

October 19, 2011

Utah Department of Environmental Protection  
ATTN: Jodi Gardberg  
195 North 1950 West, Third Floor  
Salt Lake City, UT 84116  
jgardberg@utah.gov

RE: Project UDE-SL1101

Client Project: Great Salt Lake Sampling

Dear Ms. Gardberg,

On August 5, 2011, Brooks Rand Labs (BRL) received ten (10) water samples. The samples were logged-in for the contracted analyses of total mercury (Hg), monomethyl mercury (MeHg), arsenic (As), copper (Cu), cadmium (Cd), lead (Pb), selenium (Se), and thallium (Tl). The chain-of-custody form also requested silver and zinc analyses; however these were not requested in the proposal. The samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

The results were blank-corrected as described in the calculations section of the relevant 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.

**Batch B11341 (Reductive Precipitation – ICP-MS metals)**

The reductive precipitation (RP) preparation performed on sample *GSL 2565 0.5m* (1133001-04) was very dark after adding the RP reagents and precipitate formed on the sides of the bottle. This is not typical behavior of RP sample preparations and the precipitate could not be filtered. No qualification of the data was ascribed; however, a low bias of sample results may be a product of the precipitate.

During the filtration of sample *GSL @ AIC 0.2m* (1133001-05) the clamp holding the filtrate became loose and a little less than 1/3 of the sample filtrate volume was lost. This had not happened before and BRL qualified the sample results **J** for potential low bias.

Due to limited volume, matrix spike/matrix spike duplicate sets could not be performed. Individual method duplicates and post-preparation spikes (PS) were analyzed instead.

The certified reference materials were certified at a level less than the MRL or not certified for Pb, Se, and Tl analyses.

Please note, batch quality control sample Laboratory Fortified Blank (1139001) is a freshwater matrix and does not match the client samples in this report.

The seawater laboratory fortified blank (LFB) (B111341-MS2) was not spiked for Tl analysis. Additionally the certified reference materials were not certified for Tl either. All Tl sample results were qualified **J** for lack of quality control measures. Additionally, three of the four PS' did not

produce passing recoveries and the TI results for *GSL 2267 0.2m* (1133001-01) and *GSL 2565 0.5m* (1133001-04) were qualified **N** for inaccuracy.

The seawater LFB (B111341-MS2) and the PS' were spiked with As concentrations less than the associated native sample concentrations. The recoveries were therefore not considered valid indicators of data quality.

The Pb and Se recoveries of seawater LFB (B111341-MS2) were elevated at 139% and 155%. The Pb analyses of the PS' were somewhat elevated; one was not passing - though all PS' were spiked with Pb concentrations slightly less than the native sample concentration. No Pb sample results were qualified on the basis of the PS recoveries. The results of the Se PS' are discussed below. All Pb and Se sample results were qualified **J** on an account of the seawater LFB analysis.

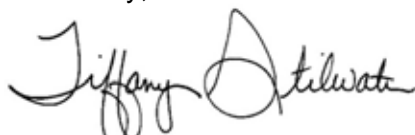
The Cd and Cu analysis of the PS' produced elevated recoveries for three of the four quality control analyses. All Se recoveries of the PS' did not meet the acceptance criteria either. The PS' were spiked appropriately and the failing recovery was unusual of what BRL typically expects. The results for samples *GSL 2267 0.2m* (1133001-01) and *GSL 2565 0.5m* (1133001-04) were qualified **N** for inaccuracy.

The Se analysis of the method duplicate and the associated sample *GSL 2267 0.2m* (1133001-01) produced results which satisfied the secondary criteria for duplicate precision as the results were less than 5x the MRL and within one MRL of each other.

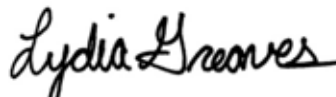
BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report.

Please feel free to contact me if you have any questions regarding this report.

