01	0.04	%	B131565	N/A
1337007-04	As	fish	wet	0.666		0.014	0.039	mg/kg	B131501	1300666
1337007-04	As(Inorg)	fish	wet	0.004	U	0.004	0.009	mg/kg	B131562	1300720
1337007-04	DMAs	fish	wet	0.008	B	0.004	0.012	mg/kg	B131563	1300733
1337007-04	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734
MC-W-C-A-2										
1337007-05	%TS	fish	NA	31.95		0.01	0.04	%	B131565	N/A
1337007-05	As	fish	wet	0.748		0.014	0.039	mg/kg	B131501	1300666
1337007-05	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131562	1300720
1337007-05	DMAs	fish	wet	0.005	B	0.003	0.010	mg/kg	B131563	1300733
1337007-05	MMAs	fish	wet	0.003	U	0.003	0.010	mg/kg	B131564	1300734

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-W-C-A-3										
1337007-06	%TS	fish	NA	37.98		0.01	0.04	%	B131565	N/A
1337007-06	As	fish	wet	1.07		0.012	0.035	mg/kg	B131501	1300666
1337007-06	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131562	1300720
1337007-06	DMAs	fish	wet	0.008	B	0.004	0.012	mg/kg	B131563	1300733
1337007-06	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734
MC-W-C-A-4										
1337007-07	%TS	fish	NA	36.71		0.01	0.04	%	B131565	N/A
1337007-07	As	fish	wet	1.10		0.013	0.036	mg/kg	B131501	1300666
1337007-07	As(Inorg)	fish	wet	0.004	U	0.004	0.010	mg/kg	B131562	1300720
1337007-07	DMAs	fish	wet	0.013		0.004	0.011	mg/kg	B131563	1300733
1337007-07	MMAs	fish	wet	0.004	U	0.004	0.011	mg/kg	B131564	1300734
SS-W-C-J-1										
1337007-15	%TS	fish	NA	35.13		0.01	0.04	%	B131565	N/A
1337007-15	As	fish	wet	4.88		0.012	0.035	mg/kg	B131501	1300666
1337007-15	As(Inorg)	fish	wet	0.089		0.004	0.010	mg/kg	B131562	1300720
1337007-15	DMAs	fish	wet	1.16		0.308	0.923	mg/kg	B131563	1300733
1337007-15	MMAs	fish	wet	0.004	U	0.004	0.012	mg/kg	B131564	1300734
SS-W-C-J-2										
1337007-16	%TS	fish	NA	41.39		0.01	0.04	%	B131565	N/A
1337007-16	As	fish	wet	4.69		0.013	0.036	mg/kg	B131501	1300666
1337007-16	As(Inorg)	fish	wet	0.110		0.003	0.008	mg/kg	B131562	1300720
1337007-16	DMAs	fish	wet	1.06		0.070	0.209	mg/kg	B131563	1300733
1337007-16	MMAs	fish	wet	0.070	U	0.070	0.209	mg/kg	B131564	1300734
WP-DU-4-Algae										
1337007-01	%TS	Algae	NA	12.88		0.01	0.04	%	B131565	N/A
1337007-01	As	Algae	wet	3.37		0.014	0.039	mg/kg	B131501	1300666
1337007-01	As(Inorg)	Algae	wet	2.52		0.138	0.345	mg/kg	B131562	1300720
1337007-01	DMAs	Algae	wet	0.188		0.006	0.019	mg/kg	B131563	1300733
1337007-01	MMAs	Algae	wet	0.006	U	0.006	0.019	mg/kg	B131564	1300734

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WP-DU-5-Algae										
1337007-02	%TS	Algae	NA	17.66		0.01	0.04	%	B131565	N/A
1337007-02	As	Algae	wet	2.92		0.013	0.038	mg/kg	B131501	1300666
1337007-02	As(Inorg)	Algae	wet	4.31		0.146	0.365	mg/kg	B131562	1300720
1337007-02	DMAs	Algae	wet	0.381		0.016	0.047	mg/kg	B131563	1300733
1337007-02	MMAs	Algae	wet	0.016	U	0.016	0.047	mg/kg	B131564	1300734

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Accuracy & Precision Summary

Batch: B131501
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131501-BS1	**Laboratory Fortified Blank (1339057)**								
	As		6.000	6.541	mg/kg	109%	75-125		
B131501-SRM1	**Certified Reference Material (1245076, DORM-4)**								
	As		6.880	6.970	mg/kg	101%	75-125		
B131501-SRM2	**Certified Reference Material (0822035, NIST 1547 - peach leaves)**								
	As		0.06000	0.067	mg/kg	112%	75-125		
B131501-DUP2	**Duplicate (1337007-04)**								
	As	0.666		0.713	mg/kg			7%	30
B131501-MS2	**Matrix Spike (1337007-04)**								
	As	0.666	5.792	7.264	mg/kg	114%	70-130		
B131501-MSD2	**Matrix Spike Duplicate (1337007-04)**								
	As	0.666	5.725	7.424	mg/kg	118%	70-130	2%	30

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Accuracy & Precision Summary

Batch: B131562
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131562-BS1	**Laboratory Fortified Blank (1339012)**								
	As(Inorg)		0.1000	0.098	mg/kg	98%	65-135		
B131562-SRM1	**Certified Reference Material (1337024, NIST 1568b)**								
	As(Inorg)		0.09200	0.094	mg/kg	102%	75-125		
B131562-DUP2	**Duplicate (1337007-12)**								
	As(Inorg)	ND		ND	mg/kg			N/C	35
B131562-MS2	**Matrix Spike (1337007-12)**								
	As(Inorg)	ND	0.08720	0.077	mg/kg	88%	65-135		
B131562-MSD2	**Matrix Spike Duplicate (1337007-12)**								
	As(Inorg)	ND	0.09656	0.083	mg/kg	86%	65-135	7%	35

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Accuracy & Precision Summary

Batch: B131563
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131563-BS1	**Laboratory Fortified Blank (1341048)**								
	DMAs		0.1000	0.110	mg/kg	110%	60-140		
B131563-DUP2	**Duplicate (1337007-12)**								
	DMAs	0.031		0.034	mg/kg			9%	35
B131563-MS2	**Matrix Spike (1337007-12)**								
	DMAs	0.031	0.09703	0.128	mg/kg	100%	60-140		
B131563-MSD2	**Matrix Spike Duplicate (1337007-12)**								
	DMAs	0.031	0.09897	0.146	mg/kg	116%	60-140	13%	35

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Accuracy & Precision Summary

Batch: B131564
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B131564-BS1	**Laboratory Fortified Blank (1341047)**								
	MMAs		0.1000	0.086	mg/kg	86%	60-140		
B131564-DUP2	**Duplicate (1337007-12)**								
	MMAs	ND		ND	mg/kg			N/C	25
B131564-MS2	**Matrix Spike (1337007-12)**								
	MMAs	ND	0.09703	0.070	mg/kg	72%	60-140		
B131564-MSD2	**Matrix Spike Duplicate (1337007-12)**								
	MMAs	ND	0.09897	0.078	mg/kg	79%	60-140	11%	25

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Accuracy & Precision Summary

Batch: B131565
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B131565-DUP2	**Duplicate (1337007-12)**						
	%TS	29.41		28.40	%		3% 15

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Method Blanks & Reporting Limits

Batch: B131501
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B131501-BLK1	0.009	mg/kg
B131501-BLK2	-0.001	mg/kg
B131501-BLK3	-0.002	mg/kg
B131501-BLK4	-0.003	mg/kg

Average: 0.001 **Standard Deviation:** 0.006 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

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Method Blanks & Reporting Limits

Batch: B131562
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B131562-BLK1	-0.0002	mg/kg
B131562-BLK2	0.0006	mg/kg
B131562-BLK3	0.0006	mg/kg
B131562-BLK4	0.0002	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Method Blanks & Reporting Limits

Batch: B131563
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B131563-BLK1	0.0007	mg/kg
B131563-BLK2	0.001	mg/kg
B131563-BLK3	0.0009	mg/kg
B131563-BLK4	0.002	mg/kg

Average: 0.001 **Standard Deviation:** 0.001 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Method Blanks & Reporting Limits

Batch: B131564
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B131564-BLK1	0.00	mg/kg
B131564-BLK2	0.00	mg/kg
B131564-BLK3	0.00	mg/kg
B131564-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Method Blanks & Reporting Limits

Batch: B131565
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B131565-BLK1	-0.05	%
B131565-BLK2	-0.04	%

Average: -0.05
Limit: 1.00

MDL: 0.30
MRL: 1.00

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1097688

Sample Containers

Lab ID: 1337007-01
Sample: WP-DU-4-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-02
Sample: WP-DU-5-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-03
Sample: LW-DU-C-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-04
Sample: MC-W-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-05
Sample: MC-W-C-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-06
Sample: MC-W-C-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Sample Containers

Lab ID: 1337007-07
Sample: MC-W-C-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-08
Sample: MC-E-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-09
Sample: MC-E-C-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-10
Sample: MC-E-C-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-11
Sample: MC-E-C-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-12
Sample: MC-G-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Sample Containers

Lab ID: 1337007-13
Sample: MC-O-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-14
Sample: MC-S-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-15
Sample: SS-W-C-J-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/28/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-16
Sample: SS-W-C-J-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/28/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Shipping Containers

Cooler

Received: September 10, 2013 9:10
Tracking No: 803721089183 via FedEx
Coolant Type: Dry Ice
Temperature: -10.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

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MEANINGFUL METALS DATA
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Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1337007

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035190231 1
PO #: (Quote: HOH-HL001)

Address: 737 Bishop St., Suite 3010
Honolulu, HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify) Total As EPA 1638M	Analyses required: Inorganic As and As species (specify) MMA, DMA, EPA 1632	Analyses required: % Solids SM 2540G	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	WP-DU-4-Algae	9-3-13	1030	KK	BIO	1	NA	X					X	X	X				Homogenization via BRL SOP BR-0106; All samples kept frozen until shipping
2	WP-DV-5-Algae	9-3-13	1130	KK	BIO	1		X					X	X	X				
3	WP-DV-C-Algae	9-3-13	0830	KK	BIO	1		X					X	X	X				
4	MC-W-C-A-1	9-3-13	0830	KK	BIO	1		X					X	X	X				
5	MC-W-C-A-2	9-3-13	0830	KK	BIO	1		X					X	X	X				
6	MC-W-C-A-3	9-3-13	0830	KK	BIO	1		X					X	X	X				
7	MC-W-C-A-4	9-3-13	0830	KK	BIO	1		X					X	X	X				
8	MC-E-C-A-1	9-3-13	0830	KK	BIO	1		X					X	X	X				
9	MC-E-C-A-2	9-3-13	0830	KK	BIO	1		X					X	X	X				
10	MC-E-C-A-3	9-3-13	0830	KK	BIO	1	NA	X					X	X	X				

Relinquished by: JP	Date: 9/9/13	Time: AM	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FED EX	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 9/10/13	Time: 0910
BRL project ID:	

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Phone: 206-632-6206
Fax: 206-632-6017
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Chain of Custody Record

BRL Report 1337007

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 103519702311
PO #: (quote: HDH-HL001)

Address: 737 Bishop St., Suite 3010 Honolulu, HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	~~Total Hg, EPA 1631~~	~~Methyl Hg, EPA 1630~~	ICP-MS Metals (specify) Total As EPA 1638 M	As / Se species (specify) Inorganic As and MMA, DMA EPA 1632	% Solids SM 2540G	Filtration	Other (specify)	Other (specify)	Comments
1	MC-E-C-A-4	9-3	0830	KK	B10	1	NA	X					X	X	X				Homogenization via BRL SOP BR-0106; All samples kept frozen until shipping
2	MC-G-C-A-1	9-3	0830	KK	B10	1		X					X	X	X				
3	MC-O-C-A-1	9-3	0830	KK	B10	1		X					X	X	X				
4	MC-S-C-A-1	9-3	0830	KK	B10	1		X					X	X	X				
5	SS-W-C-J-1	8-28	1530	KK	B10	1		X					X	X	X				
6	SS-W-C-J-2	8-28	1530	KK	B10	1		X					X	X	X				
7																			
8																			
9																			
10																			

Relinquished by: JP	Date: 9/9/13	Time: AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/10/13	Time: 0910
Shipping carrier:	# of coolers:		BRL work order ID:	BRL project ID:	

October 3, 2014

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Ave
Hilo, HI 96720
John.peard@doh.hawaii.gov

RE: Project HDH-HL1401 Client Project: Waiakea Pond 2014

Dear Mr. Peard,

On September 12, 2014, Brooks Rand Labs (BRL) received three (3) fish samples. The samples were logged-in for the analyses of total arsenic (As), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) according to the chain-of-custody (COC) forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

Grain size and TOC were subcontracted to Test America – Seattle. The results can be seen in their separate report.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a wet-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL the RPD was not calculated (**N/C**).

As(Inorg) – Batch B141511
The matrix spike/matrix spike duplicate (MS/MSD) set MS2/MSD2 was only spiked for MMAs and DMAs. A PS was analyzed for As(Inorg) and met acceptance criteria.

MMAs – Batch B141513
The MS/MSD set performed on sample *MC-W-LPM-2* (1437068-02) had low recoveries. The MMAs result was qualified **N** for inaccuracy. It should be noted that the MMAs sample result was not detectable.

The analysis of one of the method blanks (BLK1) produced a result that was determined to be a Grubb's Outlier (0.007 mg/kg). This blank result was omitted and not used in any calculations. Therefore, the results were blank-corrected with the average of the three remaining method blanks.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Lydia Greaves
Project Manager
lydia@brooksrand.com

Amanda Royal
Project Manager
amanda@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/about/accreditations-certifications/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCB	continuing calibration blank	**N/C**	not calculated
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
D	dissolved fraction	**RPD**	relative percent difference
DUP	duplicate	**RSD**	relative standard deviation
IBL	instrument blank	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
MC-W-LPM-1	1437068-01	Fish	Sample	09/09/2014	09/12/2014
MC-W-LPM-2	1437068-02	Fish	Sample	09/09/2014	09/12/2014
MC-W-LPM-3	1437068-03	Fish	Sample	09/09/2014	09/12/2014

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	09/19/2014	09/22/2014	B141750	N/A
As	Biota	EPA 1638 DRC	09/23/2014	09/24/2014	B141762	1400820
As(Inorg)	Biota	EPA 1632	09/21/2014	09/22/2014	B141511	1400807
DMAs	Biota	EPA 1632	09/21/2014	09/24/2014	B141514	1400818
MMAs	Biota	EPA 1632	09/21/2014	09/24/2014	B141513	1400817

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-W-LPM-1										
1437068-01	%TS	Fish	NA	20.17		0.30	1.00	%	B141750	N/A
1437068-01	As	Fish	wet	0.261		0.014	0.039	mg/kg	B141762	1400820
1437068-01	As(Inorg)	Fish	wet	0.006	B	0.004	0.009	mg/kg	B141511	1400807
1437068-01	DMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141514	1400818
1437068-01	MMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141513	1400817
MC-W-LPM-2										
1437068-02	%TS	Fish	NA	25.38		0.30	1.00	%	B141750	N/A
1437068-02	As	Fish	wet	0.444		0.007	0.020	mg/kg	B141762	1400820
1437068-02	As(Inorg)	Fish	wet	0.007	B	0.004	0.009	mg/kg	B141511	1400807
1437068-02	DMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141514	1400818
1437068-02	MMAs	Fish	wet	0.004	N, U	0.004	0.011	mg/kg	B141513	1400817
MC-W-LPM-3										
1437068-03	%TS	Fish	NA	26.89		0.30	1.00	%	B141750	N/A
1437068-03	As	Fish	wet	0.183		0.012	0.035	mg/kg	B141762	1400820
1437068-03	As(Inorg)	Fish	wet	0.055		0.004	0.010	mg/kg	B141511	1400807
1437068-03	DMAs	Fish	wet	0.010	B	0.005	0.012	mg/kg	B141514	1400818
1437068-03	MMAs	Fish	wet	0.004	U	0.004	0.012	mg/kg	B141513	1400817

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141511
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141511-BS1	**Laboratory Fortified Blank (1435002)**						
	As(Inorg)		0.1000	0.108	mg/kg	108% 65-135	
B141511-SRM1	**Certified Reference Material (1425011, NIST 1568a)**						
	As(Inorg)		0.09200	0.096	mg/kg	105% 65-135	
B141511-SRM2	**Certified Reference Material (1337024, NIST 1568b)**						
	As(Inorg)		0.09200	0.103	mg/kg	112% 65-135	
B141511-DUP1	**Duplicate (1433032-01)**						
	As(Inorg)	0.028		0.029	mg/kg		0.5% 35
B141511-MS1	**Matrix Spike (1433032-01)**						
	As(Inorg)	0.028	0.1248	0.157	mg/kg	103% 65-135	
B141511-MSD1	**Matrix Spike Duplicate (1433032-01)**						
	As(Inorg)	0.028	0.1177	0.147	mg/kg	101% 65-135	6% 35
B141511-DUP2	**Duplicate (1437068-02)**						
	As(Inorg)	0.007		0.008	mg/kg		16% 35
B141511-PS1	**Post Spike (1437068-02)**						
	As(Inorg)	0.007	0.04433	0.050	mg/kg	98% 65-135	

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141513
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141513-BS1	**Laboratory Fortified Blank (1438011)**								
	MMAs		0.1000	0.107	mg/kg	107%	60-140		
B141513-DUP2	**Duplicate (1437068-02)**								
	MMAs	ND		ND	mg/kg			N/C	25
B141513-MS2	**Matrix Spike (1437068-02)**								
	MMAs	ND	0.4000	0.174	mg/kg	*43%*	60-140		
B141513-MSD2	**Matrix Spike Duplicate (1437068-02)**								
	MMAs	ND	0.3891	0.145	mg/kg	*37%*	60-140	18%	25

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141514
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141514-BS1	**Laboratory Fortified Blank (1438011)**						
	DMAs		0.1000	0.096	mg/kg	96% 60-140	
B141514-SRM1	**Certified Reference Material (1425011, NIST 1568a)**						
	DMAs		0.1800	0.131	mg/kg	73% 60-140	
B141514-SRM2	**Certified Reference Material (1337024, NIST 1568b)**						
	DMAs		0.1800	0.117	mg/kg	65% 60-140	
B141514-DUP2	**Duplicate (1437068-02)**						
	DMAs	ND		ND	mg/kg		N/C 35
B141514-MS2	**Matrix Spike (1437068-02)**						
	DMAs	ND	0.4000	0.378	mg/kg	95% 60-140	
B141514-MSD2	**Matrix Spike Duplicate (1437068-02)**						
	DMAs	ND	0.3891	0.383	mg/kg	98% 60-140	1% 35

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141750
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141750-DUP1	**Duplicate (1437068-02)**						
	%TS	25.38		26.24	%		3% 15

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141762
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141762-BS1	**Laboratory Fortified Blank (1439035)**						
	As		5.000	4.654	mg/kg	93% 75-125	
B141762-SRM1	**Certified Reference Material (1426021, TORT-3)**						
	As		59.50	60.28	mg/kg	101% 75-125	
B141762-SRM2	**Certified Reference Material (1421022, DORM-4)**						
	As		6.800	6.082	mg/kg	89% 75-125	
B141762-DUP1	**Duplicate (1437068-01)**						
	As	0.261		0.262	mg/kg		0.4% 30
B141762-MS1	**Matrix Spike (1437068-01)**						
	As	0.261	3.938	4.223	mg/kg	101% 70-130	
B141762-MSD1	**Matrix Spike Duplicate (1437068-01)**						
	As	0.261	3.925	4.604	mg/kg	111% 70-130	9% 30

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141511
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B141511-BLK1	-0.0006	mg/kg
B141511-BLK2	-0.0003	mg/kg
B141511-BLK3	-0.001	mg/kg
B141511-BLK4	0.0001	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141513
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B141513-BLK2	0.00	mg/kg
B141513-BLK3	0.00	mg/kg
B141513-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141514
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141514-BLK1	0.00	mg/kg
B141514-BLK2	0.00	mg/kg
B141514-BLK3	0.00	mg/kg
B141514-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141750
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B141750-BLK1	-0.09	%
B141750-BLK2	-0.06	%

Average: -0.08
Limit: 1.00

MDL: 0.30
MRL: 1.00

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141762
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B141762-BLK1	0.012	mg/kg
B141762-BLK2	0.009	mg/kg
B141762-BLK3	0.009	mg/kg
B141762-BLK4	0.007	mg/kg

Average: 0.009 **Standard Deviation:** 0.002 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1437068-01
Sample: MC-W-LPM-1
Report Matrix: Fish
Sample Type: Sample
Collected: 09/09/2014
Received: 09/12/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	N/A	not provided	none	none		Cooler

Lab ID: 1437068-02
Sample: MC-W-LPM-2
Report Matrix: Fish
Sample Type: Sample
Collected: 09/09/2014
Received: 09/12/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	N/A	not provided	none	none		Cooler

Lab ID: 1437068-03
Sample: MC-W-LPM-3
Report Matrix: Fish
Sample Type: Sample
Collected: 09/09/2014
Received: 09/12/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	N/A	not provided	none	none		Cooler

Shipping Containers

Cooler

Received: September 12, 2014 10:25
Tracking No: 803023949328 via FedEx
Coolant Type: Dry Ice
Temperature: -9.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH HEER Office (thru Tetra Tech)	Address: Hawaii District Health Office, 1582 Kamehameha Ave., Hilo, HI 96720-4623	COC receipt confirmation? (Y) / N
Contact: John Penrod, Hilo HEER Office		If so, by: (email) / fax (circle one)
Client project ID: Waiakea Pond 2014		Email: john.penrod@doh.hawaii.gov
~~PO~~#: Quote No: TET-HN001, Rev. 1	Phone #: 808-933-9921	Fax #: 808-933-0400

Requested TAT in business days:
- ☐ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only Frozen	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify) Total As EPA 1638 M Inorganic As Total	Analyses required: As / Se species (specify) mod. IC-ICP-MS EPA 1632	Analyses required: % Solids SM 2540G (5 grams)	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	MC-W-LPM-1	9/9/14	PM	DN	Bio	1	N/A	X					X	X	X				whole
2	MC-W-LPM-2	9/9/14	PM	DN	Bio	1		X					X	X	X				whole
3	MC-W-LPM-3	9/9/14	PM	DN	Bio	1		X					X	X	X				whole
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: John Penrod	Date: 9/11/14	Time: AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/12/14	Time: 1025
Shipping carrier: Fed EX	# of coolers: 1		BRL work order ID:	BRL project ID:	

October 3, 2014

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Ave
Hilo, HI 96720
John.peard@doh.hawaii.gov

RE: Project HDH-HL1401 Client Project: Waiakea Pond 2014

Dear Mr. Peard,

On September 4, 2014, Brooks Rand Labs (BRL) received eleven (11) fish, two (2) algae, seventeen (17) crabs, and two (2) sediment samples. The samples were logged-in for the analyses of total arsenic (As), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) for all samples. Sediment samples were also logged-in for multiple incremental sampling (MIS), total iron (Fe), grain size, and total organic carbon (TOC) according to the chain-of-custody (COC) forms. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

Grain size and TOC (also following the MIS procedure) were subcontracted to Test America in Tacoma, WA. The results can be seen in their separate report.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a wet-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL the RPD was not calculated (**N/C**).