Sincerely,



Tiffany Stilwater  
Project Manager  
tiffany@brooksrnd.com



Lydia Greaves  
Project Manager  
lydia@brooksrnd.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

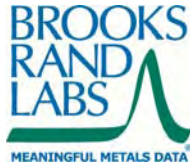
<b>BLK</b>	method blank	<b>MS</b>	matrix spike
<b>BRL</b>	Brooks Rand Labs	<b>MSD</b>	matrix spike duplicate
<b>BS</b>	laboratory fortified blank	<b>ND</b>	non-detect
<b>CAL</b>	calibration standard	<b>NR</b>	non-reportable
<b>CCV</b>	continuing calibration verification	<b>PS</b>	post preparation spike
<b>COC</b>	chain of custody record	<b>REC</b>	percent recovery
<b>CRM</b>	certified reference material	<b>RPD</b>	relative percent difference
<b>D</b>	dissolved fraction	<b>RSD</b>	relative standard deviation
<b>DUP</b>	duplicate	<b>SCV</b>	secondary calibration verification
<b>ICV</b>	initial calibration verification	<b>SOP</b>	standard operating procedure
<b>MDL</b>	method detection limit	<b>SRM</b>	standard reference material
<b>MRL</b>	method reporting limit	<b>T</b>	total recoverable fraction

### Definition of Data Qualifiers

(Effective 9/23/09)

<b>B</b>	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
<b>E</b>	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
<b>H</b>	Holding time and/or preservation requirements not met. Result is estimated.
<b>J</b>	Estimated value. A full explanation is presented in the narrative.
<b>J-M</b>	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
<b>J-N</b>	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
<b>M</b>	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
<b>N</b>	Spike recovery was not within acceptance criteria. Result is estimated.
<b>R</b>	Rejected, unusable value. A full explanation is presented in the narrative.
<b>U</b>	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
<b>X</b>	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, Ltd., those found in the EPA SOW\_ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses; USEPA; July 2002. These supersede all previous qualifiers ever employed by BRL.

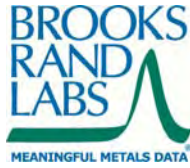


## Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
GSL 2267 0.2m	1133001-01	Water	Sample	07/28/2011	08/05/2011
GSL 2267 0.5m	1133001-02	Water	Sample	07/28/2011	08/05/2011
GSL 2565 0.2m	1133001-03	Water	Sample	07/28/2011	08/05/2011
GSL 2565 0.5m	1133001-04	Water	Sample	07/28/2011	08/05/2011
GSL@ AIC 0.2m	1133001-05	Water	Sample	07/29/2011	08/05/2011
GSL@ AIC 0.5m	1133001-06	Water	Sample	07/29/2011	08/05/2011
GSL 2767 0.2m	1133001-07	Water	Sample	07/29/2011	08/05/2011
GSL 2767 0.5m	1133001-08	Water	Sample	07/29/2011	08/05/2011
GSL 2820 0.2m	1133001-09	Water	Sample	07/28/2011	08/05/2011
GSL 2820 0.5m	1133001-10	Water	Sample	07/28/2011	08/05/2011

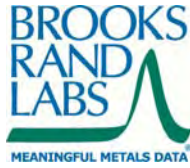
## Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
As	Water	EPA 1640 RP	09/13/2011	09/21/2011	B111341	1100647
Cd	Water	EPA 1640 RP	09/13/2011	09/21/2011	B111341	1100647
Cu	Water	EPA 1640 RP	09/13/2011	09/21/2011	B111341	1100647
Hg	Water	EPA 1631	08/12/2011	08/17/2011	B111224	1100556
MeHg	Water	EPA 1630	08/29/2011	08/31/2011	B111251	1100600
Pb	Water	EPA 1640 RP	09/13/2011	09/21/2011	B111341	1100647
Se	Water	EPA 1640 RP	09/13/2011	09/21/2011	B111341	1100647
Tl	Water	EPA 1640 RP	09/13/2011	09/21/2011	B111341	1100647