In instances where a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample, the recoveries are not considered valid indicators of data quality. However, these results are reported as a demonstration of precision. When the spiking levels were ≤ 25% of the native sample concentrations, the recoveries were not reported (**NR**). No sample results were qualified on the basis of the MS or MSD recoveries.

The recovery criteria limits did not apply to specific elements when the standard reference materials (SRMs) only listed information values. The recovery limits were not applicable (N/A).

As(Inorg) – Batch B141600
The MS/MSD sets were spiked at levels less than the native sample concentrations. Due to this, MS1, MSD1 and MSD2 were not analyzed. Post-preparation spikes (PS) were analyzed instead and met acceptance criteria.

MMAs & DMAs – Batches B141601 & B141602
The MS/MSD set MS3/MSD3 was only spiked for As(Inorg). A PS was analyzed for both MMAs and DMAs and met acceptance criteria.

Total As – Batch B141624
The native result for sample *KFP-Algae-14-B* (1436027-13) and the associated DUP result yielded a 55% RPD, not meeting BRL's acceptance criteria for duplicate precision. As such, the sample result was qualified **M** for duplicate imprecision. It should be noted that this was an algae sample that included small shell fragments.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Lydia Greaves
Project Manager
lydia@brooksrand.com

Amanda Royal
Project Manager
amanda@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/about/accreditations-certifications/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCB	continuing calibration blank	**N/C**	not calculated
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
D	dissolved fraction	**RPD**	relative percent difference
DUP	duplicate	**RSD**	relative standard deviation
IBL	instrument blank	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
MC-W-PBL-14-1	1436027-01	Fish	Sample	08/19/2014	09/04/2014
MC-W-PBL-14-2	1436027-02	Fish	Sample	08/19/2014	09/04/2014
MC-W-PBL-14-3	1436027-03	Fish	Sample	08/19/2014	09/04/2014
MC-W-PBL-14-4	1436027-04	Fish	Sample	08/19/2014	09/04/2014
MC-W-PBL-14-5	1436027-05	Fish	Sample	08/19/2014	09/04/2014
MC-O-PBL-14-6	1436027-06	Fish	Sample	08/19/2014	09/04/2014
VE-W-PB-14-7	1436027-07	Fish	Sample	08/19/2014	09/04/2014
VE-W-PB-14-8	1436027-08	Fish	Sample	08/19/2014	09/04/2014
VE-W-PB-14-9	1436027-09	Fish	Sample	08/19/2014	09/04/2014
VE-W-PB-14-10	1436027-10	Fish	Sample	08/19/2014	09/04/2014
VE-O-PB-14-11	1436027-11	Fish	Sample	08/19/2014	09/04/2014
KFP-Algae-14-A	1436027-12	Algae	Sample	08/25/2014	09/04/2014
KFP-Algae-14-B	1436027-13	Algae	Sample	08/25/2014	09/04/2014
SS-W-J-HP-1	1436027-14	Crab	Sample	08/26/2014	09/04/2014
SS-W-J-HP-2	1436027-15	Crab	Sample	08/26/2014	09/04/2014
SS-W-J-HP-3	1436027-16	Crab	Sample	08/26/2014	09/04/2014
SS-W-J-HP-4	1436027-17	Crab	Sample	08/26/2014	09/04/2014
SS-W-J-HP-5	1436027-18	Crab	Sample	08/26/2014	09/04/2014
SS-M-A-HP-1A	1436027-19	Crab	Sample	08/26/2014	09/04/2014
SS-O-A-HP-1B	1436027-20	Crab	Sample	08/26/2014	09/04/2014
SS-M-A-HP-2A	1436027-21	Crab	Sample	08/26/2014	09/04/2014
SS-O-A-HP-2B	1436027-22	Crab	Sample	08/26/2014	09/04/2014
SS-M-A-HP-3A	1436027-23	Crab	Sample	08/26/2014	09/04/2014
SS-O-A-HP-3B	1436027-24	Crab	Sample	08/26/2014	09/04/2014
SS-M-A-HP-4A	1436027-25	Crab	Sample	08/26/2014	09/04/2014
SS-O-A-HP-4B	1436027-26	Crab	Sample	08/26/2014	09/04/2014
SS-M-A-HP-5A	1436027-27	Crab	Sample	08/26/2014	09/04/2014
SS-O-A-HP-5B	1436027-28	Crab	Sample	08/26/2014	09/04/2014
SS-M-A-HP-6A	1436027-29	Crab	Sample	08/26/2014	09/04/2014
SS-O-A-HP-6B	1436027-30	Crab	Sample	08/26/2014	09/04/2014
HP-DU-1A	1436027-31	Sediment	QC Sample	08/28/2014	09/04/2014
HP-DU-2A	1436027-32	Sediment	Sample	08/28/2014	09/04/2014

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	09/11/2014	09/15/2014	B141603	N/A
As	Biota	EPA 1638 DRC	09/10/2014	09/16/2014	B141624	1400792
As(Inorg)	Biota	EPA 1632	09/17/2014	09/18/2014	B141600	1400798
DMAs	Biota	EPA 1632	09/17/2014	09/20/2014	B141602	1400804
MMAs	Biota	EPA 1632	09/17/2014	09/20/2014	B141601	1400803
%TS	Soil/Sediment	SM 2540G	09/05/2014	09/29/2014	B141639	N/A
As	Soil/Sediment	EPA 1638 DRC	09/18/2014	09/23/2014	B141635	1400816
As(Inorg)	Soil/Sediment	EPA 1632	09/22/2014	09/23/2014	B141597	1400812
DMAs	Soil/Sediment	EPA 1632	09/22/2014	09/24/2014	B141606	1400818
Fe	Soil/Sediment	EPA 1638 DRC	09/18/2014	09/30/2014	B141636	1400830
MMAs	Soil/Sediment	EPA 1632	09/22/2014	09/24/2014	B141605	1400817

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
HP-DU-1A										
1436027-31	%TS	Sediment	NA	56.18		0.30	1.00	%	B141639	N/A
1436027-31	As	Sediment	dry	12.4		0.09	0.54	mg/kg	B141635	1400816
1436027-31	As(Inorg)	Sediment	dry	11.1		2.49	6.22	mg/kg	B141597	1400812
1436027-31	DMAs	Sediment	dry	0.104	U	0.104	0.249	mg/kg	B141606	1400818
1436027-31	Fe	Sediment	dry	170000		391	1500	mg/kg	B141636	1400830
1436027-31	MMAs	Sediment	dry	0.083	U	0.083	0.249	mg/kg	B141605	1400817
HP-DU-2A										
1436027-32	%TS	Sediment	NA	55.42		0.30	1.00	%	B141639	N/A
1436027-32	As	Sediment	dry	20.2		0.10	0.63	mg/kg	B141635	1400816
1436027-32	As(Inorg)	Sediment	dry	14.2		2.77	6.93	mg/kg	B141597	1400812
1436027-32	DMAs	Sediment	dry	0.115	U	0.115	0.277	mg/kg	B141606	1400818
1436027-32	Fe	Sediment	dry	181000		455	1750	mg/kg	B141636	1400830
1436027-32	MMAs	Sediment	dry	0.092	U	0.092	0.277	mg/kg	B141605	1400817
KFP-Algae-14-A										
1436027-12	%TS	Algae	NA	18.32		0.30	1.00	%	B141603	N/A
1436027-12	As	Algae	wet	0.778		0.013	0.038	mg/kg	B141624	1400792
1436027-12	As(Inorg)	Algae	wet	0.076		0.014	0.035	mg/kg	B141600	1400798
1436027-12	DMAs	Algae	wet	0.027		0.009	0.021	mg/kg	B141602	1400804
1436027-12	MMAs	Algae	wet	0.007	U	0.007	0.021	mg/kg	B141601	1400803
KFP-Algae-14-B										
1436027-13	%TS	Algae	NA	23.17		0.30	1.00	%	B141603	N/A
1436027-13	As	Algae	wet	0.601	M	0.013	0.037	mg/kg	B141624	1400792
1436027-13	As(Inorg)	Algae	wet	0.079		0.016	0.040	mg/kg	B141600	1400798
1436027-13	DMAs	Algae	wet	0.021		0.005	0.012	mg/kg	B141602	1400804
1436027-13	MMAs	Algae	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803
MC-O-PBL-14-6										
1436027-06	%TS	Fish	NA	31.73		0.30	1.00	%	B141603	N/A
1436027-06	As	Fish	wet	1.11		0.012	0.035	mg/kg	B141624	1400792
1436027-06	As(Inorg)	Fish	wet	0.012		0.004	0.009	mg/kg	B141600	1400798
1436027-06	DMAs	Fish	wet	0.005	U	0.005	0.011	mg/kg	B141602	1400804
1436027-06	MMAs	Fish	wet	0.078		0.004	0.011	mg/kg	B141601	1400803

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Client PM: John Peard
Client PO: 1108781

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
MC-W-PBL-14-1										
1436027-01	%TS	Fish	NA	37.25		0.30	1.00	%	B141603	N/A
1436027-01	As	Fish	wet	1.05		0.013	0.038	mg/kg	B141624	1400792
1436027-01	As(Inorg)	Fish	wet	0.132		0.004	0.010	mg/kg	B141600	1400798
1436027-01	DMAs	Fish	wet	0.027		0.010	0.024	mg/kg	B141602	1400804
1436027-01	MMAs	Fish	wet	0.008	U	0.008	0.024	mg/kg	B141601	1400803
MC-W-PBL-14-2										
1436027-02	%TS	Fish	NA	36.86		0.30	1.00	%	B141603	N/A
1436027-02	As	Fish	wet	0.805		0.014	0.041	mg/kg	B141624	1400792
1436027-02	As(Inorg)	Fish	wet	0.169		0.004	0.010	mg/kg	B141600	1400798
1436027-02	DMAs	Fish	wet	0.027		0.005	0.012	mg/kg	B141602	1400804
1436027-02	MMAs	Fish	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803
MC-W-PBL-14-3										
1436027-03	%TS	Fish	NA	34.24		0.30	1.00	%	B141603	N/A
1436027-03	As	Fish	wet	0.635		0.013	0.039	mg/kg	B141624	1400792
1436027-03	As(Inorg)	Fish	wet	0.007	B	0.004	0.010	mg/kg	B141600	1400798
1436027-03	DMAs	Fish	wet	0.010	B	0.005	0.011	mg/kg	B141602	1400804
1436027-03	MMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
MC-W-PBL-14-4										
1436027-04	%TS	Fish	NA	33.38		0.30	1.00	%	B141603	N/A
1436027-04	As	Fish	wet	0.779		0.013	0.037	mg/kg	B141624	1400792
1436027-04	As(Inorg)	Fish	wet	0.146		0.004	0.009	mg/kg	B141600	1400798
1436027-04	DMAs	Fish	wet	0.021		0.005	0.011	mg/kg	B141602	1400804
1436027-04	MMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
MC-W-PBL-14-5										
1436027-05	%TS	Fish	NA	32.61		0.30	1.00	%	B141603	N/A
1436027-05	As	Fish	wet	0.635		0.012	0.035	mg/kg	B141624	1400792
1436027-05	As(Inorg)	Fish	wet	0.016		0.004	0.009	mg/kg	B141600	1400798
1436027-05	DMAs	Fish	wet	0.038		0.004	0.011	mg/kg	B141602	1400804
1436027-05	MMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-M-A-HP-1A										
1436027-19	%TS	Crab	NA	17.32		0.30	1.00	%	B141603	N/A
1436027-19	As	Crab	wet	8.61		0.013	0.037	mg/kg	B141624	1400792
1436027-19	As(Inorg)	Crab	wet	0.008	B	0.003	0.009	mg/kg	B141600	1400798
1436027-19	DMAs	Crab	wet	0.023		0.004	0.010	mg/kg	B141602	1400804
1436027-19	MMAs	Crab	wet	0.003	U	0.003	0.010	mg/kg	B141601	1400803
SS-M-A-HP-2A										
1436027-21	%TS	Crab	NA	17.35		0.30	1.00	%	B141603	N/A
1436027-21	As	Crab	wet	9.75		0.014	0.041	mg/kg	B141624	1400792
1436027-21	As(Inorg)	Crab	wet	0.009	B	0.004	0.009	mg/kg	B141600	1400798
1436027-21	DMAs	Crab	wet	0.037		0.005	0.011	mg/kg	B141602	1400804
1436027-21	MMAs	Crab	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
SS-M-A-HP-3A										
1436027-23	%TS	Crab	NA	17.00		0.30	1.00	%	B141603	N/A
1436027-23	As	Crab	wet	6.85		0.014	0.039	mg/kg	B141624	1400792
1436027-23	As(Inorg)	Crab	wet	0.004	U	0.004	0.010	mg/kg	B141600	1400798
1436027-23	DMAs	Crab	wet	0.044		0.005	0.011	mg/kg	B141602	1400804
1436027-23	MMAs	Crab	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
SS-M-A-HP-4A										
1436027-25	%TS	Crab	NA	17.73		0.30	1.00	%	B141603	N/A
1436027-25	As	Crab	wet	6.49		0.012	0.035	mg/kg	B141624	1400792
1436027-25	As(Inorg)	Crab	wet	0.006	B	0.003	0.009	mg/kg	B141600	1400798
1436027-25	DMAs	Crab	wet	0.049		0.004	0.010	mg/kg	B141602	1400804
1436027-25	MMAs	Crab	wet	0.003	U	0.003	0.010	mg/kg	B141601	1400803
SS-M-A-HP-5A										
1436027-27	%TS	Crab	NA	19.95		0.30	1.00	%	B141603	N/A
1436027-27	As	Crab	wet	8.19		0.013	0.036	mg/kg	B141624	1400792
1436027-27	As(Inorg)	Crab	wet	0.004	U	0.004	0.009	mg/kg	B141600	1400798
1436027-27	DMAs	Crab	wet	0.172		0.009	0.022	mg/kg	B141602	1400804
1436027-27	MMAs	Crab	wet	0.007	U	0.007	0.022	mg/kg	B141601	1400803

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Client PO: 1108781

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-M-A-HP-6A										
1436027-29	%TS	Crab	NA	16.01		0.30	1.00	%	B141603	N/A
1436027-29	As	Crab	wet	3.72		0.014	0.039	mg/kg	B141624	1400792
1436027-29	As(Inorg)	Crab	wet	0.003	U	0.003	0.008	mg/kg	B141600	1400798
1436027-29	DMAs	Crab	wet	0.130		0.008	0.020	mg/kg	B141602	1400804
1436027-29	MMAs	Crab	wet	0.007	U	0.007	0.020	mg/kg	B141601	1400803
SS-O-A-HP-1B										
1436027-20	%TS	Crab	NA	15.77		0.30	1.00	%	B141603	N/A
1436027-20	As	Crab	wet	2.92		0.014	0.040	mg/kg	B141624	1400792
1436027-20	As(Inorg)	Crab	wet	0.006	B	0.004	0.009	mg/kg	B141600	1400798
1436027-20	DMAs	Crab	wet	0.017		0.005	0.011	mg/kg	B141602	1400804
1436027-20	MMAs	Crab	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
SS-O-A-HP-2B										
1436027-22	%TS	Crab	NA	13.20		0.30	1.00	%	B141603	N/A
1436027-22	As	Crab	wet	4.18		0.012	0.035	mg/kg	B141624	1400792
1436027-22	As(Inorg)	Crab	wet	0.009	B	0.003	0.009	mg/kg	B141600	1400798
1436027-22	DMAs	Crab	wet	0.038		0.004	0.010	mg/kg	B141602	1400804
1436027-22	MMAs	Crab	wet	0.003	U	0.003	0.010	mg/kg	B141601	1400803
SS-O-A-HP-3B										
1436027-24	%TS	Crab	NA	21.54		0.30	1.00	%	B141603	N/A
1436027-24	As	Crab	wet	3.13		0.012	0.035	mg/kg	B141624	1400792
1436027-24	As(Inorg)	Crab	wet	0.011		0.004	0.010	mg/kg	B141600	1400798
1436027-24	DMAs	Crab	wet	0.035		0.005	0.012	mg/kg	B141602	1400804
1436027-24	MMAs	Crab	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803
SS-O-A-HP-4B										
1436027-26	%TS	Crab	NA	16.50		0.30	1.00	%	B141603	N/A
1436027-26	As	Crab	wet	3.07		0.014	0.040	mg/kg	B141624	1400792
1436027-26	As(Inorg)	Crab	wet	0.013		0.004	0.010	mg/kg	B141600	1400798
1436027-26	DMAs	Crab	wet	0.037		0.005	0.012	mg/kg	B141602	1400804
1436027-26	MMAs	Crab	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803