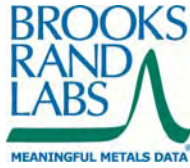
## Sample Results

Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
<b>GSL 2267 0.2m</b>										
1133001-01	As	Water	T	42.4		0.06	0.20	µg/L	B111341	1100647
1133001-01	Cd	Water	T	0.041	N	0.006	0.020	µg/L	B111341	1100647
1133001-01	Cu	Water	T	1.04	N	0.08	0.20	µg/L	B111341	1100647
1133001-01	Hg	Water	T	2.77		0.15	0.40	ng/L	B111224	1100556
1133001-01	MeHg	Water	T	0.836		0.020	0.050	ng/L	B111251	1100600
1133001-01	Pb	Water	T	1.34	J	0.004	0.026	µg/L	B111341	1100647
1133001-01	Se	Water	T	0.216	J, N, B	0.140	0.400	µg/L	B111341	1100647
1133001-01	TI	Water	T	0.036	J, N	0.004	0.020	µg/L	B111341	1100647
<b>GSL 2267 0.5m</b>										
1133001-02	As	Water	T	52.8		0.06	0.20	µg/L	B111341	1100647
1133001-02	Cd	Water	T	0.034		0.006	0.020	µg/L	B111341	1100647
1133001-02	Cu	Water	T	1.16		0.08	0.20	µg/L	B111341	1100647
1133001-02	Hg	Water	T	16.7		0.60	1.60	ng/L	B111224	1100556
1133001-02	MeHg	Water	T	0.535		0.021	0.051	ng/L	B111251	1100600
1133001-02	Pb	Water	T	1.19	J	0.004	0.026	µg/L	B111341	1100647
1133001-02	Se	Water	T	0.298	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-02	TI	Water	T	0.045	J	0.004	0.020	µg/L	B111341	1100647
<b>GSL 2565 0.2m</b>										
1133001-03	As	Water	T	62.8		0.06	0.20	µg/L	B111341	1100647
1133001-03	Cd	Water	T	0.043		0.006	0.020	µg/L	B111341	1100647
1133001-03	Cu	Water	T	1.50		0.08	0.20	µg/L	B111341	1100647
1133001-03	Hg	Water	T	7.59		0.60	1.61	ng/L	B111224	1100556
1133001-03	MeHg	Water	T	0.597		0.020	0.050	ng/L	B111251	1100600
1133001-03	Pb	Water	T	1.19	J	0.004	0.026	µg/L	B111341	1100647
1133001-03	Se	Water	T	0.261	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-03	TI	Water	T	0.041	J	0.004	0.020	µg/L	B111341	1100647



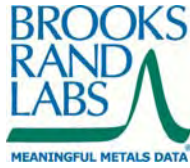
## Sample Results

Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
<b>GSL 2565 0.5m</b>										
1133001-04	As	Water	T	108		0.06	0.20	µg/L	B111341	1100647
1133001-04	Cd	Water	T	0.174	N	0.006	0.020	µg/L	B111341	1100647
1133001-04	Cu	Water	T	5.53	N	0.08	0.20	µg/L	B111341	1100647
1133001-04	Hg	Water	T	46.1		0.62	1.66	ng/L	B111224	1100556
1133001-04	MeHg	Water	T	21.1		0.020	0.050	ng/L	B111251	1100600
1133001-04	Pb	Water	T	4.70	J	0.004	0.026	µg/L	B111341	1100647
1133001-04	Se	Water	T	0.480	J, N	0.140	0.400	µg/L	B111341	1100647
1133001-04	TI	Water	T	0.055	J, N	0.004	0.020	µg/L	B111341	1100647
<b>GSL 2767 0.2m</b>										
1133001-07	As	Water	T	53.7		0.06	0.20	µg/L	B111341	1100647
1133001-07	Cd	Water	T	0.044		0.006	0.020	µg/L	B111341	1100647
1133001-07	Cu	Water	T	1.42		0.08	0.20	µg/L	B111341	1100647
1133001-07	Hg	Water	T	8.18		0.61	1.62	ng/L	B111224	1100556
1133001-07	MeHg	Water	T	0.777		0.020	0.050	ng/L	B111251	1100600
1133001-07	Pb	Water	T	1.41	J	0.004	0.026	µg/L	B111341	1100647
1133001-07	Se	Water	T	0.369	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-07	TI	Water	T	0.042	J	0.004	0.020	µg/L	B111341	1100647
<b>GSL 2767 0.5m</b>										
1133001-08	As	Water	T	69.1		0.06	0.20	µg/L	B111341	1100647
1133001-08	Cd	Water	T	0.048		0.006	0.020	µg/L	B111341	1100647
1133001-08	Cu	Water	T	1.85		0.08	0.20	µg/L	B111341	1100647
1133001-08	Hg	Water	T	2.82		0.15	0.41	ng/L	B111224	1100556
1133001-08	MeHg	Water	T	4.12		0.020	0.051	ng/L	B111251	1100600
1133001-08	Pb	Water	T	1.17	J	0.004	0.026	µg/L	B111341	1100647
1133001-08	Se	Water	T	0.266	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-08	TI	Water	T	0.036	J	0.004	0.020	µg/L	B111341	1100647