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Client PO: 1108781

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-O-A-HP-5B										
1436027-28	%TS	Crab	NA	34.54		0.30	1.00	%	B141603	N/A
1436027-28	As	Crab	wet	4.68		0.014	0.041	mg/kg	B141624	1400792
1436027-28	As(Inorg)	Crab	wet	0.015		0.004	0.010	mg/kg	B141600	1400798
1436027-28	DMAs	Crab	wet	0.083		0.005	0.012	mg/kg	B141602	1400804
1436027-28	MMAs	Crab	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803
SS-O-A-HP-6B										
1436027-30	%TS	Crab	NA	18.05		0.30	1.00	%	B141603	N/A
1436027-30	As	Crab	wet	2.87		0.014	0.040	mg/kg	B141624	1400792
1436027-30	As(Inorg)	Crab	wet	0.023		0.004	0.010	mg/kg	B141600	1400798
1436027-30	DMAs	Crab	wet	0.064		0.005	0.012	mg/kg	B141602	1400804
1436027-30	MMAs	Crab	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803
SS-W-J-HP-1										
1436027-14	%TS	Crab	NA	30.92		0.30	1.00	%	B141603	N/A
1436027-14	As	Crab	wet	1.95		0.013	0.038	mg/kg	B141624	1400792
1436027-14	As(Inorg)	Crab	wet	0.052		0.004	0.009	mg/kg	B141600	1400798
1436027-14	DMAs	Crab	wet	0.058		0.005	0.011	mg/kg	B141602	1400804
1436027-14	MMAs	Crab	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
SS-W-J-HP-2										
1436027-15	%TS	Crab	NA	33.50		0.30	1.00	%	B141603	N/A
1436027-15	As	Crab	wet	1.15		0.013	0.036	mg/kg	B141624	1400792
1436027-15	As(Inorg)	Crab	wet	0.045		0.004	0.009	mg/kg	B141600	1400798
1436027-15	DMAs	Crab	wet	0.051		0.009	0.022	mg/kg	B141602	1400804
1436027-15	MMAs	Crab	wet	0.007	U	0.007	0.022	mg/kg	B141601	1400803
SS-W-J-HP-3										
1436027-16	%TS	Crab	NA	24.02		0.30	1.00	%	B141603	N/A
1436027-16	As	Crab	wet	0.620		0.014	0.040	mg/kg	B141624	1400792
1436027-16	As(Inorg)	Crab	wet	0.034		0.004	0.009	mg/kg	B141600	1400798
1436027-16	DMAs	Crab	wet	0.030		0.005	0.011	mg/kg	B141602	1400804
1436027-16	MMAs	Crab	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-W-J-HP-4										
1436027-17	%TS	Crab	NA	29.18		0.30	1.00	%	B141603	N/A
1436027-17	As	Crab	wet	1.98		0.014	0.040	mg/kg	B141624	1400792
1436027-17	As(Inorg)	Crab	wet	0.081		0.003	0.009	mg/kg	B141600	1400798
1436027-17	DMAs	Crab	wet	0.077		0.004	0.010	mg/kg	B141602	1400804
1436027-17	MMAs	Crab	wet	0.003	U	0.003	0.010	mg/kg	B141601	1400803
SS-W-J-HP-5										
1436027-18	%TS	Crab	NA	38.84		0.30	1.00	%	B141603	N/A
1436027-18	As	Crab	wet	2.31		0.013	0.038	mg/kg	B141624	1400792
1436027-18	As(Inorg)	Crab	wet	0.065		0.003	0.009	mg/kg	B141600	1400798
1436027-18	DMAs	Crab	wet	0.099		0.009	0.020	mg/kg	B141602	1400804
1436027-18	MMAs	Crab	wet	0.007	U	0.007	0.020	mg/kg	B141601	1400803
VE-O-PB-14-11										
1436027-11	%TS	Fish	NA	35.39		0.30	1.00	%	B141603	N/A
1436027-11	As	Fish	wet	6.29		0.013	0.038	mg/kg	B141624	1400792
1436027-11	As(Inorg)	Fish	wet	1.19		0.040	0.100	mg/kg	B141600	1400798
1436027-11	DMAs	Fish	wet	0.447		0.020	0.048	mg/kg	B141602	1400804
1436027-11	MMAs	Fish	wet	0.016	U	0.016	0.048	mg/kg	B141601	1400803
VE-W-PB-14-10										
1436027-10	%TS	Fish	NA	30.48		0.30	1.00	%	B141603	N/A
1436027-10	As	Fish	wet	1.79		0.013	0.036	mg/kg	B141624	1400792
1436027-10	As(Inorg)	Fish	wet	0.102		0.004	0.009	mg/kg	B141600	1400798
1436027-10	DMAs	Fish	wet	0.129		0.009	0.023	mg/kg	B141602	1400804
1436027-10	MMAs	Fish	wet	0.008	U	0.008	0.023	mg/kg	B141601	1400803
VE-W-PB-14-7										
1436027-07	%TS	Fish	NA	30.96		0.30	1.00	%	B141603	N/A
1436027-07	As	Fish	wet	1.58		0.013	0.038	mg/kg	B141624	1400792
1436027-07	As(Inorg)	Fish	wet	0.105		0.004	0.010	mg/kg	B141600	1400798
1436027-07	DMAs	Fish	wet	0.092		0.005	0.012	mg/kg	B141602	1400804
1436027-07	MMAs	Fish	wet	0.004	U	0.004	0.012	mg/kg	B141601	1400803

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
VE-W-PB-14-8										
1436027-08	%TS	Fish	NA	29.61		0.30	1.00	%	B141603	N/A
1436027-08	As	Fish	wet	1.30		0.014	0.041	mg/kg	B141624	1400792
1436027-08	As(Inorg)	Fish	wet	0.052		0.004	0.009	mg/kg	B141600	1400798
1436027-08	DMAs	Fish	wet	0.097		0.004	0.011	mg/kg	B141602	1400804
1436027-08	MMAs	Fish	wet	0.004	U	0.004	0.011	mg/kg	B141601	1400803
VE-W-PB-14-9										
1436027-09	%TS	Fish	NA	29.81		0.30	1.00	%	B141603	N/A
1436027-09	As	Fish	wet	1.22		0.013	0.038	mg/kg	B141624	1400792
1436027-09	As(Inorg)	Fish	wet	0.056		0.004	0.009	mg/kg	B141600	1400798
1436027-09	DMAs	Fish	wet	0.082		0.009	0.021	mg/kg	B141602	1400804
1436027-09	MMAs	Fish	wet	0.007	U	0.007	0.021	mg/kg	B141601	1400803

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Accuracy & Precision Summary

Batch: B141597
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141597-BS1	**Laboratory Fortified Blank (1435006)**						
	As(Inorg)		0.1003	0.110	mg/kg	109% 65-135	
B141597-SRM1	**Certified Reference Material (1408014, MESS-3)**						
	As(Inorg)		18.67	17.14	mg/kg	92% 65-135	
B141597-DUP2	**Duplicate (1436027-31)**						
	As(Inorg)	11.07		9.423	mg/kg		16% 35
B141597-MS2	**Matrix Spike (1436027-31)**						
	As(Inorg)	11.07	748.0	678.1	mg/kg	89% 65-135	
B141597-MSD2	**Matrix Spike Duplicate (1436027-31)**						
	As(Inorg)	11.07	727.2	671.5	mg/kg	91% 65-135	1% 35

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Accuracy & Precision Summary

Batch: B141600
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141600-BS1	**Laboratory Fortified Blank (1435002)**						
	As(Inorg)		0.1000	0.101	mg/kg	101% 65-135	
B141600-SRM1	**Certified Reference Material (1425011, NIST 1568a)**						
	As(Inorg)		0.09200	0.099	mg/kg	107% 65-135	
B141600-SRM2	**Certified Reference Material (1337024, NIST 1568b)**						
	As(Inorg)		0.09200	0.100	mg/kg	109% 65-135	
B141600-DUP1	**Duplicate (1436027-15)**						
	As(Inorg)	0.045		0.041	mg/kg		9% 35
B141600-PS1	**Post Spike (1436027-15)**						
	As(Inorg)	0.045	0.09091	0.132	mg/kg	95% 65-135	
B141600-DUP2	**Duplicate (1436027-21)**						
	As(Inorg)	0.009		ND	mg/kg		N/C 35
B141600-MS2	**Matrix Spike (1436027-21)**						
	As(Inorg)	0.009	.0009728	0.010	mg/kg	NR 65-135	
B141600-PS2	**Post Spike (1436027-21)**						
	As(Inorg)	0.009	0.04537	0.055	mg/kg	100% 65-135	
B141600-PS3	**Post Spike (1436027-26)**						
	As(Inorg)	0.013	0.04826	0.063	mg/kg	103% 65-135	

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141601
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141601-BS1	**Laboratory Fortified Blank (1438011)**								
	MMAs		0.06000	0.066	mg/kg	110%	60-140		
B141601-DUP1	**Duplicate (1436027-01)**								
	MMAs	ND		ND	mg/kg			N/C	25
B141601-MS1	**Matrix Spike (1436027-01)**								
	MMAs	ND	0.5435	0.408	mg/kg	75%	60-140		
B141601-MSD1	**Matrix Spike Duplicate (1436027-01)**								
	MMAs	ND	0.5455	0.500	mg/kg	92%	60-140	20%	25
B141601-DUP2	**Duplicate (1436027-12)**								
	MMAs	ND		ND	mg/kg			N/C	25
B141601-MS2	**Matrix Spike (1436027-12)**								
	MMAs	ND	0.5803	0.612	mg/kg	106%	60-140		
B141601-MSD2	**Matrix Spike Duplicate (1436027-12)**								
	MMAs	ND	0.5976	0.653	mg/kg	109%	60-140	6%	25
B141601-DUP3	**Duplicate (1436027-15)**								
	MMAs	ND		ND	mg/kg			N/C	25
B141601-PS1	**Post Spike (1436027-15)**								
	MMAs	ND	0.09091	0.086	mg/kg	95%	60-140		

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141602
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141602-BS1	**Laboratory Fortified Blank (1438011)**						
	DMAs		0.06000	0.051	mg/kg	84% 60-140	
B141602-SRM1	**Certified Reference Material (1425011, NIST 1568a)**						
	DMAs		0.1800	0.152	mg/kg	84% 60-140	
B141602-SRM2	**Certified Reference Material (1337024, NIST 1568b)**						
	DMAs		0.1800	0.119	mg/kg	66% 60-140	
B141602-DUP5	**Duplicate (1436027-01)**						
	DMAs	0.027		0.033	mg/kg		19% 35
B141602-MS1	**Matrix Spike (1436027-01)**						
	DMAs	0.027	0.5435	0.570	mg/kg	100% 60-140	
B141602-MSD1	**Matrix Spike Duplicate (1436027-01)**						
	DMAs	0.027	0.5455	0.543	mg/kg	95% 60-140	5% 35
B141602-DUP2	**Duplicate (1436027-12)**						
	DMAs	0.027		0.020	mg/kg		28% 35
B141602-MS2	**Matrix Spike (1436027-12)**						
	DMAs	0.027	0.5803	0.416	mg/kg	67% 60-140	
B141602-MSD2	**Matrix Spike Duplicate (1436027-12)**						
	DMAs	0.027	0.5976	0.481	mg/kg	76% 60-140	15% 35
B141602-DUP3	**Duplicate (1436027-15)**						
	DMAs	0.051		0.047	mg/kg		7% 35
B141602-PS1	**Post Spike (1436027-15)**						
	DMAs	0.051	0.1000	0.176	mg/kg	125% 60-140	

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141603
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141603-DUP1	**Duplicate (1436027-01)**						
	%TS	37.25		36.75	%		1% 15
B141603-DUP2	**Duplicate (1436027-12)**						
	%TS	18.32		17.83	%		3% 15
B141603-DUP3	**Duplicate (1436027-15)**						
	%TS	33.50		32.65	%		3% 15

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141605
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141605-BS1	**Laboratory Fortified Blank (1438011)**						
	MMAs		0.1000	0.109	mg/kg	109% 60-140	
B141605-DUP1	**Duplicate (1436027-31)**						
	MMAs	ND		ND	mg/kg		N/C 25
B141605-PS1	**Post Spike (1436027-31)**						
	MMAs	ND	0.3560	0.384	mg/kg	108% 60-140	
B141605-MS1	**Matrix Spike (1436027-32)**						
	MMAs	ND	8.292	6.933	mg/kg	84% 60-140	
B141605-MSD1	**Matrix Spike Duplicate (1436027-32)**						
	MMAs	ND	8.543	7.690	mg/kg	90% 60-140	10% 25

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141606
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141606-BS1	**Laboratory Fortified Blank (1438011)**						
	DMAs		0.1000	0.104	mg/kg	104% 60-140	
B141606-DUP1	**Duplicate (1436027-31)**						
	DMAs	ND		ND	mg/kg		N/C 35
B141606-PS1	**Post Spike (1436027-31)**						
	DMAs	ND	0.3560	0.328	mg/kg	92% 60-140	
B141606-MS1	**Matrix Spike (1436027-32)**						
	DMAs	ND	8.292	7.665	mg/kg	92% 60-140	
B141606-MSD1	**Matrix Spike Duplicate (1436027-32)**						
	DMAs	ND	8.543	8.901	mg/kg	104% 60-140	15% 35

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141624
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141624-BS1	**Laboratory Fortified Blank (1437021)**						
	As		5.000	5.287	mg/kg	106% 75-125	
B141624-SRM1	**Certified Reference Material (1421022, DORM-4)**						
	As		6.800	6.275	mg/kg	92% 75-125	
B141624-SRM2	**Certified Reference Material (1426021, TORT-3)**						
	As		59.50	62.55	mg/kg	105% 75-125	
B141624-DUP2	**Duplicate (1436027-03)**						
	As	0.635		0.653	mg/kg		3% 30
B141624-MS2	**Matrix Spike (1436027-03)**						
	As	0.635	4.780	5.958	mg/kg	111% 70-130	
B141624-MSD2	**Matrix Spike Duplicate (1436027-03)**						
	As	0.635	5.102	6.290	mg/kg	111% 70-130	5% 30
B141624-DUP3	**Duplicate (1436027-13)**						
	As	0.601		1.059	mg/kg		*55%* 30
B141624-MS3	**Matrix Spike (1436027-13)**						
	As	0.601	4.513	5.845	mg/kg	116% 70-130	
B141624-MSD3	**Matrix Spike Duplicate (1436027-13)**						
	As	0.601	4.529	5.978	mg/kg	119% 70-130	2% 30
B141624-DUP4	**Duplicate (1436027-23)**						
	As	6.852		7.120	mg/kg		4% 30
B141624-MS4	**Matrix Spike (1436027-23)**						
	As	6.852	4.708	12.30	mg/kg	116% 70-130	

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141624
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141624-MSD4	**Matrix Spike Duplicate (1436027-23)**								
	As	6.852	4.950	12.58	mg/kg	116%	70-130	2%	30

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141635
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141635-BS1	**Laboratory Fortified Blank (1439001)**								
	As		13.00	13.16	mg/kg	101%	75-125		
B141635-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	As		10.50	9.14	mg/kg	87%	N/A		
B141635-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	As		1540	1454	mg/kg	94%	75-125		
B141635-DUP1	**Duplicate (1436027-31)**								
	As	12.41		12.99	mg/kg			5%	30
B141635-MS1	**Matrix Spike (1436027-31)**								
	As	12.41	20.37	31.38	mg/kg	93%	70-130		
B141635-MSD1	**Matrix Spike Duplicate (1436027-31)**								
	As	12.41	20.05	29.62	mg/kg	86%	70-130	6%	30

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141636
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141636-BS1	**Laboratory Fortified Blank (1439001)**						
	Fe		251.0	215.7	mg/kg	86% 75-125	
B141636-SRM1	**Certified Reference Material (0919050, NIST 2709a)**						
	Fe		33600	25600	mg/kg	76% 75-125	
B141636-SRM2	**Certified Reference Material (0919053, NIST 2710a)**						
	Fe		43200	35820	mg/kg	83% 75-125	
B141636-DUP4	**Duplicate (1436027-31)**						
	Fe	136200		155500	mg/kg		13% 30
B141636-MS2	**Matrix Spike (1436027-31)**						
	Fe	136200	393.3	168100	mg/kg	NR 70-130	
B141636-MSD2	**Matrix Spike Duplicate (1436027-31)**						
	Fe	136200	387.2	166300	mg/kg	NR 70-130	1% 30

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141639
Lab Matrix: Soil/Sediment
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141639-DUP1	**Duplicate (1437046-04)**						
	%TS	66.00		66.16	%		0.2% 15

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141597
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B141597-BLK1	-0.0002	mg/kg wet
B141597-BLK2	0.000004	mg/kg wet
B141597-BLK3	-0.0003	mg/kg wet
B141597-BLK4	-0.0003	mg/kg wet

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141600
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B141600-BLK1	0.0003	mg/kg
B141600-BLK2	-0.0002	mg/kg
B141600-BLK3	-0.00007	mg/kg
B141600-BLK4	-0.00002	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141601
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B141601-BLK1	0.00	mg/kg
B141601-BLK2	0.00	mg/kg
B141601-BLK3	0.00	mg/kg
B141601-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141602
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141602-BLK1	0.00	mg/kg
B141602-BLK2	0.00	mg/kg
B141602-BLK3	0.00	mg/kg
B141602-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141603
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B141603-BLK1	-0.21	%
B141603-BLK2	-0.21	%

Average: -0.21
Limit: 1.00

MDL: 0.30
MRL: 1.00

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141605
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B141605-BLK1	0.00	mg/kg wet
B141605-BLK2	0.00	mg/kg wet
B141605-BLK3	0.00	mg/kg wet
B141605-BLK4	0.00	mg/kg wet

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141606
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141606-BLK1	0.00	mg/kg wet
B141606-BLK2	0.00	mg/kg wet
B141606-BLK3	0.00	mg/kg wet
B141606-BLK4	0.00	mg/kg wet

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141624
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B141624-BLK1	0.002	mg/kg
B141624-BLK2	0.003	mg/kg
B141624-BLK3	0.001	mg/kg
B141624-BLK4	0.001	mg/kg

Average: 0.002 **Standard Deviation:** 0.001 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141635
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B141635-BLK1	0.03	mg/kg wet
B141635-BLK2	0.01	mg/kg wet
B141635-BLK3	0.003	mg/kg wet
B141635-BLK4	0.01	mg/kg wet

Average: 0.01 **Standard Deviation:** 0.01 **MDL:** 0.06
Limit: 0.36 **Limit:** 0.06 **MRL:** 0.36

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141636
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: Fe 56

Sample	Result	Units
B141636-BLK1	1.6	mg/kg wet
B141636-BLK2	1.2	mg/kg wet
B141636-BLK3	1.4	mg/kg wet
B141636-BLK4	0.4	mg/kg wet

Average: 1.2 **Standard Deviation:** 0.5 **MDL:** 6.5
Limit: 25.0 **Limit:** 6.5 **MRL:** 25.0

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141639
Matrix: Soil/Sediment
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B141639-BLK1	0.00	%
B141639-BLK2	-0.03	%

Average: -0.02
Limit: 1.00

MDL: 0.30
MRL: 1.00

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-01
Sample: MC-W-PBL-14-1
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-02
Sample: MC-W-PBL-14-2
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-03
Sample: MC-W-PBL-14-3
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-04
Sample: MC-W-PBL-14-4
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-05
Sample: MC-W-PBL-14-5
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-06
Sample: MC-O-PBL-14-6
Comments: GI Tract of 14-5

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none	n/a		Cooler 1

Lab ID: 1436027-07
Sample: VE-W-PB-14-7
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-08
Sample: VE-W-PB-14-8
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-09
Sample: VE-W-PB-14-9
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-10
Sample: VE-W-PB-14-10
Comments: Whole

Report Matrix: Fish
Sample Type: Sample

Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-11
Sample: VE-O-PB-14-11
Comments: GI tract composite of 14-7 to 14-10
Report Matrix: Fish
Sample Type: Sample
Collected: 08/19/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none	n/a		Cooler 1

Lab ID: 1436027-12
Sample: KFP-Algae-14-A
Report Matrix: Algae
Sample Type: Sample
Collected: 08/25/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-13
Sample: KFP-Algae-14-B
Report Matrix: Algae
Sample Type: Sample
Collected: 08/25/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 1

Lab ID: 1436027-14
Sample: SS-W-J-HP-1
Comments: Whole - in foil
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-15
Sample: SS-W-J-HP-2
Comments: Whole - in foil
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-16
Sample: SS-W-J-HP-3
Comments: Whole - in foil
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-17
Sample: SS-W-J-HP-4
Comments: Whole - in foil

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-18
Sample: SS-W-J-HP-5
Comments: Whole - in foil

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-19
Sample: SS-M-A-HP-1A
Comments: Meat (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-20
Sample: SS-O-A-HP-1B
Comments: Internal organs (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	8oz	not provided	none	n/a		Cooler 2

Lab ID: 1436027-21
Sample: SS-M-A-HP-2A
Comments: Meat (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-22
Sample: SS-O-A-HP-2B
Comments: Internal organs (edible)
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	8oz	not provided	none	n/a		Cooler 2

Lab ID: 1436027-23
Sample: SS-M-A-HP-3A
Comments: Meat (edible)
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-24
Sample: SS-O-A-HP-3B
Comments: Internal organs (edible)
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	8oz	not provided	none	n/a		Cooler 2

Lab ID: 1436027-25
Sample: SS-M-A-HP-4A
Comments: Meat (edible)
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-26
Sample: SS-O-A-HP-4B
Comments: Internal organs (edible)
Report Matrix: Crab
Sample Type: Sample
Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	8oz	not provided	none	n/a		Cooler 2

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-27
Sample: SS-M-A-HP-5A
Comments: Meat (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-28
Sample: SS-O-A-HP-5B
Comments: Internal organs (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	8oz	not provided	none	n/a		Cooler 2

Lab ID: 1436027-29
Sample: SS-M-A-HP-6A
Comments: Meat (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2

Lab ID: 1436027-30
Sample: SS-O-A-HP-6B
Comments: Internal organs (edible)

Report Matrix: Crab
Sample Type: Sample

Collected: 08/26/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	8oz	not provided	none	n/a		Cooler 2

Lab ID: 1436027-31
Sample: HP-DU-1A

Report Matrix: Sediment
Sample Type: QC Sample

Collected: 08/28/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2
B	Client-Provided - TOC	jar		none	n/a		Cooler 2

Comments: split taken from A container

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1436027-32
Sample: HP-DU-2A

Report Matrix: Sediment
Sample Type: Sample

Collected: 08/28/2014
Received: 09/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler 2
B	Client-Provided - TOC	jar		none	n/a		Cooler 2

Comments: split taken from A container

Shipping Containers

Cooler 1

Received: September 4, 2014 10:30
Tracking No: 806172352203 via FedEx
Coolant Type: Dry Ice
Temperature: -23.0 °C

Description: Cooler 1
Damaged in transit? No
Returned to client? No

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

Cooler 2

Received: September 4, 2014 10:30
Tracking No: 771036860022 via FedEx
Coolant Type: Ice
Temperature: -0.6 °C

Description: Cooler 2
Damaged in transit? No
Returned to client? No

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

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Chain of Custody Record

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Client: HDOH HEER Office (Hanu Tetra Tech)
Contact: John Pennel, Hilo HEER office
Client project ID: Waiakea Pond 2014
PO#: Quote No: TET-HN001, Rev. 1

Address: Hawaii District Health Office, 1582 Kamehameha Ave., Hilo, HI 96720-4623
Phone #: 808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pennel@doh.hawaii.gov
Fax #: 808-933-0400

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only Frozen	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify) Total As EPA 1638M	Analyses required: As speciation (specify) Inorganic As and MMAs/DMAs EPA 1632	Analyses required: % Solids SM 2540G (Batch 3-5)	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	MC-W-PBL-14-1	8-19-14	AM	JP	Bio	1	N/A	X					X	X	X				whole
2	MC-W-PBL-14-2	8-19-14	AM	JP	Bio	1		X					X	X	X				whole
3	MC-W-PBL-14-3	8/19/14	AM	JP	Bio	1		X					X	X	X				whole
4	MC-W-PBL-14-4	8-19-14	AM	JP	Bio	1		X					X	X	X				whole
5	MC-W-PBL-14-5	8-19-14	AM	JP	Bio	1		X					X	X	X				whole
6	MC-O-PBL-14-6	8-19-14	AM	JP	Bio	1		X					X	X	X				(G-I mact of 14-5)
7	VE-W-PB-14-7	8-19-14	AM	JP	Bio	1		X					X	X	X				whole
8	VE-W-PB-14-8	8-19-14	AM	JP	Bio	1		X					X	X	X				whole
9	VE-W-PB-14-9	8-19-14	AM	JP	Bio	1		X					X	X	X				whole
10	VE-W-PB-14-10	8-19-14	AM	JP	Bio	1		X					X	X	X				whole

Relinquished by: John Pennel	Date: 9/3/14	Time: ~11:00 AM	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: [signature]
Shipping carrier: Fed EX	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 9/4/14	Time: 1030
BRL project ID:	

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Chain of Custody Record

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Client: HDOH HEER Office (thru Tetra Tech)
Contact: John Pennel, Hilo HEER Office
Client project ID: Waiakea Pond 2014
~~PO#~~ Quote No: TET-HN001, Rev. 1

Address: Hawaii District Health Office, 1582 Kamehameha Ave. H120, HI 96720-4623
Phone #: 808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pennel@doh.hawaii.gov
Fax #: 808-933-0400

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify) Total As EPA 6020	Analyses required: As / Se species (specify) Inorganic As EPA 1632	Analyses required: % Solids SM 25406 (Batch 3-5g)	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	VE-0-PB-14-11	8-19-14	AM	JP	Bio	1	N/A	X					X	X	X				(Sediment composite of 14-7 to 14-10)
2	KFP-Algae-14-A	8-25-14	PM	JP	Bio	1		X					X	X	X				
3	KFP-Algae-14-B	8-25-14	PM	JP	Bio	1		X					X	X	X				
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: John Pennel	Date: 9/3/14	Time: ~11:00 AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by: Lori Utt	Date: 9/4/14	Time: 1030
Shipping carrier: Fed EX	# of coolers: 1		BRL work order ID:	BRL project ID:	

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Chain of Custody Record

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Client: HDOH HEER Office (Thru Tetra Tech)
Contact: John Pennd, Hilo HEER Office
Client project ID: Wailuku Pond 2014
PO #: (Quote No.: TET-HN001, Rev. 1

Address: Hawaii District Health Office, 1582 Kamehameha Ave., Hilo, HI 96720-4623
Phone #: 808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pennd@doh.hawaii.gov
Fax #: 808-933-0400

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only (Ends EW)	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify) Total As EPA 1638	Analyses required: As / Se species (specify) Inorganic As and methylation EPA 1632	Analyses required: % Solids SM 2540G	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	SS-W-J-HP-1	8-26-14	AM	KK	Bio	1	N/A	X					X	X	X				Whole-in Foil
2	SS-W-J-HP-2	8-26-14	AM	KK	Bio	1		X					X	X	X				Whole-in Foil
3	SS-W-J-HP-3	8-26-14	AM	KK	Bio	1		X					X	X	X				Whole-in Foil
4	SS-W-J-HP-4	8-26-14	AM	KK	Bio	1		X					X	X	X				Whole-in Foil
5	SS-W-J-HP-5	8-26-14	AM	KK	Bio	1		X					X	X	X				Whole-in Foil
6	SS-M-A-HP-1A	8-26-14	AM	KK	Bio	1		X					X	X	X				meat (edible)
7	SS-O-A-HP-1B	8-26-14	AM	KK	Bio	1		X					X	X	X				internal organs (edible)
8	SS-M-A-HP-2A	8-26-14	AM	KK	Bio	1		X					X	X	X				meat (edible)
9	SS-O-A-HP-2B	8-26-14	AM	KK	Bio	1		X					X	X	X				internal organs (edible)
10	SS-M-A-HP-3A	8-26-14	AM	KK	Bio	1		X					X	X	X				meat (edible)

Relinquished by: [signature]	Date: 9-3-14	Time: 0400	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by: [signature]	Date: 9/4/14	Time: 1030
Shipping carrier: Fed EX	# of coolers: 1		BRL work order ID:	BRL project ID:	

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Chain of Custody Record

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Client: HDOH HEER Office (thru Tetra Tech)
Contact: John Penal, Hilo HEER Office
Client project ID: Waikoloa Pond 2014
PO #: (Quote No.: TET-HN001, Rev. 1

Address: Hawaii District Health Office, 1582 Kamehameha Ave., Hilo, HI 96720-4623
Phone #: 808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.penal@doh.hawaii.gov
Fax #: 808-933-0400

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only (4°C ±2)	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	DRC ICP-MS Metals (specify) Total As EPA 1638 M	Inorganic As and As species (specify) EPA 1632	% Solids SM 2540G (Cartz 3-5 grams)	Filtration	Other (specify) TOC 9060	Other (specify) Sample size D422	Comments
1	SS-O-A-HP-3B	8/26/14		KK	Bio	1	N/A	X					X	X	X				internal organs (edible)
2	SS-M-A-HP-4A	8/26/14		KK	Bio	1		X					X	X	X				meat (edible)
3	SS-O-A-HP-4B	8/26/14		KK	Bio	1		X					X	X	X				internal organs (edible)
4	SS-M-A-HP-5A	8/26/14		KK	Bio	1		X					X	X	X				meat (edible)
5	SS-O-A-HP-5B	8/26/14		KK	Bio	1		X					X	X	X				internal organs (edible)
6	SS-M-A-HP-6A	8/26/14		KK	Bio	1		X					X	X	X				meat (edible)
7	SS-O-A-HP-6B	8/26/14		KK	Bio	1		X					X	X	X				internal organs (edible)
8																			
9	HP-DU-1A	8/28/14	AM	JP	Sed	1		X					X	X	X		X	X	Sediments: - 30-50g for % TS analysis - Also Total Fe on ICP-MS
10	HP-DU-2A	8/28/14	PM	JP	Sed	1		X					X	X	X		X	X	30-50g for % TS analysis - Also Total Fe on ICP-MS

Sediments:
- 30-50g for % TS analysis
- Total As and Fe for ICP-DRC-MS analysis
- Use MIS sub-sampling for TOC & Grain Size and Arsenic & Fe analyses (HW)

Relinquished by:	Date: 9-3-14	Time: 1400	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: Lori Wolf
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:

Date: | Time:
Date: 9/4/14 | Time: 1030
BRL project ID:

October 3, 2014

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Ave
Hilo, HI 96720
John.peard@doh.hawaii.gov

RE: Project HDH-HL1401 Client Project: Waiakea Pond 2014

Dear Mr. Peard,

On September 11, 2014, Brooks Rand Labs (BRL) received one (1) algae and two (2) sediment samples. The samples were logged-in for the analyses of total arsenic (As), percent total solids (%TS), and arsenic speciation contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs) for all samples. Sediment samples were also logged-in for multiple incremental sampling (MIS), total iron (Fe), grain size, and total organic carbon (TOC) according to the chain-of-custody (COC) forms. Each sediment sample had a duplicate prepared during the MIS procedure for a total of four (4) sediment samples. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

Grain size and TOC (also following the MIS procedure) were subcontracted to Test America in Tacoma, WA. The results can be seen in their separate report.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a wet-weight basis.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL the RPD was not calculated (**N/C**).

In instances where a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample, the recoveries are not considered valid indicators of data quality. However, these results are reported as a demonstration of precision. When the spiking levels were ≤ 25% of the native sample concentrations, the recoveries were not reported (**NR**). No sample results were qualified on the basis of the MS or MSD recoveries.

The recovery criteria limits did not apply to specific elements when the standard reference materials (SRMs) only listed information values. The recovery limits were not applicable (N/A).

As(Inorg) – Batch B141511
The MS/MSD set MS2/MSD2 was only spiked for MMAs and DMAs. A PS was analyzed for As(Inorg) and met acceptance criteria.

MMAs – Batch B141513
The MS/MSD set performed on sample 1437068-02 had low recoveries. The MMAs result was qualified **N** for inaccuracy. It should be noted that the MMAs sample result was not detectable. No samples from this work order were qualified.

Aside from concentration qualifiers, all data was reported without qualification and all other associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Lydia Greaves
Project Manager
lydia@brooksrand.com

Amanda Royal
Project Manager
amanda@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/about/accreditations-certifications/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCB	continuing calibration blank	**N/C**	not calculated
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
D	dissolved fraction	**RPD**	relative percent difference
DUP	duplicate	**RSD**	relative standard deviation
IBL	instrument blank	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
PB-DU-A-1 Rep 1	1437046-01	Sediment	Sample	09/09/2014	09/11/2014
PB-DU-A-1 Rep 2	1437046-02	Sediment	Sample	09/09/2014	09/11/2014
PB-DU-B-1 Rep 1	1437046-03	Sediment	Sample	09/09/2014	09/11/2014
PB-DU-B-1 Rep 2	1437046-04	Sediment	Sample	09/09/2014	09/11/2014
PBL-Algae-1	1437046-05	Algae	Sample	09/09/2014	09/11/2014

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SM 2540G	09/19/2014	09/22/2014	B141750	N/A
As	Biota	EPA 1638 DRC	09/23/2014	09/24/2014	B141762	1400820
As(Inorg)	Biota	EPA 1632	09/21/2014	09/22/2014	B141511	1400807
DMAs	Biota	EPA 1632	09/21/2014	09/24/2014	B141514	1400818
MMAs	Biota	EPA 1632	09/21/2014	09/24/2014	B141513	1400817
%TS	Soil/Sediment	SM 2540G	09/05/2014	09/29/2014	B141639	N/A
As	Soil/Sediment	EPA 1638 DRC	09/18/2014	09/23/2014	B141635	1400816
As(Inorg)	Soil/Sediment	EPA 1632	09/22/2014	09/23/2014	B141597	1400812
DMAs	Soil/Sediment	EPA 1632	09/22/2014	09/24/2014	B141606	1400818
Fe	Soil/Sediment	EPA 1638 DRC	09/18/2014	09/24/2014	B141636	1400801
Fe	Soil/Sediment	EPA 1638 DRC	09/18/2014	09/30/2014	B141636	1400830
MMAs	Soil/Sediment	EPA 1632	09/22/2014	09/24/2014	B141605	1400817

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
PB-DU-A-1 Rep 1										
1437046-01	%TS	Sediment	NA	66.84		0.30	1.00	%	B141639	N/A
1437046-01	As	Sediment	dry	7.64		0.08	0.49	mg/kg	B141635	1400816
1437046-01	As(Inorg)	Sediment	dry	6.49		2.35	5.87	mg/kg	B141597	1400812
1437046-01	DMAs	Sediment	dry	0.049	U	0.049	0.117	mg/kg	B141606	1400818
1437046-01	Fe	Sediment	dry	95900		35.6	137	mg/kg	B141636	1400830
1437046-01	MMAs	Sediment	dry	0.039	U	0.039	0.117	mg/kg	B141605	1400817
PB-DU-A-1 Rep 2										
1437046-02	%TS	Sediment	NA	65.68		0.30	1.00	%	B141639	N/A
1437046-02	As	Sediment	dry	7.84		0.08	0.51	mg/kg	B141635	1400816
1437046-02	As(Inorg)	Sediment	dry	4.44		0.424	1.06	mg/kg	B141597	1400812
1437046-02	DMAs	Sediment	dry	0.035	U	0.035	0.085	mg/kg	B141606	1400818
1437046-02	Fe	Sediment	dry	94100		36.8	142	mg/kg	B141636	1400830
1437046-02	MMAs	Sediment	dry	0.028	U	0.028	0.085	mg/kg	B141605	1400817
PB-DU-B-1 Rep 1										
1437046-03	%TS	Sediment	NA	65.64		0.30	1.00	%	B141639	N/A
1437046-03	As	Sediment	dry	7.58		0.09	0.53	mg/kg	B141635	1400816
1437046-03	As(Inorg)	Sediment	dry	4.71		0.464	1.16	mg/kg	B141597	1400812
1437046-03	DMAs	Sediment	dry	0.039	U	0.039	0.093	mg/kg	B141606	1400818
1437046-03	Fe	Sediment	dry	69900		9.5	36.5	mg/kg	B141636	1400801
1437046-03	MMAs	Sediment	dry	0.031	U	0.031	0.093	mg/kg	B141605	1400817
PB-DU-B-1 Rep 2										
1437046-04	%TS	Sediment	NA	66.00		0.30	1.00	%	B141639	N/A
1437046-04	As	Sediment	dry	7.84		0.08	0.47	mg/kg	B141635	1400816
1437046-04	As(Inorg)	Sediment	dry	4.56		0.463	1.16	mg/kg	B141597	1400812
1437046-04	DMAs	Sediment	dry	0.039	U	0.039	0.093	mg/kg	B141606	1400818
1437046-04	Fe	Sediment	dry	89500		33.8	130	mg/kg	B141636	1400830
1437046-04	MMAs	Sediment	dry	0.031	U	0.031	0.093	mg/kg	B141605	1400817
PBL-Algae-1										
1437046-05	%TS	Algae	NA	11.55		0.30	1.00	%	B141750	N/A
1437046-05	As	Algae	wet	0.614		0.014	0.039	mg/kg	B141762	1400820
1437046-05	As(Inorg)	Algae	wet	0.196		0.014	0.036	mg/kg	B141511	1400807
1437046-05	DMAs	Algae	wet	0.080		0.009	0.022	mg/kg	B141514	1400818
1437046-05	MMAs	Algae	wet	0.007	U	0.007	0.022	mg/kg	B141513	1400817

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Client PM: John Peard
Client PO: 1108781

Accuracy & Precision Summary

Batch: B141511
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141511-BS1	**Laboratory Fortified Blank (1435002)**						
	As(Inorg)		0.1000	0.108	mg/kg	108% 65-135	
B141511-SRM1	**Certified Reference Material (1425011, NIST 1568a)**						
	As(Inorg)		0.09200	0.096	mg/kg	105% 65-135	
B141511-SRM2	**Certified Reference Material (1337024, NIST 1568b)**						
	As(Inorg)		0.09200	0.103	mg/kg	112% 65-135	
B141511-DUP1	**Duplicate (1433032-01)**						
	As(Inorg)	0.028		0.029	mg/kg		0.5% 35
B141511-MS1	**Matrix Spike (1433032-01)**						
	As(Inorg)	0.028	0.1248	0.157	mg/kg	103% 65-135	
B141511-MSD1	**Matrix Spike Duplicate (1433032-01)**						
	As(Inorg)	0.028	0.1177	0.147	mg/kg	101% 65-135	6% 35
B141511-DUP2	**Duplicate (1437068-02)**						
	As(Inorg)	0.007		0.008	mg/kg		16% 35
B141511-PS1	**Post Spike (1437068-02)**						
	As(Inorg)	0.007	0.04433	0.050	mg/kg	98% 65-135	

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Accuracy & Precision Summary

Batch: B141513
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141513-BS1	**Laboratory Fortified Blank (1438011)**								
	MMAs		0.1000	0.107	mg/kg	107%	60-140		
B141513-DUP2	**Duplicate (1437068-02)**								
	MMAs	ND		ND	mg/kg			N/C	25
B141513-MS2	**Matrix Spike (1437068-02)**								
	MMAs	ND	0.4000	0.174	mg/kg	*43%*	60-140		
B141513-MSD2	**Matrix Spike Duplicate (1437068-02)**								
	MMAs	ND	0.3891	0.145	mg/kg	*37%*	60-140	18%	25

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Accuracy & Precision Summary

Batch: B141514
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141514-BS1	**Laboratory Fortified Blank (1438011)**						
	DMAs		0.1000	0.096	mg/kg	96% 60-140	
B141514-SRM1	**Certified Reference Material (1425011, NIST 1568a)**						
	DMAs		0.1800	0.131	mg/kg	73% 60-140	
B141514-SRM2	**Certified Reference Material (1337024, NIST 1568b)**						
	DMAs		0.1800	0.117	mg/kg	65% 60-140	
B141514-DUP2	**Duplicate (1437068-02)**						
	DMAs	ND		ND	mg/kg		N/C 35
B141514-MS2	**Matrix Spike (1437068-02)**						
	DMAs	ND	0.4000	0.378	mg/kg	95% 60-140	
B141514-MSD2	**Matrix Spike Duplicate (1437068-02)**						
	DMAs	ND	0.3891	0.383	mg/kg	98% 60-140	1% 35

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Accuracy & Precision Summary

Batch: B141597
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141597-BS1	**Laboratory Fortified Blank (1435006)**						
	As(Inorg)		0.1003	0.110	mg/kg	109% 65-135	
B141597-SRM1	**Certified Reference Material (1408014, MESS-3)**						
	As(Inorg)		18.67	17.14	mg/kg	92% 65-135	
B141597-DUP2	**Duplicate (1436027-31)**						
	As(Inorg)	11.07		9.423	mg/kg		16% 35
B141597-MS2	**Matrix Spike (1436027-31)**						
	As(Inorg)	11.07	748.0	678.1	mg/kg	89% 65-135	
B141597-MSD2	**Matrix Spike Duplicate (1436027-31)**						
	As(Inorg)	11.07	727.2	671.5	mg/kg	91% 65-135	1% 35

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Accuracy & Precision Summary

Batch: B141605
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141605-BS1	**Laboratory Fortified Blank (1438011)**						
	MMAs		0.1000	0.109	mg/kg	109% 60-140	
B141605-DUP1	**Duplicate (1436027-31)**						
	MMAs	ND		ND	mg/kg		N/C 25
B141605-PS1	**Post Spike (1436027-31)**						
	MMAs	ND	0.3560	0.384	mg/kg	108% 60-140	
B141605-MS1	**Matrix Spike (1436027-32)**						
	MMAs	ND	8.292	6.933	mg/kg	84% 60-140	
B141605-MSD1	**Matrix Spike Duplicate (1436027-32)**						
	MMAs	ND	8.543	7.690	mg/kg	90% 60-140	10% 25

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Accuracy & Precision Summary

Batch: B141606
Lab Matrix: Soil/Sediment
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141606-BS1	**Laboratory Fortified Blank (1438011)**						
	DMAs		0.1000	0.104	mg/kg	104% 60-140	
B141606-DUP1	**Duplicate (1436027-31)**						
	DMAs	ND		ND	mg/kg		N/C 35
B141606-PS1	**Post Spike (1436027-31)**						
	DMAs	ND	0.3560	0.328	mg/kg	92% 60-140	
B141606-MS1	**Matrix Spike (1436027-32)**						
	DMAs	ND	8.292	7.665	mg/kg	92% 60-140	
B141606-MSD1	**Matrix Spike Duplicate (1436027-32)**						
	DMAs	ND	8.543	8.901	mg/kg	104% 60-140	15% 35

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Accuracy & Precision Summary

Batch: B141635
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141635-BS1	**Laboratory Fortified Blank (1439001)**								
	As		13.00	13.16	mg/kg	101%	75-125		
B141635-SRM1	**Certified Reference Material (0919050, NIST 2709a)**								
	As		10.50	9.14	mg/kg	87%	N/A		
B141635-SRM2	**Certified Reference Material (0919053, NIST 2710a)**								
	As		1540	1454	mg/kg	94%	75-125		
B141635-DUP1	**Duplicate (1436027-31)**								
	As	12.41		12.99	mg/kg			5%	30
B141635-MS1	**Matrix Spike (1436027-31)**								
	As	12.41	20.37	31.38	mg/kg	93%	70-130		
B141635-MSD1	**Matrix Spike Duplicate (1436027-31)**								
	As	12.41	20.05	29.62	mg/kg	86%	70-130	6%	30

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Accuracy & Precision Summary

Batch: B141636
Lab Matrix: Soil/Sediment
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141636-BS1	**Laboratory Fortified Blank (1439001)**						
	Fe		251.0	215.7	mg/kg	86% 75-125	
B141636-SRM1	**Certified Reference Material (0919050, NIST 2709a)**						
	Fe		33600	25600	mg/kg	76% 75-125	
B141636-SRM2	**Certified Reference Material (0919053, NIST 2710a)**						
	Fe		43200	35820	mg/kg	83% 75-125	
B141636-DUP4	**Duplicate (1436027-31)**						
	Fe	136200		155500	mg/kg		13% 30
B141636-MS2	**Matrix Spike (1436027-31)**						
	Fe	136200	393.3	168100	mg/kg	NR 70-130	
B141636-MSD2	**Matrix Spike Duplicate (1436027-31)**						
	Fe	136200	387.2	166300	mg/kg	NR 70-130	1% 30

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Accuracy & Precision Summary

Batch: B141639
Lab Matrix: Soil/Sediment
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141639-DUP1	**Duplicate (1437046-04)**						
	%TS	66.00		66.16	%		0.2% 15

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Accuracy & Precision Summary