## Sample Results

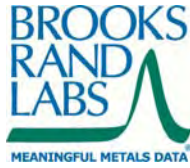
Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
<b>GSL 2820 0.2m</b>										
1133001-09	As	Water	T	56.1		0.06	0.20	µg/L	B111341	1100647
1133001-09	Cd	Water	T	0.030		0.006	0.020	µg/L	B111341	1100647
1133001-09	Cu	Water	T	0.88		0.08	0.20	µg/L	B111341	1100647
1133001-09	Hg	Water	T	1.88		0.15	0.40	ng/L	B111224	1100556
1133001-09	MeHg	Water	T	3.49		0.020	0.051	ng/L	B111251	1100600
1133001-09	Pb	Water	T	0.896	J	0.004	0.026	µg/L	B111341	1100647
1133001-09	Se	Water	T	0.230	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-09	TI	Water	T	0.032	J	0.004	0.020	µg/L	B111341	1100647
<b>GSL 2820 0.5m</b>										
1133001-10	As	Water	T	71.3		0.06	0.20	µg/L	B111341	1100647
1133001-10	Cd	Water	T	0.045		0.006	0.020	µg/L	B111341	1100647
1133001-10	Cu	Water	T	1.38		0.08	0.20	µg/L	B111341	1100647
1133001-10	Hg	Water	T	2.29		0.15	0.41	ng/L	B111224	1100556
1133001-10	MeHg	Water	T	1.02		0.020	0.051	ng/L	B111251	1100600
1133001-10	Pb	Water	T	1.12	J	0.004	0.026	µg/L	B111341	1100647
1133001-10	Se	Water	T	0.310	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-10	TI	Water	T	0.036	J	0.004	0.020	µg/L	B111341	1100647
<b>GSL@ AIC 0.2m</b>										
1133001-05	As	Water	T	27.9	J	0.06	0.20	µg/L	B111341	1100647
1133001-05	Cd	Water	T	0.029	J	0.006	0.020	µg/L	B111341	1100647
1133001-05	Cu	Water	T	1.37	J	0.08	0.20	µg/L	B111341	1100647
1133001-05	Hg	Water	T	10.3		0.59	1.56	ng/L	B111224	1100556
1133001-05	MeHg	Water	T	1.34		0.019	0.049	ng/L	B111251	1100600
1133001-05	Pb	Water	T	0.667	J	0.004	0.026	µg/L	B111341	1100647
1133001-05	Se	Water	T	0.300	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-05	TI	Water	T	0.020	J, B	0.004	0.020	µg/L	B111341	1100647



## Sample Results

Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
<b>GSL@ AIC 0.5m</b>										
1133001-06	As	Water	T	45.8		0.06	0.20	µg/L	B111341	1100647
1133001-06	Cd	Water	T	0.035		0.006	0.020	µg/L	B111341	1100647
1133001-06	Cu	Water	T	1.06		0.08	0.20	µg/L	B111341	1100647
1133001-06	Hg	Water	T	4.98		0.58	1.56	ng/L	B111224	1100556
1133001-06	MeHg	Water	T	1.85		0.020	0.051	ng/L	B111251	1100600
1133001-06	Pb	Water	T	1.10	J	0.004	0.026	µg/L	B111341	1100647
1133001-06	Se	Water	T	0.238	J, B	0.140	0.400	µg/L	B111341	1100647
1133001-06	TI	Water	T	0.033	J	0.004	0.020	µg/L	B111341	1100647

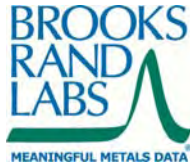




## Accuracy & Precision Summary

**Batch:** B111224  
**Lab Matrix:** Water  
**Method:** EPA 1631

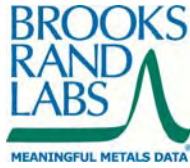
Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
<b>B111224-SRM1</b>	<b>Certified Reference Material (1133002, NIST 1641d 1000x dilution)</b> Hg		15.68	13.27	ng/L	85% 85-115	
<b>B111224-MS3</b>	<b>Matrix Spike (1133001-02)</b> Hg	16.71	78.64	105.0	ng/L	112% 71-125	
<b>B111224-MSD3</b>	<b>Matrix Spike Duplicate (1133001-02)</b> Hg	16.71	81.00	107.6	ng/L	112% 71-125	2% 24