Batch: B141750
Lab Matrix: Biota
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141750-DUP1	**Duplicate (1437068-02)**						
	%TS	25.38		26.24	%		3% 15

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Accuracy & Precision Summary

Batch: B141762
Lab Matrix: Biota
Method: EPA 1638 DRC

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141762-BS1	**Laboratory Fortified Blank (1439035)**						
	As		5.000	4.654	mg/kg	93% 75-125	
B141762-SRM1	**Certified Reference Material (1426021, TORT-3)**						
	As		59.50	60.28	mg/kg	101% 75-125	
B141762-SRM2	**Certified Reference Material (1421022, DORM-4)**						
	As		6.800	6.082	mg/kg	89% 75-125	
B141762-DUP1	**Duplicate (1437068-01)**						
	As	0.261		0.262	mg/kg		0.4% 30
B141762-MS1	**Matrix Spike (1437068-01)**						
	As	0.261	3.938	4.223	mg/kg	101% 70-130	
B141762-MSD1	**Matrix Spike Duplicate (1437068-01)**						
	As	0.261	3.925	4.604	mg/kg	111% 70-130	9% 30

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Method Blanks & Reporting Limits

Batch: B141511
Matrix: Biota
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B141511-BLK1	-0.0006	mg/kg
B141511-BLK2	-0.0003	mg/kg
B141511-BLK3	-0.001	mg/kg
B141511-BLK4	0.0001	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Method Blanks & Reporting Limits

Batch: B141513
Matrix: Biota
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B141513-BLK2	0.00	mg/kg
B141513-BLK3	0.00	mg/kg
B141513-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141514
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141514-BLK1	0.00	mg/kg
B141514-BLK2	0.00	mg/kg
B141514-BLK3	0.00	mg/kg
B141514-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141597
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: As(Inorg)

Sample	Result	Units
B141597-BLK1	-0.0002	mg/kg wet
B141597-BLK2	0.000004	mg/kg wet
B141597-BLK3	-0.0003	mg/kg wet
B141597-BLK4	-0.0003	mg/kg wet

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.010

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141605
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: MMAs

Sample	Result	Units
B141605-BLK1	0.00	mg/kg wet
B141605-BLK2	0.00	mg/kg wet
B141605-BLK3	0.00	mg/kg wet
B141605-BLK4	0.00	mg/kg wet

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.004
Limit: 0.008 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141606
Matrix: Soil/Sediment
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141606-BLK1	0.00	mg/kg wet
B141606-BLK2	0.00	mg/kg wet
B141606-BLK3	0.00	mg/kg wet
B141606-BLK4	0.00	mg/kg wet

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141635
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B141635-BLK1	0.03	mg/kg wet
B141635-BLK2	0.01	mg/kg wet
B141635-BLK3	0.003	mg/kg wet
B141635-BLK4	0.01	mg/kg wet

Average: 0.01 **Standard Deviation:** 0.01 **MDL:** 0.06
Limit: 0.36 **Limit:** 0.06 **MRL:** 0.36

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141636
Matrix: Soil/Sediment
Method: EPA 1638 DRC
Analyte: Fe 56

Sample	Result	Units
B141636-BLK1	1.6	mg/kg wet
B141636-BLK2	1.2	mg/kg wet
B141636-BLK3	1.4	mg/kg wet
B141636-BLK4	0.4	mg/kg wet

Average: 1.2 **Standard Deviation:** 0.5 **MDL:** 6.5
Limit: 25.0 **Limit:** 6.5 **MRL:** 25.0

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141639
Matrix: Soil/Sediment
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B141639-BLK1	0.00	%
B141639-BLK2	-0.03	%

Average: -0.02
Limit: 1.00

MDL: 0.30
MRL: 1.00

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141750
Matrix: Biota
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B141750-BLK1	-0.09	%
B141750-BLK2	-0.06	%

Average: -0.08
Limit: 1.00

MDL: 0.30
MRL: 1.00

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Method Blanks & Reporting Limits

Batch: B141762
Matrix: Biota
Method: EPA 1638 DRC
Analyte: As 91

Sample	Result	Units
B141762-BLK1	0.012	mg/kg
B141762-BLK2	0.009	mg/kg
B141762-BLK3	0.009	mg/kg
B141762-BLK4	0.007	mg/kg

Average: 0.009 **Standard Deviation:** 0.002 **MDL:** 0.014
Limit: 0.040 **Limit:** 0.014 **MRL:** 0.040

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Sample Containers

Lab ID: 1437046-01
Sample: PB-DU-A-1 Rep 1
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/09/2014
Received: 09/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler
B	Client-Provided - TOC	8oz	not provided	none	n/a		Cooler

Lab ID: 1437046-02
Sample: PB-DU-A-1 Rep 2
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/09/2014
Received: 09/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler
B	Client-Provided - TOC	8oz	not provided	none	n/a		Cooler

Lab ID: 1437046-03
Sample: PB-DU-B-1 Rep 1
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/09/2014
Received: 09/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler
B	Client-Provided - TOC	8oz	not provided	none	n/a		Cooler

Lab ID: 1437046-04
Sample: PB-DU-B-1 Rep 2
Report Matrix: Sediment
Sample Type: Sample
Collected: 09/09/2014
Received: 09/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler
B	Client-Provided - TOC	8oz	not provided	none	n/a		Cooler

Lab ID: 1437046-05
Sample: PBL-Algae-1
Report Matrix: Algae
Sample Type: Sample
Collected: 09/09/2014
Received: 09/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1401
PM: Lydia Greaves

Client PM: John Peard
Client PO: 1108781

Shipping Containers

Cooler

Received: September 11, 2014 9:45
Tracking No: 803023949339 via FedEx
Coolant Type: Dry Ice
Temperature: -4.3 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

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Phone: 206-632-6206
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Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH HEER Office (thru Tetra Tech)
Contact: John Pearl, Hilo HEER Office
Client project ID: Wainiha Pond 2014
PO#: Quote No.: TET-HN001, Rev 1

Address: Hawaii District Health Office, 1582 Kamehameha Ave., Hilo, HI 96720-4623
Phone #: 808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pearl@doh.hawaii.gov
Fax #: 808-933-0400

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only Frozen	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify) Sed: Fe, Mn, Al, Total As, EPA 1638 M; Bio: Total As	As / Se species (specify) Inorganic As and Methylated As, EPA 1632	% Solids SM 2540G Sed: 30-50g; Bio: 2g	Filtration	Other (specify)	Other (specify)	Comments
1	PB-DU-A-1	9-9-14		JP	Sed	1	N/A	X					X	X	X				Total As & Fe for ICP-DRC-MS
2	PB-DU-B-1	9-9-14		JP	Sed	1		X					X	X	X				Total As & Fe for ICP-DRC-MS
3																			
4	PBL-Algae-1	9-9-14		JP	Bio	1		X					X	X	X				
5																			
6																			
7																			
8																			
9																			
10																			

Comments: Sediments: Use mix sub-sampling for As analyses and TOC & grain size. 30-50g for % TS analysis. Total As and Fe for ICP-DRC-MS analyses

Relinquished by: JP	Date: 9/10/14	Time: AM	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: [signature]
Shipping carrier: FedEX	# of coolers: 1		BRL work order ID: 1437046

Date:	Time:	
Date: 9/11/14	Time: 0945	
BRL project ID: HDH-HL1401		

September 12, 2014

Hawaii Dept. of Health
ATTN: John Peard
152 Kamehameha Avenue
Hilo, HI 96720
john.peard@doh.hawaii.gov

RE: Project HDH-HL1301
Client Project: 10351902311 (Waiakea Pond; Tetra Tech Work Order 1097688)

Dear Mr. Peard,

From August 29, 2013 to September 10, 2013, Brooks Rand Labs (BRL) received eighty (80) biota samples. The samples were logged-in for the analyses of total recoverable arsenic (As), percent total solids (%TS), and arsenic speciation, contractually defined as inorganic arsenic [As(Inorg)], monomethyl arsenic (MMAs), and dimethyl arsenic (DMAs), according to the chain-of-custody (COC) forms and reported in BRL Work Orders 1335036, 1336005, and 1337007. Due to a shipping issue, all samples for BRL Work Order 1336005were received at 18.3ºC, well above the required 0 – 4 ºC and all of those sample results were qualified **H** as the temperature requirement was not met. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

As detailed in the memo dated April 4, 2014, BRL has recently found that when biological tissue samples are prepared with the sodium hydroxide sample preparation method described in EPA Method 1632A, arsenobetaine (AsB) can be falsely identified as DMAs. This can result in a false positive for DMAs in many tissues with significant levels of AsB (e.g., fin fish, some shellfish, some sea plants). Given the quality control samples included in EPA Method 1632A, there would be no way for a lab to detect this bias. Only with the analysis of newly developed certified reference materials was this interference detected and validated. BRL has re-analyzed the specified samples from the memo and these DMAs results are reported here. The thirty (30) samples that were re-analyzed are:

1335036-01, -03, -04, -12
1336005-01, -06, -08, -09, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -23, -24, -25, -26,-27,-39
1337007-02, -03, -15, -16

As can be seen in the DMA Comparison EDD, all sample results were much lower using the new preparation for DMAs, with the exception of samples *VE-W-S-J-1* (1336005-01), *VE-W-S-A-2* (1336005-06) and *VE-W-S-A-4* (1336005-08). These samples had DMAs results that had

RPDs less than 15% in comparison with the initial DMAs results. In the DMA Comparison EDD, all re-prepared and re-analyzed results are highlighted green.

The results were method blank corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All sample results were reported on a wet-weight basis.

All data was reported without further qualification and all associated quality control sample results met the acceptance criteria.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Lydia Greaves
Project Manager
lydia@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/about/accreditations-certifications/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCB	continuing calibration blank	**N/C**	not calculated
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
D	dissolved fraction	**RPD**	relative percent difference
DUP	duplicate	**RSD**	relative standard deviation
IBL	instrument blank	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
MC-W-S-A-1	1335036-01	fish	Sample	08/14/2013	08/29/2013
MC-W-S-A-2	1335036-02	fish	Sample	08/14/2013	08/29/2013
MC-W-S-A-3	1335036-03	fish	Sample	08/14/2013	08/29/2013
MC-W-S-A-4	1335036-04	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-1	1335036-05	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-2	1335036-06	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-3	1335036-07	fish	Sample	08/14/2013	08/29/2013
MC-E-S-A-4	1335036-08	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-1	1335036-09	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-2	1335036-10	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-3	1335036-11	fish	Sample	08/14/2013	08/29/2013
MC-W-S-J-4	1335036-12	fish	Sample	08/14/2013	08/29/2013
MC-G-S-A-1	1335036-13	Gills	Sample	08/14/2013	08/29/2013
MC-O-S-A-1	1335036-14	Organs	Sample	08/14/2013	08/29/2013
MC-S-S-A-1	1335036-15	Scales	Sample	08/14/2013	08/29/2013
VE-E-S-A-1	1335036-16	fish	Sample	08/14/2013	08/29/2013
VE-E-S-A-2	1335036-17	fish	Sample	08/14/2013	08/29/2013
VE-E-S-A-3	1335036-18	fish	Sample	08/14/2013	08/29/2013
VE-E-S-A-4	1335036-19	fish	Sample	08/14/2013	08/29/2013
VE-G-S-A-1	1335036-20	Gills	Sample	08/14/2013	08/29/2013
VE-O-S-A-1	1335036-21	Organs	Sample	08/14/2013	08/29/2013
VE-S-S-A-1	1335036-22	Scales	Sample	08/14/2013	08/29/2013

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Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
VE-W-S-J-1	1336005-01	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-J-2	1336005-02	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-J-3	1336005-03	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-J-4	1336005-04	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-1	1336005-05	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-2	1336005-06	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-3	1336005-07	Biota	Sample	08/14/2013	09/03/2013
VE-W-S-A-4	1336005-08	Biota	Sample	08/14/2013	09/03/2013
SS-W-S-J-4	1336005-09	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-5	1336005-10	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-7	1336005-11	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-8	1336005-12	Biota	Sample	08/20/2013	09/03/2013
SS-W-S-J-9	1336005-13	Biota	Sample	08/22/2013	09/03/2013
SS-W-S-J-10	1336005-14	Biota	Sample	08/22/2013	09/03/2013
SS-E-S-A-1	1336005-15	Biota	Sample	08/14/2013	09/03/2013
SS-E-S-A-2	1336005-16	Biota	Sample	08/20/2013	09/03/2013
SS-E-S-A-3	1336005-17	Biota	Sample	08/20/2013	09/03/2013
SS-E-S-A-4	1336005-18	Biota	Sample	08/20/2013	09/03/2013
SS-E-S-A-5	1336005-19	Biota	Sample	08/15/2013	09/03/2013
SS-E-S-A-6	1336005-20	Biota	Sample	08/22/2013	09/03/2013
SS-H-S-A-1	1336005-21	Biota	Sample	08/15/2013	09/03/2013
SS-GI-S-A-2	1336005-22	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-2	1336005-23	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-3	1336005-24	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-4	1336005-25	Biota	Sample	08/20/2013	09/03/2013
SS-HP-S-A-5	1336005-26	Biota	Sample	08/15/2013	09/03/2013
SS-HP-S-A-6	1336005-27	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-1	1336005-28	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-2	1336005-29	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-3	1336005-30	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-A-4	1336005-31	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-1	1336005-32	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-2	1336005-33	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-3	1336005-34	Biota	Sample	08/21/2013	09/03/2013
VE-W-K-J-4	1336005-35	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-1	1336005-36	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-2	1336005-37	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-3	1336005-38	Biota	Sample	08/21/2013	09/03/2013
VE-E-K-A-4	1336005-39	Biota	Sample	08/21/2013	09/03/2013
VE-G-K-A-1	1336005-40	Biota	Sample	08/21/2013	09/03/2013
VE-O-K-A-1	1336005-41	Biota	Sample	08/21/2013	09/03/2013

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Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
VE-S-K-A-1	1336005-42	Biota	Sample	08/21/2013	09/03/2013
WP-DU-4-Algae	1337007-01	Algae	Sample	09/03/2013	09/10/2013
WP-DU-5-Algae	1337007-02	Algae	Sample	09/03/2013	09/10/2013
LW-DU-C-Algae	1337007-03	Algae	Sample	09/03/2013	09/10/2013
MC-W-C-A-1	1337007-04	fish	Sample	09/03/2013	09/10/2013
MC-W-C-A-2	1337007-05	fish	Sample	09/03/2013	09/10/2013
MC-W-C-A-3	1337007-06	fish	Sample	09/03/2013	09/10/2013
MC-W-C-A-4	1337007-07	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-1	1337007-08	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-2	1337007-09	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-3	1337007-10	fish	Sample	09/03/2013	09/10/2013
MC-E-C-A-4	1337007-11	fish	Sample	09/03/2013	09/10/2013
MC-G-C-A-1	1337007-12	fish	Sample	09/03/2013	09/10/2013
MC-O-C-A-1	1337007-13	fish	Sample	09/03/2013	09/10/2013
MC-S-C-A-1	1337007-14	fish	Sample	09/03/2013	09/10/2013
SS-W-C-J-1	1337007-15	fish	Sample	08/28/2013	09/10/2013
SS-W-C-J-2	1337007-16	fish	Sample	08/28/2013	09/10/2013

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
DMAs	Biota	EPA 1632	06/26/2014	06/27/2014	B141087	1400570
DMAs	Biota	EPA 1632	07/01/2014	07/02/2014	B141095	1400581

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
LW-DU-C-Algae										
1337007-03	DMAs	Algae	wet	0.038		0.010	0.023	mg/kg	B141087	1400570
MC-W-S-A-1										
1335036-01	DMAs	fish	wet	0.028		0.010	0.023	mg/kg	B141087	1400570
MC-W-S-A-3										
1335036-03	DMAs	fish	wet	0.081		0.019	0.046	mg/kg	B141087	1400570
MC-W-S-A-4										
1335036-04	DMAs	fish	wet	0.073		0.019	0.047	mg/kg	B141087	1400570
MC-W-S-J-4										
1335036-12	DMAs	fish	wet	0.063		0.019	0.046	mg/kg	B141087	1400570
SS-E-S-A-1										
1336005-15	DMAs	Biota	wet	0.054	H	0.020	0.047	mg/kg	B141095	1400581
SS-E-S-A-2										
1336005-16	DMAs	Biota	wet	0.098	H	0.019	0.047	mg/kg	B141095	1400581
SS-E-S-A-3										
1336005-17	DMAs	Biota	wet	0.101	H	0.019	0.047	mg/kg	B141095	1400581
SS-E-S-A-4										
1336005-18	DMAs	Biota	wet	0.012	H	0.005	0.011	mg/kg	B141095	1400581
SS-E-S-A-5										
1336005-19	DMAs	Biota	wet	0.239	H	0.019	0.045	mg/kg	B141095	1400581
SS-E-S-A-6										
1336005-20	DMAs	Biota	wet	0.073	H	0.019	0.046	mg/kg	B141095	1400581
SS-HP-S-A-2										
1336005-23	DMAs	Biota	wet	0.244	H	0.019	0.046	mg/kg	B141095	1400581

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-HP-S-A-3 1336005-24	DMAs	Biota	wet	0.157	H	0.020	0.047	mg/kg	B141095	1400581
SS-HP-S-A-4 1336005-25	DMAs	Biota	wet	0.078	H	0.020	0.047	mg/kg	B141095	1400581
SS-HP-S-A-5 1336005-26	DMAs	Biota	wet	0.062	H	0.020	0.047	mg/kg	B141095	1400581
SS-HP-S-A-6 1336005-27	DMAs	Biota	wet	0.329	H	0.048	0.115	mg/kg	B141087	1400570
SS-H-S-A-1 1336005-21	DMAs	Biota	wet	0.282	H	0.019	0.046	mg/kg	B141095	1400581
SS-W-C-J-1 1337007-15	DMAs	fish	wet	0.065		0.010	0.023	mg/kg	B141087	1400570
SS-W-C-J-2 1337007-16	DMAs	fish	wet	0.044		0.010	0.024	mg/kg	B141087	1400570
SS-W-S-J-10 1336005-14	DMAs	Biota	wet	0.078	H	0.019	0.046	mg/kg	B141095	1400581
SS-W-S-J-4 1336005-09	DMAs	Biota	wet	0.071	H	0.019	0.046	mg/kg	B141095	1400581
SS-W-S-J-5 1336005-10	DMAs	Biota	wet	0.088	H	0.019	0.047	mg/kg	B141095	1400581
SS-W-S-J-7 1336005-11	DMAs	Biota	wet	0.126	H	0.039	0.093	mg/kg	B141095	1400581
SS-W-S-J-8 1336005-12	DMAs	Biota	wet	0.095	H	0.039	0.093	mg/kg	B141095	1400581

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
SS-W-S-J-9										
1336005-13	DMAs	Biota	wet	0.116	H	0.019	0.046	mg/kg	B141095	1400581
VE-E-K-A-4										
1336005-39	DMAs	Biota	wet	0.029	H	0.010	0.024	mg/kg	B141087	1400570
VE-W-S-A-2										
1336005-06	DMAs	Biota	wet	0.178	H	0.019	0.046	mg/kg	B141095	1400581
VE-W-S-A-4										
1336005-08	DMAs	Biota	wet	0.150	H	0.020	0.047	mg/kg	B141095	1400581
VE-W-S-J-1										
1336005-01	DMAs	Biota	wet	0.204	H	0.038	0.091	mg/kg	B141095	1400581
WP-DU-5-Algae										
1337007-02	DMAs	Algae	wet	0.178		0.050	0.120	mg/kg	B141087	1400570

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B141087
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141087-BS1	**Laboratory Fortified Blank (1425044)**						
	DMAs		0.1000	0.077	mg/kg	77% 60-140	
B141087-SRM5	**Certified Reference Material (1337024, NIST 1568b)**						
	DMAs		0.1800	0.145	mg/kg	81% 60-140	
B141087-SRM6	**Certified Reference Material (1407010, BCR-627 Tuna Fish Tissue CRM)**						
	DMAs		0.1498	0.171	mg/kg	114% 65-135	
B141087-DUP1	**Duplicate (1335036-03)**						
	DMAs	0.081		0.096	mg/kg		17% 35
B141087-MS1	**Matrix Spike (1335036-03)**						
	DMAs	0.081	0.09848	0.153	mg/kg	74% 60-140	
B141087-MSD1	**Matrix Spike Duplicate (1335036-03)**						
	DMAs	0.081	0.09839	0.148	mg/kg	69% 60-140	3% 35
B141087-DUP2	**Duplicate (1337007-02)**						
	DMAs	0.178		0.177	mg/kg		0.3% 35
B141087-MS2	**Matrix Spike (1337007-02)**						
	DMAs	0.178	0.9671	0.962	mg/kg	81% 60-140	
B141087-MSD2	**Matrix Spike Duplicate (1337007-02)**						
	DMAs	0.178	0.9876	1.077	mg/kg	91% 60-140	11% 35
B141087-DUP3	**Duplicate (1418008-02)**						
	DMAs	1.596		1.751	mg/kg		9% 35
B141087-MS3	**Matrix Spike (1418008-02)**						
	DMAs	1.596	4.920	5.596	mg/kg	81% 60-140	

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Accuracy & Precision Summary

Batch: B141087
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B141087-MSD3	**Matrix Spike Duplicate (1418008-02)**								
	DMAs	1.596	4.825	5.471	mg/kg	80%	60-140	2%	35

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Project ID: HDH-HL1301
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Client PM: John Peard

Accuracy & Precision Summary

Batch: B141095
Lab Matrix: Biota
Method: EPA 1632

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B141095-BS1	**Laboratory Fortified Blank (1427023)**						
	DMAs		0.1000	0.086	mg/kg	86% 60-140	
B141095-SRM1	**Certified Reference Material (1407010, BCR-627 Tuna Fish Tissue CRM)**						
	DMAs		0.1498	0.150	mg/kg	100% 65-135	
B141095-DUP1	**Duplicate (1336005-01)**						
	DMAs	0.204		0.181	mg/kg		12% 35
B141095-MS1	**Matrix Spike (1336005-01)**						
	DMAs	0.204	0.9823	1.049	mg/kg	86% 60-140	
B141095-MSD1	**Matrix Spike Duplicate (1336005-01)**						
	DMAs	0.204	0.9634	1.026	mg/kg	85% 60-140	2% 35
B141095-DUP2	**Duplicate (1336005-15)**						
	DMAs	0.054		0.059	mg/kg		9% 35
B141095-MS2	**Matrix Spike (1336005-15)**						
	DMAs	0.054	0.9579	0.831	mg/kg	81% 60-140	
B141095-MSD2	**Matrix Spike Duplicate (1336005-15)**						
	DMAs	0.054	0.9524	0.870	mg/kg	86% 60-140	5% 35

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B141087
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141087-BLK1	-0.0004	mg/kg
B141087-BLK2	-0.0004	mg/kg
B141087-BLK3	-0.0004	mg/kg
B141087-BLK4	-0.0004	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Method Blanks & Reporting Limits

Batch: B141095
Matrix: Biota
Method: EPA 1632
Analyte: DMAs

Sample	Result	Units
B141095-BLK1	0.00	mg/kg
B141095-BLK2	0.00	mg/kg
B141095-BLK3	0.00	mg/kg
B141095-BLK4	0.00	mg/kg

Average: 0.000 **Standard Deviation:** 0.000 **MDL:** 0.005
Limit: 0.010 **Limit:** 0.003 **MRL:** 0.012

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-01
Sample: MC-W-S-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-02
Sample: MC-W-S-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-03
Sample: MC-W-S-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-04
Sample: MC-W-S-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-05
Sample: MC-E-S-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-06
Sample: MC-E-S-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-07
Sample: MC-E-S-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-08
Sample: MC-E-S-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-09
Sample: MC-W-S-J-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-10
Sample: MC-W-S-J-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-11
Sample: MC-W-S-J-3
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-12
Sample: MC-W-S-J-4
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

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Sample Containers

Lab ID: 1335036-13
Sample: MC-G-S-A-1
Report Matrix: Gills
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-14
Sample: MC-O-S-A-1
Report Matrix: Organs
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-15
Sample: MC-S-S-A-1
Report Matrix: Scales
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-16
Sample: VE-E-S-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-17
Sample: VE-E-S-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-18
Sample: VE-E-S-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1335036-19
Sample: VE-E-S-A-4

Report Matrix: fish
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-20
Sample: VE-G-S-A-1

Report Matrix: Gills
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-21
Sample: VE-O-S-A-1

Report Matrix: Organs
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Lab ID: 1335036-22
Sample: VE-S-S-A-1

Report Matrix: Scales
Sample Type: Sample

Collected: 08/14/2013
Received: 08/29/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	bag	not provided	none	n/a		Cooler

Sample Containers

Lab ID: 1336005-01
Sample: VE-W-S-J-1

Report Matrix: Biota
Sample Type: Sample

Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-02
Sample: VE-W-S-J-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-03
Sample: VE-W-S-J-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-04
Sample: VE-W-S-J-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-05
Sample: VE-W-S-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-06
Sample: VE-W-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-07
Sample: VE-W-S-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-08
Sample: VE-W-S-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-09
Sample: SS-W-S-J-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-10
Sample: SS-W-S-J-5
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-11
Sample: SS-W-S-J-7
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-12
Sample: SS-W-S-J-8
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-13
Sample: SS-W-S-J-9
Report Matrix: Biota
Sample Type: Sample
Collected: 08/22/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-14
Sample: SS-W-S-J-10
Report Matrix: Biota
Sample Type: Sample
Collected: 08/22/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-15
Sample: SS-E-S-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/14/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-16
Sample: SS-E-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-17
Sample: SS-E-S-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-18
Sample: SS-E-S-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-19
Sample: SS-E-S-A-5
Report Matrix: Biota
Sample Type: Sample
Collected: 08/15/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Sample Containers

Lab ID: 1336005-20
Sample: SS-E-S-A-6
Report Matrix: Biota
Sample Type: Sample
Collected: 08/22/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-21
Sample: SS-H-S-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/15/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-22
Sample: SS-GI-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-23
Sample: SS-HP-S-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-24
Sample: SS-HP-S-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-25
Sample: SS-HP-S-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/20/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-26
Sample: SS-HP-S-A-5
Report Matrix: Biota
Sample Type: Sample
Collected: 08/15/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-27
Sample: SS-HP-S-A-6
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-28
Sample: VE-W-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-29
Sample: VE-W-K-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-30
Sample: VE-W-K-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-31
Sample: VE-W-K-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-32
Sample: VE-W-K-J-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-33
Sample: VE-W-K-J-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-34
Sample: VE-W-K-J-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-35
Sample: VE-W-K-J-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-36
Sample: VE-E-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-37
Sample: VE-E-K-A-2
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1336005-38
Sample: VE-E-K-A-3
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-39
Sample: VE-E-K-A-4
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-40
Sample: VE-G-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-41
Sample: VE-O-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1336005-42
Sample: VE-S-K-A-1
Report Matrix: Biota
Sample Type: Sample
Collected: 08/21/2013
Received: 09/03/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Sample Containers

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1337007-01
Sample: WP-DU-4-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-02
Sample: WP-DU-5-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-03
Sample: LW-DU-C-Algae
Report Matrix: Algae
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-04
Sample: MC-W-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-05
Sample: MC-W-C-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-06
Sample: MC-W-C-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1337007-07
Sample: MC-W-C-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-08
Sample: MC-E-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-09
Sample: MC-E-C-A-2
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-10
Sample: MC-E-C-A-3
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-11
Sample: MC-E-C-A-4
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-12
Sample: MC-G-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Project ID: HDH-HL1301
PM: Lydia Greaves

Client PM: John Peard

Sample Containers

Lab ID: 1337007-13
Sample: MC-O-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-14
Sample: MC-S-C-A-1
Report Matrix: fish
Sample Type: Sample
Collected: 09/03/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-15
Sample: SS-W-C-J-1
Report Matrix: fish
Sample Type: Sample
Collected: 08/28/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

Lab ID: 1337007-16
Sample: SS-W-C-J-2
Report Matrix: fish
Sample Type: Sample
Collected: 08/28/2013
Received: 09/10/2013

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided		not provided	none	n/a		Cooler

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Shipping Containers

Cooler

Received: August 29, 2013 9:45
Tracking No: 803023953239 via FedEx
Coolant Type: Dry Ice
Temperature: -31.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

Cooler

Received: September 3, 2013 9:25
Tracking No: 803721093039 via FedEx
Coolant Type: None
Temperature: 18.3 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

Cooler

Received: September 10, 2013 9:10
Tracking No: 803721089183 via FedEx
Coolant Type: Dry Ice
Temperature: -10.0 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

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MEMO

TO: John Peard, Hawaii Department of Health

FROM: Lydia Greaves, Project Manager

SUBJECT: Potential Arsenobetaine Interference with Dimethyarsinic Acid (DMAs) determination

DATE: April 4, 2014

This memorandum is to inform you of some important new research recently performed at Brooks Rand Labs (BRL), and of the potential affect this research has on the results reported to you for dimethylarsinic acid (DMAs) in biological tissues determined by EPA Method 1632A.

As detailed in the attached R&D Report, BRL has recently found that when biological tissue samples are prepared with the sodium hydroxide sample preparation method described in EPA Method 1632A, arsenobetaine (AsB) can be falsely identified as DMAs. This can result in a false positive for DMAs in many tissues with significant levels of AsB (e.g., fin fish, some shellfish, some sea plants).

Given the quality control samples included in EPA Method 1632A, there would be no way for a lab to detect this bias. Only with the analysis of newly developed certified reference materials was this interference detected and validated.

On October 31, 2013, in BRL report numbers 1335036, 1336005, and 1337007, BRL reported DMAs results to you that may have been significantly impacted by this interference, resulting is a high bias for the DMAs concentrations reported. Specifically, the following samples may have been significantly affected:

1335036-01, -03, -04, -12
1336005-01, -06, -08, -09, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -23,-24,-25,-26,-27,-39
1337007-02, -03, -15, -16

BRL has archived your samples in frozen storage. Please contact us if you would like to request re-analysis of your samples at no cost. Requests for reanalysis must be made within 90 days of the above date.

If you have any questions regarding this memorandum, please feel free to contact me at any time.

Sincerely,

Lydia Greaves

Lydia Greaves
Project Manager
206-632-6206, ext. 127
lydia@brooksrand.com

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Seattle, WA 98107
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Fax: 206-632-6017
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Chain of Custody Record

1335036

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St. Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As (As) Se species (specify) EPA 1638, Modified SM2540G	% Solids	Filtration	MMAs and DMAs Other (specify) EPA 1632	Inorganic As Other (specify) EPA 1632	Comments
1	MC-W-S-A-1	8/14/13	1200	KK	BIO	1	NA	X						X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping.
2	MC-W-S-A-2	8-14	1200	KK	BIO	1		X						X	X		X	X	
3	MC-W-S-A-3	8-14	1200	KK	BIO	1		X						X	X		X	X	
4	MC-W-S-A-4	8-14	1200	KK	BIO	1		X						X	X		X	X	
5	MC-E-S-A-1	8-14	1200	KK	BIO	1		X						X	X		X	X	
6	MC-E-S-A-2	8-14	1200	KK	BIO	1		X						X	X		X	X	
7	MC-E-S-A-3	8-14	1200	KK	BIO	1		X						X	X		X	X	
8	MC-E-S-A-4	8-14	1200	KK	BIO	1		X						X	X		X	X	
9	MC-W-S-J-1	8-14	1200	KK	BIO	1		X						X	X		X	X	
10	MC-W-S-J-2	8-14	1200	KK	BIO	1	NA	X						X	X		X	X	

Relinquished by: KK	Date: 8-26-13	Time: 1145	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: CA
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 8/29/13	Time: 0945
BRL project ID:	

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Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: kevin.kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As (As/Se species (specify) EPA 1638, modified)	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Analyses required: Inorganic As Other (specify) EPA 1632	Comments
1	MC-W-S-J-3	8-14	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping
2	MC-W-S-J-4	8-14	1200	KK	BIO	1								X	X		X	X	
3	MC-G-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
4	MC-O-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
5	MC-S-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
6	VE-E-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
7	VE-E-S-A-2	8-14	1200	KK	BIO	1								X	X		X	X	
8	VE-E-S-A-3	8-14	1200	KK	BIO	1								X	X		X	X	
9	VE-E-S-A-4	8-14	1200	KK	BIO	1								X	X		X	X	
10	VE-G-S-A-1	8-14	1200	KK	BIO	1	NA							X	X		X	X	

Relinquished by: KKelly	Date: 8-28-13	Time: 1148	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:

Date: | Time:
Date: 8/29/13 | Time: 0945
BRL project ID:

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Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1335036

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035190231 1
PO #:

Address: 737 Bishop St, Suite 3200 Honolulu HI 96813
Phone #: 808 441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-[illegible]-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / Se species (specify) EPA 1632, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Analyses required: Inorganic As Other (specify) EPA 1632	Comments
1	VE-0-S-A-1	8-14	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping
2	VE-S-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by:	Date: 8-28-13	Time: 1145	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 8/29/13	Time: 0945
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:	BRL project ID:	

ORIGIN ID:ITOA (808) 831-6600
TETRA TECH EM INC GOVT
737 BISHOP ST STE 3010
HONOLULU, HI 96813-3297
UNITED STATES US

SHIP DATE: 28AUG13
ACTWGT: 36.0 LB MAN
CAD: /POS1400
DIMS: 27x15x15 IN
DRY ICE: 5.0 KGS
BILL SENDER

LYDIA
BROOKS RAND LABS
3958 6TH AVE NW

SEATTLE WA 98107
(206) 632-6206
INV:
PO:
REF:
DEPT:

-31°C

FedEx Express

J1311130212012 6

TRK# 0200 8030 2395 3239

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PRIORITY OVERNIGHT
ICE
98107
WA-US SEA

WV BFIA

Cargo Aircraft Only

Fold Here

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

Page 1 of 3

1336005

White: LAB COPY
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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #: ~~103S1902311~~

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As / Se species (specify) EPA 1632, Modified	% Solids SM2540G	Filtered ~~Total As~~	Inorganic Other (specify) EPA 1632	Inorganic ~~DMAS~~ Other (specify) EPA 1632	Comments
1	VE-W-S-J-1	8-14	1200	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples kept frozen until shipped.
2	VE-W-S-J-2	8-14	1200	KK	B10	1								X	X		X	X	
3	VE-W-S-J-3	8-14	1200	KK	B10	1								X	X		X	X	
4	VE-W-S-J-4	8-14	1200	KK	B10	1								X	X		X	X	
5	VE-W-S-A-1	8-14	1200	KK	B10	1								X	X		X	X	
6	VE-W-S-A-2	8-14	1200	KK	B10	1								X	X		X	X	
7	VE-W-S-A-3	8-14	1200	KK	B10	1								X	X		X	X	
8	VE-W-S-A-4	8-14	1200	KK	B10	1								X	X		X	X	
9	SS-W-S-J-4	8-20	1000	KK	B10	1								X	X		X	X	
10	SS-W-S-J-5	8-20	1000	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date: ____ Time: ____
Date: 9/3/13 Time: 0925
BRL project ID: ____

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St., Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As, Se species (specify) EPA 1632 modified	% Solids SM2540G	Filtration	Inorganic As Other (specify) EPA 1632	MMAs and DMAs Other (specify) EPA 1632	Comments
1	SS-W-S-J-7	8-20	1000	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples kept frozen until shipped.
2	SS-W-S-J-8	8-20	1000	KK	BIO	1								X	X		X	X	
3	SS-W-S-J-9	8-22	1000	KK	BIO	1								X	X		X	X	
4	SS-W-S-J-10	8-22	1000	KK	BIO	1								X	X		X	X	
5	SS-E-S-A-1	8-14	1000	KK	BIO	1								X	X		X	X	
6	SS-E-S-A-2	8-20	1000	KK	BIO	1								X	X		X	X	
7	SS-E-S-A-3	8-20	1000	KK	BIO	1								X	X		X	X	
8	SS-E-S-A-4	8-20	1000	KK	BIO	1								X	X		X	X	
9	SS-E-S-A-5	8-15	1000	KK	BIO	1								X	X		X	X	
10	SS-E-S-A-6	8-22	1000	KK	BIO	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx 1	# of coolers: 1		BRL work order ID:

Date: Time:
Date: 9/3/13 Time: 0925
BRL project ID:

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 1035901902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As, Se species (specify) EPA 1638, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	SS-H-S-A-1	8-15	1000	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples frozen until shipped
2	SS-G1-S-A-1	8-20	1000	KK	B10	1								X	X		X	X	
3	SS-H-S-A-2	8-20	1000	KK	B10	1								X	X		X	X	
4	SS-H-S-A-3	8-20	1000	KK	B10	1								X	X		X	X	
5	SS-H-S-A-4	8-20	1000	KK	B10	1								X	X		X	X	
6	SS-H-S-A-5	8-15	1000	KK	B10	1								X	X		X	X	
7	SS-H-S-A-6	8-21	800	KK	B10	1								X	X		X	X	
8	VE-W-K-A-1	8-21	1200	KK	B10	1								X	X		X	X	
9	VE-W-K-A-2	8-21	1200	KK	B10	1								X	X		X	X	
10	VE-W-K-A-3	8-21	1200	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8.29.13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:

Date:	Time:	
Date: 9/3/13	Time: 0925	
BRL project ID:		

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
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Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035990231 1
PO #:

Address: 737 Bishop St, Suite 3010
Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify) Total As EPA 1632, Method D	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic AS Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	VE-W-K-A-4	8-21	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples frozen until shipped.
2	VE-W-K-J-1	8-21	1200	KK	BIO	1								X	X		X	X	
3	VE-W-K-J-2	8-21	1200	KK	BIO	1								X	X		X	X	
4	VE-W-K-J-3	8-21	1200	KK	BIO	1								X	X		X	X	
5	VE-W-K-J-4	8-21	1200	KK	BIO	1								X	X		X	X	
6	VE-E-K-A-1	8-21	1200	KK	BIO	1								X	X		X	X	
7	VE-E-K-A-2	8-21	1200	KK	BIO	1								X	X		X	X	
8	VE-E-K-A-3	8-21	1200	KK	BIO	1								X	X		X	X	
9	VE-E-K-A-4	8-21	1200	KK	BIO	1								X	X		X	X	
10	VE-G-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	
Received by:	Date:	Time:	
Shipping carrier: FedEx	# of coolers: 1		

Relinquished by:	Date:	Time:
Received at BRL by:	Date: 9/3/13	Time: 0925
BRL work order ID:	BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 0351902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-[redacted]-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As Se species (specify) EPA 1632, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	VEO-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	Homogenization Via BRL SOP BR-0106, Samples frozen until shipped
2	VES-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/3/13	Time: 0925
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:	BRL project ID:	

FedEx Express NEW Package US Airb

FedEx Tracking Number 8037 [redacted] 3039

1 From

Date 8-29-13 [redacted]

Sender's Name Kevin Kell Phone 808 352-0742

Company Tetra Tech, Inc

Address 737 Bishop St Suite 3010

Dept./Floor/Suite/Room

City Honolulu State HI ZIP 96813

2 Your Internal Billing Referen

3 To

Recipient's Name B Lydia * Phone

Company Brooks Rand Lab

Address 3958 6th Ave NW

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Seattle State WA ZIP 98107

HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8037 2109 3039

Date 02C

4 Express Packa

NOTE: Service order ha

Next Business Da

FedEx First Overni Earliest next business mor locations. Friday shipment Monday unless SATURDA

FedEx Priority Ove Next business morning.* F delivered on Monday unle is selected.

FedEx Standard O Next business afternoon.* Saturday Delivery NOT av

5 Packaging

FedEx Envelope*

6 Special Hand

SATURDAY Deliv NOT available for FedEx

No Signature Re Package may be left wit obtaining a signature for

Does this shipment contain dangerous goods?

One box must be checked.

No

Yes As per attached Shipper's Declaration.

Yes Shipper's Declaration not required.

Dry Ice Dry ice, 9, UN 1845 5 kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender Acct. No. in Section 1 will be billed. [redacted]

Recipient

Third Party

Credit Card

Cash/Check

Obtain recip. Acct. No.

Total Packages 1 Total Weight 31 lbs.

Credit Card Auth.

†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

644

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TO LYDIA
BROOKS RAND LABS
3958 6TH AVE NW

SEATTLE WA 98107
(206) 632-6206
INV:
PO:
REF:
DEPT:

FedEx Express

TRK# 0200 8037 2109 3039

FRI - 30 AUG 10:30A
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WV BFIA

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98107
WA-US SEA

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Seattle, WA 98107
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Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1337007

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035190231 1
PO #: (Quote: HOH-HL001)

Address: 737 Bishop St., Suite 3010
Honolulu, HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	(DMC) ICP-MS Metals (specify) Total As EPA 1638M	Inorganic As and As species (specify) MMA, DMA, EPA 1632	% Solids SM 2540G	Filtration	Other (specify)	Other (specify)	Comments
1	WP-DU-4-Algae	9-3-13	1030	KK	BIO	1	NA	X					X	X	X				Homogenization via BRL SOP BR-0106; All samples kept frozen until shipping
2	WP-DV-5-Algae	9-3-13	1130	KK	BIO	1		X					X	X	X				
3	WP-DV-C-Algae	9-3-13	0830	KK	BIO	1		X					X	X	X				
4	MC-W-C-A-1	9-3-13	0830	KK	BIO	1		X					X	X	X				
5	MC-W-C-A-2	9-3-13	0830	KK	BIO	1		X					X	X	X				
6	MC-W-C-A-3	9-3-13	0830	KK	BIO	1		X					X	X	X				
7	MC-W-C-A-4	9-3-13	0830	KK	BIO	1		X					X	X	X				
8	MC-E-C-A-1	9-3-13	0830	KK	BIO	1		X					X	X	X				
9	MC-E-C-A-2	9-3-13	0830	KK	BIO	1		X					X	X	X				
10	MC-E-C-A-3	9-3-13	0830	KK	BIO	1	NA	X					X	X	X				

Relinquished by: JP	Date: 9/9/13	Time: AM	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FED EX	# of coolers: 1		BRL work order ID:

Date: | Time:
Date: 9/10/13 | Time: 0910
BRL project ID:

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 103519702311
PO #: (quote: HDH-HL001)

Address: 737 Bishop St., Suite 3010 Honolulu, HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: ~~Total Hg, EPA 1631~~	Analyses required: ~~Methyl Hg, EPA 1630~~	Analyses required: ICP-MS Metals (specify) Total As EPA 1638 M	Analyses required: As / ~~Se~~ species (specify) Inorganic As and MMA, DMA EPA 1632	Analyses required: % Solids SM 2540G	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	MC-E-C-A-4	9-3	0830	KK	B10	1	NA	X					X	X	X				Homogenization via BRL SOP BR-0106; All samples kept frozen until shipping
2	MC-G-C-A-1	9-3	0830	KK	B10	1		X					X	X	X				
3	MC-O-C-A-1	9-3	0830	KK	B10	1		X					X	X	X				
4	MC-S-C-A-1	9-3	0830	KK	B10	1		X					X	X	X				
5	SS-W-C-J-1	8-28	1530	KK	B10	1		X					X	X	X				
6	SS-W-C-J-2	8-28	1530	KK	B10	1		X					X	X	X				
7																			
8																			
9																			
10																			

Relinquished by: JP	Date: 9/9/13	Time: AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/10/13	Time: 0910
Shipping carrier:	# of coolers:		BRL work order ID:	BRL project ID:	

Appendix G

Sample Chain of Custody Forms

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other:

Client Contact	Project Manager: John Peard	Site Contact: J. Peard	Date: 8/29/13	COC No: 1
Your Company Name here HDOH/HEER	Tel/Fax:	Lab Contact: Kristie Reilly	Carrier:	1 of 1 COCs
Address 1582 Kamehameha Ave	Analysis Turnaround Time			Sampler:
City/State/Zip Hilo, HI 96720	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx Phone 808.933-9921	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: Waiakea Pond	☐ 1 week			
Site: " "	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2mm)	Total Fe (<2mm)	Bioaccessible As	Total Fe (<250um)	Sample Specific Notes:
WP-DU1 (0-4")	8/26/13	6:00pm	MIS	S	1			X	X	X	X	Only test
WP-DU1 (4-8")	8/26/13	6:00pm	"	"	1			X	X	X	X	for bioaccessible
WP-DU1 (8-12")	8/26/13	6:00pm	"	"	1			X	X	X	X	As (& total Fe) in
WP-DU2 (0-4")	8/27/13	6:00pm	"	"	1			X	X	X	X	<250um fraction
WP-DU2 (4-8")	8/27/13	6:00pm	"	"	1			X	X	X	X	if total As >24mg/kg
WP-DU2 (8-12")	8/27/13	6:00pm	"	"	1			X	X	X	X	in <2mm fraction
WP-DU5 (0-4")	8/23/13	6:00pm	"	"	1			X	X	X	X	
WP-DU5 (4-8")	8/23/13	6:00pm	"	"	1			X	X	X	X	
WP-DU5 (8-12") (Five cores only)	8/23/13	6:00pm	"	"	1			X	X	X	X	

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Sediment samples. Process using MIS protocol
*See attached notes
* Bioaccessible arsenic fraction only if total As in <2mm fraction >24mg/kg
Include total As for <250um. Also report total iron for <250um fraction.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____		
Relinquished by: John Peard	Company: HDOH-HEER Office	Date/Time: 8/29/13	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

>>> Select a Laboratory <<<
#N/A
#N/A
#N/A
#N/A

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: John Pennel	Site Contact: J. Pennel	Date: 9/4/13	COC No: 1
Your Company Name here HDOH/HEER	Tel/Fax:	Lab Contact: Kristie Reilly	Carrier:	1 of 1 COCs
Address 1582 Kamehameha Ave.	Analysis Turnaround Time			Sampler:
City/State/Zip Hilo, HI 96720	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx Phone 808 933-9921	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: Waiakea Pond	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2 mm)	Total Fe (<2 mm)	*Bioaccessible As	Total Fe (<250 µm)	Sample Specific Notes:
WP-DU3 (0-4 in.)	8/29/13	6:00 PM	MIS	Sed	1			X	X	X	X	Only test for
WP-DU3 (4-8 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	Bioaccessible As
WP-DU3 (8-12 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	(& Total Fe) in
WP-DU4 (0-4 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	<250 µm Fraction
WP-DU4 (4-8 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	if total As >24 mg/kg
WP-DU4 (8-12 in.)	8/29/13	6:00 PM	"	Sed	1			X	X	X	X	in <2 mm Fraction

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐Non-Hazard ☐Flammable ☐Skin Irritant ☐Poison B ☐Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐Return to Client ☐Disposal by Lab ☐Archive for_____ Months

Special Instructions/QC Requirements & Comments:
Sediment Samples. Process using MIS protocol.
* See Attached notes
* Bioaccessible Arsenic analysis only if total Arsenic <2mm fraction >24 mg/kg
Total As should be included for <250 µm Fraction (if Bioaccessible run). Also report Total Fe for <250 µm Fraction (if no As).

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:_____ Corr'd:_____		Therm ID No.:_____
Relinquished by: Kevin Kelly	Company: Tetra Tech	Date/Time: 9/4/13	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

>>> Select a Laboratory <<<

#N/A Test America - Honolulu
#N/A
#N/A
#N/A

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Your Company Name here HDOH/HEER	Tel/Fax:	Lab Contact:	Carrier:	1 of 1 COCs
Address 1582 Kamehameha Ave	Analysis Turnaround Time			Sampler:
City/State/Zip Hilo, HI 96720	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx Phone 808-933-9921	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☐ 2 weeks			Lab Sampling:
Project Name: Waikea Pond	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total As (<2mm)	Total Fe (<2mm)	*Bioaccessible As	*Total Fe (<250µm)	Sample Specific Notes:
WP-DU-6 (0-4 in.)	9/3/13	6:00pm	MIS	Sed	1			X	X	X	X	
WP-DU-6 (4-8 in.)	9/3/13	6:00pm	MIS	Sed	1			X	X	X	X	
WP-DU6 (8-12 in)	9/3/13	6:00pm	MIS	Sed	1			X	X	X	X	
WP-DU7 (0-4 in.)	9/4/13	6:00pm	MIS	Sed	1			X	X	X	X	
WP-DU 7 (4-8 in.)	9/4/13	6:00pm	MIS	Sed	1			X	X	X	X	
WP-DU 7 (8-12 in)	9/4/13	6:00pm	MIS	Sed	1			X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Sediment Samples. Process using HDOH MIS Protocol - 10gm total As & Fe in <2mm fract
* Please Report Total As & Fe in <2mm fraction, then HDOH-HEER will get back on which samples to run Bioaccessible Arsenic on. For samples where Bio As analyzed please report Total As & Fe in the <250µm fraction.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Reard	HDOH-HEER office	9/9/13 AM			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH/HEER
Contact: John Pennd
Client project ID:
PO #: (Quote HDH-HL001)

Address: 1582 Kamehameha Ave. Hilo, HI 96720
Phone #: 1-808-933-9921

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pennd@doh.hawaii.gov
Fax #:

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: ~~Total Hg, EPA 1631~~	Analyses required: ~~Methyl Hg, EPA 1630~~	Analyses required: (DNC) EPA 1638 ICP-MS Metals (specify) As, Fe	Analyses required: Inorganic As species (specify) MMAO, DMA 1632	Analyses required: % Solids (30-50 grams) SM 2540G	Analyses required: ~~Filtration~~	Analyses required: Other (specify) TOC 9060	Analyses required: Other (specify) Grain Size D422	Comments
1	WP-DU1 (0-4")	8/24/13	6:00pm	JP	Sed	1	–			-frozen-			X	X	X		X	X	use MIS subsampling for TOC & grain-size analysis
2	WP-DU1 (4-8")	8/24/13	6:00pm	JP	"	1	–						X	X	X		X	X	
3	WP-DU1 (8-12")	8/24/13	6:00pm	JP	"	1	–						X	X	X		X	X	
4	WP-DU2 (0-4")	8/27/13	6:00pm	JP	"	1	–						X	X	X		X	X	
5	WP-DU2 (4-8")	8/27/13	6:00pm	JP	"	1	–						X	X	X		X	X	
6	WP-DU2 (8-12")	8/27/13	6:00pm	JP	"	1	–						X	X	X		X	X	
7	WP-DU5 (0-4")	8/23/13	6:00pm	JP	"	1	–						X	X	X		X	X	
8	WP-DU5 (4-8")	8/23/13	6:00pm	JP	"	1	–						X	X	X		X	X	
9	WP-DU5 (8-12")	8/23/13	6:00pm	JP	"	1	–						X	X	X		X	X	
10																			

Relinquished by: John Pennd	Date: 8-29-13	Time: 10:00AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/3/13	Time: 0925
Shipping carrier: FedEx	# of coolers:		BRL work order ID:	BRL project ID:	

Do Not Lift Using This Tag

Align FedEx Pouch

fedex.com 1.800.GoFedEx 1.800.463.3339

FedEx Express. NEW Package US Airbill

FedEx Tracking Number 8037 2108 7467

[redacted]

#481676 08/29 51AG1/09B9/1A9E

16.6c

Form ID No. 0200

1 From

Date Aug. 29, 2012 Call (808) 960-0080

Sender's Name R. John Pennd Phone 808 933-1121

Company HDOH - HEEL OFFICE - HILO

Address 1582 Kamehameha Ave. Dept./Floor/Suite/Room

City Hilo State HI ZIP 96720

2 Your Internal Billing Reference R. John Pennd

3 To

Recipient's Name BROOKS RAND LABS ATTN: Lydia GREAVES Phone 206 632-6206

Company BROOKS RAND LABS

Address 3958 6TH AVE. NW Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City SEATTLE State WA ZIP 98107

☐ HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.

☐ HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8037 2108 7467

4 Express Package Se

NOTE Service order has chang

Next Business Day

☐ FedEx First Overnight Earliest next business morning deliv locations. Friday shipments will be d Monday unless SATURDAY Delivery

(X) FedEx Priority Overnight Next business morning.* Friday ship delivered on Monday unless SATUR is selected.

☐ FedEx Standard Overnigl Next business afternoon.* Saturday Delivery NOT available.

5 Packaging *Declared

☐ FedEx Envelope*

6 Special Handling a

☐ SATURDAY Delivery NOT available for FedEx Standard

☐ No Signature Required Package may be left without obtaining a signature for delivery.

residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?

One box must be checked.

(X) No ☐ Yes As per attached Shipper's Declaration. ☐ Yes Shipper's Declaration not required.

(X) Dry Ice Dry Ice, 9, UN 1845 1.5 kg

☐ Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below

Obtain recip. Acct. No. ☐

☐ Sender Acct. No. in Section 1 will be billed. ☐ Recipient ☐ Third Party (X) Credit Card ☐ Cash/Check

[redacted]

Total Packages 1 Total Weight 87 lbs.

Credit Card Auth.

365.17

644

*Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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463.3339

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MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1336023

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH/HEER
Contact: John Pearrd
Client project ID:
PO #: (Quote HDH-HL001)

Address: 1582 Kamehameha Ave. Hilo, HI 96720
Phone #: 1-808-933-9921 or (808) 960-0080

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pearrd@doh.hawaii.gov
Fax #:

Requested TAT in business days:
- ☑ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Date	Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	~~Total Hg, EPA 1631~~	~~Methyl Hg, EPA 1630~~	ICP-MS Metals (specify) (DAC) EPA 1638M As, Fe	Inorganic As / As Se species (specify) MARL DMB 1632	% Solids (30-50 gm) SM-2540G	~~Filtration~~	Other (specify) TOC 9060	~~Other (specify)~~ Grain size D422	Comments
1	WP-DU3 (0-4")	8/28/13	6:00PM	JP	Sed	1	—			Frozen			X	X	X		X	X	Use MIS sub-sampling for TOC & grain size analyses
2	WP-DU3 (4-8")	8/28/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
3	WP-DU3 (8-12")	8/28/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
4	WP-DU4 (0-4")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
5	WP-DU4 (4-8")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
6	WP-DU4 (8-12")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
7	[redacted]																		
8	WP-DU1-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				just total As, not Fe (via ICP-MS on sed.)
9	WP-DU2-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				% solids could be ~~C30-50gm~~ (~~[illegible]~~ for sed.)
10	WP-DU3-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				

Relinquished by: Kevin Kelly	Date: 9/4/13	Time: 1145	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed-EX	# of coolers: 1		BRL work order ID:

Relinquished by:	Date:	Time:
Received at BRL by:	Date: 9/5/13	Time: 1030
BRL work order ID:	BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1335036

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St. Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As (As) Se species (specify) EPA 1638, Modified SM2540G	Analyses required: % Solids	Analyses required: Filtration	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Analyses required: Inorganic As Other (specify) EPA 1632	Comments
1	MC-W-S-A-1	8/14/13	1200	KK	BIO	1	NA	X						X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping.
2	MC-W-S-A-2	8-14	1200	KK	BIO	1		X						X	X		X	X	
3	MC-W-S-A-3	8-14	1200	KK	BIO	1		X						X	X		X	X	
4	MC-W-S-A-4	8-14	1200	KK	BIO	1		X						X	X		X	X	
5	MC-E-S-A-1	8-14	1200	KK	BIO	1		X						X	X		X	X	
6	MC-E-S-A-2	8-14	1200	KK	BIO	1		X						X	X		X	X	
7	MC-E-S-A-3	8-14	1200	KK	BIO	1		X						X	X		X	X	
8	MC-E-S-A-4	8-14	1200	KK	BIO	1		X						X	X		X	X	
9	MC-W-S-J-1	8-14	1200	KK	BIO	1		X						X	X		X	X	
10	MC-W-S-J-2	8-14	1200	KK	BIO	1	NA	X						X	X		X	X	

Relinquished by: KK	Date: 8-26-13	Time: 1145	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: CA
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 8/29/13	Time: 0945
BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: kevin.kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As (As/Se species (specify) EPA 1632, modified)	% Solids SM2540G	Filtration	MMAs and DMAs Other (specify) EPA 1632	Inorganic As Other (specify) EPA 1632	Comments
1	MC-W-S-J-3	8-14	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping
2	MC-W-S-J-4	8-14	1200	KK	BIO	1								X	X		X	X	
3	MC-G-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
4	MC-O-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
5	MC-S-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
6	VE-E-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
7	VE-E-S-A-2	8-14	1200	KK	BIO	1								X	X		X	X	
8	VE-E-S-A-3	8-14	1200	KK	BIO	1								X	X		X	X	
9	VE-E-S-A-4	8-14	1200	KK	BIO	1								X	X		X	X	
10	VE-G-S-A-1	8-14	1200	KK	BIO	1	NA							X	X		X	X	

Relinquished by: KKelly	Date: 8-28-13	Time: 1148	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:

Date:	Time:
Date: 8/29/13	Time: 0945
BRL project ID:	

BROOKS RAND LABS
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3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1335036

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035190231 1
PO #:

Address: 737 Bishop St, Suite 3200 Honolulu HI 96813
Phone #: 808 441-6603

COC receipt confirmation? Y / N
If so, by: email / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-[illegible]-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / Se species (specify) EPA 1632, modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Analyses required: Inorganic As Other (specify) EPA 1632	Comments
1	VE-0-S-A-1	8-14	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106; all samples kept frozen until shipping
2	VE-S-S-A-1	8-14	1200	KK	BIO	1								X	X		X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by:	Date: 8-28-13	Time: 1145	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 8/29/13	Time: 0945
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:	BRL project ID:	

ORIGIN ID:ITOA (808) 831-6600
TETRA TECH EM INC GOVT
737 BISHOP ST STE 3010
HONOLULU, HI 96813 3297
UNITED STATES US

SHIP DATE: 28AUG13
ACTWGT: 36.0 LB MAN
CAD: /POS1400
DIMS: 27x15x15 IN
DRY ICE: 5.0 KGS
BILL SENDER

LYDIA
BROOKS RAND LABS
3958 6TH AVE NW

SEATTLE WA 98107
(206) 632-6206

-31°C

INV:
PO: REF:
DEPT:

FedEx Express

J1311130212012 6

TRK# 0200 8030 2395 3239

THU - 29 AUG 10:30A
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ICE
98107
WA-US SEA

WV BFIA

Cargo Aircraft Only

Pull FedEx Pouch Here

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MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1336005

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #: ~~103S1902311~~

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	Total As / Se species (specify) EPA 1632, Modified	% Solids SM2540G	Filtered ~~Total As~~	Inorganic Other (specify) EPA 1632	Inorganic As Other (specify) EPA 1632	Comments
1	VE-W-S-J-1	8-14	1200	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples kept frozen until shipped.
2	VE-W-S-J-2	8-14	1200	KK	B10	1								X	X		X	X	
3	VE-W-S-J-3	8-14	1200	KK	B10	1								X	X		X	X	
4	VE-W-S-J-4	8-14	1200	KK	B10	1								X	X		X	X	
5	VE-W-S-A-1	8-14	1200	KK	B10	1								X	X		X	X	
6	VE-W-S-A-2	8-14	1200	KK	B10	1								X	X		X	X	
7	VE-W-S-A-3	8-14	1200	KK	B10	1								X	X		X	X	
8	VE-W-S-A-4	8-14	1200	KK	B10	1								X	X		X	X	
9	SS-W-S-J-4	8-20	1000	KK	B10	1								X	X		X	X	
10	SS-W-S-J-5	8-20	1000	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed Ex	# of coolers: 1		BRL work order ID:

Date: Time:
Date: 9/3/13 Time: 0925
BRL project ID:

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 103S1902311
PO #:

Address: 737 Bishop St., Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / As Se species (specify) EPA 1632 modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	SS-W-S-J-7	8-20	1000	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples kept frozen until shipped.
2	SS-W-S-J-8	8-20	1000	KK	B10	1								X	X		X	X	
3	SS-W-S-J-9	8-22	1000	KK	B10	1								X	X		X	X	
4	SS-W-S-J-10	8-22	1000	KK	B10	1								X	X		X	X	
5	SS-E-S-A-1	8-14	1000	KK	B10	1								X	X		X	X	
6	SS-E-S-A-2	8-20	1000	KK	B10	1								X	X		X	X	
7	SS-E-S-A-3	8-20	1000	KK	B10	1								X	X		X	X	
8	SS-E-S-A-4	8-20	1000	KK	B10	1								X	X		X	X	
9	SS-E-S-A-5	8-15	1000	KK	B10	1								X	X		X	X	
10	SS-E-S-A-6	8-22	1000	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx 1	# of coolers: 1		BRL work order ID:

Date: Time:
Date: 9/3/13 Time: 0925
BRL project ID:

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech
Contact: Kevin Kelly
Client project ID: 1035901902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As / Se species (specify) EPA 1632, methods	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	SS-H-S-A-1	8-15	1000	KK	B10	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples frozen until shipped
2	SS-G1-S-A-1	8-20	1000	KK	B10	1								X	X		X	X	
3	SS-H-S-A-2	8-20	1000	KK	B10	1								X	X		X	X	
4	SS-H-S-A-3	8-20	1000	KK	B10	1								X	X		X	X	
5	SS-H-S-A-4	8-20	1000	KK	B10	1								X	X		X	X	
6	SS-H-S-A-5	8-15	1000	KK	B10	1								X	X		X	X	
7	SS-H-S-A-6	8-21	800	KK	B10	1								X	X		X	X	
8	VE-W-K-A-1	8-21	1200	KK	B10	1								X	X		X	X	
9	VE-W-K-A-2	8-21	1200	KK	B10	1								X	X		X	X	
10	VE-W-K-A-3	8-21	1200	KK	B10	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8.29.13	Time: 1100	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:

Date: | Time:
Date: 9/3/13 | Time: 0925
BRL project ID:

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 1035990231 1
PO #:

Address: 737 Bishop St, Suite 3010
Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) / N
If so, by (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify) Total As EPA 1638 Modified	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	VE-W-K-A-4	8-21	1200	KK	BIO	1	NA							X	X		X	X	Homogenization via BRL SOP BR-0106. Samples frozen until shipped.
2	VE-W-K-J-1	8-21	1200	KK	BIO	1								X	X		X	X	
3	VE-W-K-J-2	8-21	1200	KK	BIO	1								X	X		X	X	
4	VE-W-K-J-3	8-21	1200	KK	BIO	1								X	X		X	X	
5	VE-W-K-J-4	8-21	1200	KK	BIO	1								X	X		X	X	
6	VE-E-K-A-1	8-21	1200	KK	BIO	1								X	X		X	X	
7	VE-E-K-A-2	8-21	1200	KK	BIO	1								X	X		X	X	
8	VE-E-K-A-3	8-21	1200	KK	BIO	1								X	X		X	X	
9	VE-E-K-A-4	8-21	1200	KK	BIO	1								X	X		X	X	
10	VE-G-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	

Relinquished by: Kevin Kelly	Date: 8-29-13	Time: 1100	
Received by:	Date:	Time:	
Shipping carrier: FedEx	# of coolers: 1		

Relinquished by:	Date:	Time:
Received at BRL by:	Date: 9/3/13	Time: 0925
BRL work order ID:	BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech
Contact: Kevin Kelly
Client project ID: 0351902311
PO #:

Address: 737 Bishop St, Suite 3010 Honolulu HI 96813
Phone #: 808-441-6603

COC receipt confirmation? (Y) N
If so, by: (email) / fax (circle one)
Email: Kevin.Kelly@tetratech.com
Fax #: 808-[redacted]-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: Total As (As species (specify) EPA 1632, modified)	Analyses required: % Solids SM2540G	Analyses required: Filtration	Analyses required: Inorganic As Other (specify) EPA 1632	Analyses required: MMAs and DMAs Other (specify) EPA 1632	Comments
1	VEO-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	Homogenization Via BRL SOP BR-0106, Samples frozen until shipped
2	VES-K-A-1	8-21	1200	KK	BIO	1	NA							X	X		X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: Kevin Kelly	Date: 8-21-13	Time: 1100	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 9/3/13	Time: 0925
Shipping carrier: FedEx	# of coolers: 1		BRL work order ID:	BRL project ID:	

FedEx Express NEW Package US Airb

FedEx Tracking Number 8037 [redacted] 3039

1 From

Date 8-29-13 [redacted]

Sender's Name Kevin Kell Phone 808 352-0742

Company Tetra Tech, Inc

Address 737 Bishop St. Suite 3010

Dept./Floor/Suite/Room

City Honolulu State HI ZIP 96813

2 Your Internal Billing Referen

3 To

Recipient's Name B Lydia * Phone

Company Brooks Rand Lab

Address 3958 6th Ave NW

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Seattle State WA ZIP 98107

HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

8037 2109 3039

Date 020

4 Express Packa

NOTE: Service order ha

Next Business Da

FedEx First Overni Earliest next business mor locations. Friday shipment Monday unless SATURDA

FedEx Priority Ove Next business morning.* F delivered on Monday unle is selected.

FedEx Standard O Next business afternoon.* Saturday Delivery NOT av

5 Packaging

FedEx Envelope*

6 Special Hand

SATURDAY Deliv NOT available for FedEx

No Signature Re Package may be left wit obtaining a signature for

Does this shipment contain dangerous goods?

One box must be checked.

No

Yes As per attached Shipper's Declaration.

Yes Shipper's Declaration not required.

Dry Ice Dry ice, 9, UN 1845 5 kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender Acct. No. in Section 1 will be billed. [redacted]

Recipient

Third Party

Credit Card

Cash/Check

Obtain recip. Acct. No.

Total Packages 1 Total Weight 31 lbs.

Credit Card Auth.

†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

644

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TO LYDIA
BROOKS RAND LABS
3958 6TH AVE NW

SEATTLE WA 98107
(206) 632-6206
INV:
PO: REF:
DEPT:

FedEx Express

E

TRK# 0200 8037 2109 3039

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ICE
98107
WA-US SEA

WV BFIA

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Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TetraTech	Address: 737 Bishop St., Suite 3010 Honolulu, HI 96813	COC receipt confirmation? (Y) / N
Contact: Kevin Kelly		If so, by: (email) / fax (circle one)
Client project ID: 1035T902311		Email: Kevin.Kelly@tetratech.com
PO #: (Quote: HOH-HL001)	Phone #: 808-441-6603	Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify) Total As EPA 1638M	Analyses required: As / Se species (specify) Inorganic As only MMA, DMA, EPA 1632	Analyses required: % Solids SM 2540G	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	WP-DV-4-Algae	9-3-13	1030	KK	BIO	1	NA	X					X	X	X				Homogenization via BRL SOP BR-0106; All samples kept frozen until shipping
2	WP-DV-5-Algae	9-3-13	1130	KK	BIO	1		X					X	X	X				
3	WP-DV-C-Algae	9-3-13	0830	KK	BIO	1		X					X	X	X				
4	MC-W-C-A-1	9-3-13	0830	KK	BIO	1		X					X	X	X				
5	MC-W-C-A-2	9-3-13	0830	KK	BIO	1		X					X	X	X				
6	MC-W-C-A-3	9-3-13	0830	KK	BIO	1		X					X	X	X				
7	MC-W-C-A-4	9-3-13	0830	KK	BIO	1		X					X	X	X				
8	MC-E-C-A-1	9-3-13	0830	KK	BIO	1		X					X	X	X				
9	MC-E-C-A-2	9-3-13	0830	KK	BIO	1		X					X	X	X				
10	MC-E-C-A-3	9-3-13	0830	KK	BIO	1	NA	X					X	X	X				

Relinquished by: JP	Date: 9/9/13	Time: AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date:	Time:
Shipping carrier: FED EX	# of coolers: 1		BRL work order ID:	BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

White: LAB COPY
Yellow: CUSTOMER COPY

Client: Tetra Tech	Address: 737 Bishop St., Suite 3010 Honolulu, HI 96813	COC receipt confirmation? (Y) / N
Contact: Kevin Kelly		If so, by: (email) / fax (circle one)
Client project ID: 103519202311		Email: Kevin.Kelly@tetratech.com
PO #: (quote: HDH-HL001)	Phone #: 808-441-6603	Fax #: 808-836-1689

Requested TAT in business days:
- [x] 20 (standard)
- [ ] 15
- [ ] 10
- [ ] 5
- [ ] Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: ~~Total Hg, EPA 1631~~	Analyses required: Methyl Hg, EPA 1630	Analyses required: (Calc) ICP-MS Metals (specify) Total As EPA 1638 M	Analyses required: Inorganic As and As species (specify) MMA, DMA EPA 1632	Analyses required: % Solids SM 2540G	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	MC-E-C-A-4	9-3	0830	KK	BIO	1	NA	X					X	X	X				Homogenization via BRL SOP BR-0106; All samples kept frozen until shipping
2	MC-G-C-A-1	9-3	0830	KK	BIO	1		X					X	X	X				
3	MC-O-C-A-1	9-3	0830	KK	BIO	1		X					X	X	X				
4	MC-S-C-A-1	9-3	0830	KK	BIO	1		X					X	X	X				
5	SS-(W)-C-J-1	8-28	1530	KK	BIO	1		X					X	X	X				
6	SS-W-C-J-2	8-28	1530	KK	BIO	1		X					X	X	X				
7																			
8																			
9																			
10																			

Relinquished by: JP	Date: 9/9/3	Time: AM	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date:	Time:
Shipping carrier:	# of coolers:		BRL work order ID:	BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1336023

White: LAB COPY
Yellow: CUSTOMER COPY

Client: HDOH/HEER
Contact: John Pearrd
Client project ID:
PO #: (Quote HDH-HL001)

Address: 1582 Kamehameha Ave. Hilo, HI 96720
Phone #: 1-808-933-9921 or (808) 960-0080

COC receipt confirmation? (Y) / N
If so, by: (email) / fax (circle one)
Email: john.pearrd@doh.hawaii.gov
Fax #:

Requested TAT in business days:
- ☑ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Date	Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Unpreserved / ice only	HCl / HNO_3 (circle one)	Other (specify)	~~Total Hg, EPA 1631~~	~~Methyl Hg, EPA 1630~~	ICP-MS Metals (specify) (DAC) EPA 1638M As, Fe	Inorganic As / As Se species (specify) MARL DMB 1632	% Solids (30-50 gm) SM-2540G	~~Filtration~~	Other (specify) TOC 9060	~~Other (specify)~~ Grain size D422	Comments
1	WP-DU3 (0-4")	8/28/13	6:00PM	JP	Sed	1	—			Frozen			X	X	X		X	X	Use MIS sub-sampling for TOC & grain size analyses
2	WP-DU3 (4-8")	8/28/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
3	WP-DU3 (8-12")	8/28/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
4	WP-DU4 (0-4")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
5	WP-DU4 (4-8")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
6	WP-DU4 (8-12")	8/29/13	6:00PM	JP	Sed	1	—						X	X	X		X	X	
7	[redacted]																		
8	WP-DU1-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				just total As, not Fe (via ICP-MS on sed.)
9	WP-DU2-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				% solids could be ~~C30-50gm~~ (~~[illegible]~~ for sed.)
10	WP-DU3-Algae	8/31/13	6:00PM	KK	Algae	1	—						X	X	X				

Relinquished by: Kevin Kelly	Date: 9/4/13	Time: 1145	Relinquished by:
Received by:	Date:	Time:	Received at BRL by:
Shipping carrier: Fed-EX	# of coolers: 1		BRL work order ID:

Relinquished by:	Date:	Time:
Received at BRL by:	Date: 9/5/13	Time: 1030
BRL work order ID:	BRL project ID:	

Appendix H

Sediment Subsample Replicate Data Summary

Table B-1. Waiakea Pond sediment data, including laboratory replicate data (Brooks Rand Laboratory).

Brooks Rand Labs Anlayses -Replicates Sediment Sample ID	Total Arsenic mg/kg*	Inorg. Arsenic mg/kg*	% Inorg. Arsenic	DMAs mg/kg*	MMAs mg/kg*	Total Iron mg/kg*	Total Solids %
WP-**DU-1 (0-4 in)**, rep. 1	399	214	53.6	1.16	0.777	62,400	38.58
WP-**DU-1 (0-4 in)**, rep. 2	365	191	52.3	1.12	0.745	55,800	40.16
WP-**DU-1 (0-4 in)**, rep. 3	288	167	58.0	1.17	0.778	53,600	39.71
Average	**351**	**191**	**54.6**	**1.15**	**0.767**	**57,267**	**39.5**
Standard Deviation	56.9	23.5				4,580	
Relative Std Dev %	**16.2**	**12.3**				**8.00**	
WP-**DU-1 (4-8 in)**, rep. 1	487	223	45.8	1.27	0.846	20000	41.1
WP-**DU-1 (4-8 in)**, rep. 2	453	188	41.5	1.30	0.865	52700	39.87
WP-**DU-1 (4-8 in)**, rep. 3	280	169	60.4	1.27	1.44	37800	38.12
Average	**407**	**193**	**49.2**	**1.28**	**1.05**	**36833**	**39.7**
Standard Deviation	111	27.4				16371	
Relative Std Dev %	**27.3**	**14.2**				**44.4**	
WP-**DU-1 (8-12 in)**, rep. 1	301	128	42.5	1.26	1.07	56800	41.62
WP-**DU-1 (8-12 in)**, rep. 2	300	104	34.7	1.30	0.87	62600	39.48
WP-**DU-1 (8-12 in)**, rep. 3	339	181	53.4	1.29	0.858	59600	39.52
Average	**313**	**138**	**43.5**	**1.28**	**0.933**	**59667**	**40.2**
Standard Deviation	22.2	39.4				2901	
Relative Std Dev %	**7.10**	**28.6**				**4.86**	
WP-**DU-2 (0-4 in)**, rep. 1	2140	988	46.2	1.50	0.998	51100	34.77
WP-**DU-2 (0-4 in)**, rep. 2	2950	706	23.9	1.36	0.904	49300	36.56
WP-**DU-2 (0-4 in)**, rep. 3	1860	513	27.6	1.21	0.806	49500	38.61
Average	**2317**	**736**	**32.6**	**1.36**	**0.903**	**49967**	**36.6**
Standard Deviation	566	239				987	
Relative Std Dev %	**24.4**	**32.5**				**1.97**	
WP-**DU-2 (4-8 in)**, rep. 1	708	311	43.9	1.24	0.826	74300	39.92
WP-**DU-2 (4-8 in)**, rep. 2	661	274	41.5	1.16	0.771	52200	42.44
WP-**DU-2 (4-8 in)**, rep. 3	759	239	31.5	1.14	0.757	54700	43.39
Average	**709**	**275**	**39.0**	**1.18**	**0.785**	**60400**	**41.9**
Standard Deviation	49.0	36.0				12102	
Relative Std Dev %	**6.91**	**13.1**				**20.0**	
WP-**DU-2 (8-12 in)**, rep. 1	608	201	33.1	1.18	0.789	51400	39.09
WP-**DU-2 (8-12 in)**, rep. 2	581	407	70.1	1.16	0.770	61700	40.03
WP-**DU-2 (8-12 in)**, rep. 3	553	355	64.2	1.21	0.807	56000	39.48
Average	**581**	**321**	**55.8**	**1.18**	**0.789**	**56367**	**39.5**
Standard Deviation	27.5	107				5160	
Relative Std Dev %	**4.74**	**33.4**				**9.15**	
WP-**DU-3 (0-4 in)**, rep. 1	153	91.1	59.5	0.308	0.247	48500	51.18
WP-**DU-3 (0-4 in)**, rep. 2	211	89.1	42.2	0.388	0.311	61900	50.69
WP-**DU-3 (0-4 in)**, rep. 3	209	109	52.2	0.414	0.322	62200	50.69
Average	**191**	**96.4**	**51.3**	**0.37**	**0.293**	**57533**	**50.9**
Standard Deviation	32.9	11.0				7825	
Relative Std Dev %	**17.2**	**11.4**				**13.6**	
WP-**DU-3 (4-8 in)**, rep. 1	216	107	49.5	0.423	0.338	54600	49.72
WP-**DU-3 (4-8 in)**, rep. 2	252	117	46.4	0.356	0.285	61200	48.91

Table B-1. Waiakea Pond sediment data, including laboratory replicate data (Brooks Rand Laboratory).

Brooks Rand Labs Anlayses -Replicates Sediment Sample ID	Total Arsenic mg/kg*	Inorg. Arsenic mg/kg*	% Inorg. Arsenic	DMAs mg/kg*	MMAs mg/kg*	Total Iron mg/kg*	Total Solids %
WP-**DU-3 (4-8 in)**, rep. 3	213	120	56.3	0.848	0.678	67000	50.96
Average	**227**	**115**	**50.8**	**0.542**	**0.434**	**60933**	**49.9**
Standard Deviation	21.7	6.81				6204	
Relative Std Dev %	**9.56**	**5.94**				**10.2**	
WP-**DU-3 (8-12 in)**, rep. 1	257	173	67.3	0.408	0.326	61000	45.11
WP-**DU-3 (8-12 in)**, rep. 2	261	168	64.4	0.440	0.352	60800	44.27
WP-**DU-3 (8-12 in)**, rep. 3	237	128	54.0	0.426	0.341	66600	45.3
Average	**252**	**156**	**61.9**	**0.425**	**0.340**	**62800**	**44.9**
Standard Deviation	12.9	24.7				3292	
Relative Std Dev %	**5.11**	**15.8**				**5.24**	
WP-**DU-4 (0-4 in)**, rep. 1	127	92.2	72.6	0.407	0.326	66100	54.37
WP-**DU-4 (0-4 in)**, rep. 2	114	76.3	66.9	0.379	0.303	64500	54.75
WP-**DU-4 (0-4 in)**, rep. 3	194	76.8	39.6	0.403	0.322	72300	54.94
Average	**145**	**81.8**	**59.7**	**0.396**	**0.317**	**67633**	**54.7**
Standard Deviation	42.9	9.04				4120	
Relative Std Dev %	**29.6**	**11.1**				**6.09**	
WP-**DU-4 (4-8 in)**, rep. 1	178	81.4	45.7	0.349	0.279	59900	58.61
WP-**DU-4 (4-8 in)**, rep. 2	238	97.9	41.1	0.343	0.275	66700	57.57
WP-**DU-4 (4-8 in)**, rep. 3	143	104	72.7	0.329	0.263	70600	57.82
Average	**186**	**94.4**	**53.2**	**0.340**	**0.272**	**65733**	**58.0**
Standard Deviation	48.0	11.7				5415	
Relative Std Dev %	**25.8**	**12.4**				**8.24**	
WP-**DU-4 (8-12 in)**, rep. 1	145	98.1	67.7	0.365	0.292	68000	58.42
WP-**DU-4 (8-12 in)**, rep. 2	160	96.5	60.3	0.339	0.271	74800	57.01
WP-**DU-4 (8-12 in)**, rep. 3	165	106	64.2	0.324	0.259	71400	58.71
Average	**157**	**100**	**64.1**	**0.343**	**0.274**	**71400**	**58.0**
Standard Deviation	10.4	5.09				3400	
Relative Std Dev %	**6.64**	**5.08**				**4.76**	
WP-**DU-5 (0-4 in)**, rep. 1	58.4	43.2	74.0	0.141	0.094	67900	76.14
WP-**DU-5 (0-4 in)**, rep. 2	58.9	55.7	94.6	0.143	0.095	89700	75.42
WP-**DU-5 (0-4 in)**, rep. 3	509	42.1	8.27	0.150	0.100	64900	74.28
Average	**209**	**47.0**	**58.9**	**0.145**	**0.096**	**74167**	**75.3**
Standard Deviation	260	7.55				13536	
Relative Std Dev %	**125**	**16.1**				**18.3**	
WP-**DU-5 (4-8 in)**, rep. 1	448	84.0	18.8	0.332	0.221	68100	76.03
WP-**DU-5 (4-8 in)**, rep. 2	138	73.3	53.1	0.322	0.215	66200	74.50
WP-**DU-5 (4-8 in)**, rep. 3	593	60.6	10.2	0.336	0.224	56400	74.68
Average	**393**	**72.6**	**27.4**	**0.330**	**0.220**	**63567**	**75.1**
Standard Deviation	232	11.7				6279	
Relative Std Dev %	**59.1**	**16.1**				**9.88**	
WP-**DU-5 (8-12 in)**, rep. 1	917	330	36.0	0.331	0.220	71900	68.62
WP-**DU-5 (8-12 in)**, rep. 2	491	283	57.6	0.363	0.242	61800	70.00
WP-**DU-5 (8-12 in)**, rep. 3	665	354	53.2	0.750	0.500	63200	68.67
Average	**691**	**322**	**49.0**	**0.481**	**0.321**	**65633**	**69.1**

Table B-1. Waiakea Pond sediment data, including laboratory replicate data (Brooks Rand Laboratory).

Brooks Rand Labs Anlayses -Replicates Sediment Sample ID	Total Arsenic mg/kg*	Inorg. Arsenic mg/kg*	% Inorg. Arsenic	DMAs mg/kg*	MMAs mg/kg*	Total Iron mg/kg*	Total Solids %
Standard Deviation	214	36.1				5472	
Relative Std Dev %	**31.0**	**11.2**				**8.34**	
WP-**DU-6 (0-4 in)**, rep. 1	544	249	45.8	1.07	0.856	54400	36.15
WP-**DU-6 (0-4 in)**, rep. 2	443	267	60.3	0.978	0.782	51700	36.33
WP-**DU-6 (0-4 in)**, rep. 3	470	235	50.0	0.959	0.767	45900	35.95
Average	**486**	**250**	**52.0**	**1.00**	**0.802**	**50667**	**36.14**
Standard Deviation	52.29	16.04				4343	
Relative Std Dev %	**10.77**	**6.41**				**8.57**	
WP-**DU-6 (4-8 in)**, rep. 1	592	251	42.4	1.02	0.817	59300	34.29
WP-**DU-6 (4-8 in)**, rep. 2	550	317	57.6	1.20	0.957	54400	34.92
WP-**DU-6 (4-8 in)**, rep. 3	605	288	47.6	0.993	0.794	50600	33.85
Average	**582**	**285**	**49.2**	**1.07**	**0.856**	**54767**	**34.35**
Standard Deviation	28.7	33.1				4362	
Relative Std Dev %	**4.94**	**11.6**				**7.96**	
WP-**DU-6 (8-12 in)**, rep. 1	551	282	51.2	0.816	0.653	57600	35.51
WP-**DU-6 (8-12 in)**, rep. 2	537	303	56.4	1.05	0.841	57800	35.29
WP-**DU-6 (8-12 in)**, rep. 3	549	306	55.7	1.01	0.807	62200	36.86
Average	**546**	**297**	**54.4**	**0.959**	**0.767**	**59200**	**35.89**
Standard Deviation	7.57	13.1				2600	
Relative Std Dev %	**1.39**	**4.40**				**4.39**	
WP-**DU-7 (0-4 in)**, rep. 1	456	248	54.4	1.06	0.849	51100	37.49
WP-**DU-7 (0-4 in)**, rep. 2	487	236	48.5	1.05	0.838	50500	37.27
WP-**DU-7 (0-4 in)**, rep. 3	427	262	61.4	1.19	0.949	43900	36.98
Average	**457**	**249**	**54.7**	**1.10**	**0.879**	**48500**	**37.25**
Standard Deviation	30.0	13.0				3995	
Relative Std Dev %	**6.57**	**5.23**				**8.24**	
WP-**DU-7 (4-8 in)**, rep. 1	584	308	52.7	1.08	0.867	48300	37.96
WP-**DU-7 (4-8 in)**, rep. 2	553	342	61.8	1.10	0.880	50100	38.21
WP-**DU-7 (4-8 in)**, rep. 3	591	342	57.9	1.14	0.916	56000	38.06
Average	**576**	**331**	**57.5**	**1.11**	**0.888**	**51467**	**38.08**
Standard Deviation	20.2	19.6				4028	
Relative Std Dev %	**3.51**	**5.94**				**7.83**	
WP-**DU-7 (8-12 in)**, rep. 1	586	330	56.3	1.18	0.945	60400	37.39
WP-**DU-7 (8-12 in)**, rep. 2	688	370	53.8	1.20	0.956	56300	36.77
WP-**DU-7 (8-12 in)**, rep. 3	587	316	53.8	0.981	0.785	55900	37.95
Average	**620**	**339**	**54.6**	**1.12**	**0.895**	**57533**	**37.37**
Standard Deviation	58.6	28.0				2491	
Relative Std Dev %	**9.45**	**8.27**				**4.33**	

*** Note: All analyses reported on a dry weight basis**