## Accuracy & Precision Summary

Batch: B111251  
Lab Matrix: Water  
Method: EPA 1630

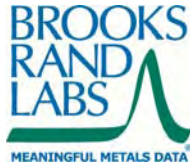
Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B111251-BS1	Laboratory Fortified Blank (1135001) MeHg		1.015	1.135	ng/L	112% 67-133	
B111251-BS2	Laboratory Fortified Blank (1135001) MeHg		1.003	1.040	ng/L	104% 67-133	
B111251-MS1	Matrix Spike (1133001-01) MeHg	0.836	5.075	6.994	ng/L	121% 65-135	
B111251-MSD1	Matrix Spike Duplicate (1133001-01) MeHg	0.836	5.068	7.139	ng/L	124% 65-135	2% 35



## Accuracy & Precision Summary

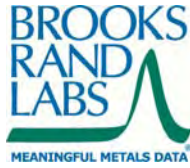
**Batch:** B111341  
**Lab Matrix:** Water  
**Method:** EPA 1640 RP

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
<b>B111341-BS2</b>	<b>Laboratory Fortified Blank (1139001)</b>						
	As		1.000	0.85	µg/L	85% 70-130	
	Cd		0.1000	0.103	µg/L	103% 70-130	
	Cu		1.000	0.90	µg/L	90% 70-130	
	Pb		0.1300	0.131	µg/L	100% 70-130	
	Se		2.000	2.314	µg/L	116% 70-130	
<b>B111341-SRM1</b>	<b>Certified Reference Material (1136009, CASS-5)</b>						
	As		1.240	1.06	µg/L	86% 75-125	
	Cd		0.02150	0.026	µg/L	120% 75-125	
	Cu		0.3800	0.30	µg/L	80% 75-125	
<b>B111341-SRM2</b>	<b>Certified Reference Material (1136010, SLEW-3)</b>						
	As		1.360	1.22	µg/L	89% 75-125	
	Cd		0.04800	0.045	µg/L	95% 75-125	
	Cu		1.550	1.31	µg/L	84% 75-125	
<b>B111341-MS2</b>	<b>Matrix Spike (0944029-53)</b>						
	As	1.18	1.000	2.72	µg/L	154% 70-130	
	Cd	0.067	0.1000	0.194	µg/L	127% 70-130	
	Cu	0.39	1.000	1.37	µg/L	98% 70-130	
	Pb	0.004	0.1300	0.185	µg/L	139% 70-130	
	Se	ND	2.000	3.102	µg/L	155% 70-130	
<b>B111341-DUP1</b>	<b>Duplicate (1133001-01)</b>						
	As	42.42		43.27	µg/L		2% 30
	Cd	0.041		0.042	µg/L		3% 30
	Cu	1.04		1.05	µg/L		0.9% 30
	Pb	1.342		1.379	µg/L		3% 30
	Se	0.216		0.330	µg/L		42% 30
	TI	0.036		0.038	µg/L		4% 30



## Accuracy & Precision Summary

<b>B111341-PS1</b>	<b>Post Spike (1133001-01)</b>							
	As	42.42	5.000	48.47	µg/L	121%	75-125	
	Cd	0.041	0.5000	0.627	µg/L	117%	75-125	
	Cu	1.04	5.000	6.46	µg/L	109%	75-125	
	Pb	1.342	1.250	2.756	µg/L	113%	75-125	
	Se	0.216	5.000	7.344	µg/L	143%	75-125	
	Tl	0.036	0.2500	0.309	µg/L	109%	75-125	
<b>B111341-PS2</b>	<b>Post Spike (1133001-01)</b>							
	As	42.42	5.000	49.02	µg/L	132%	75-125	
	Cd	0.041	0.5000	0.744	µg/L	141%	75-125	
	Cu	1.04	5.000	7.59	µg/L	131%	75-125	
	Pb	1.342	1.250	3.051	µg/L	137%	75-125	
	Se	0.216	5.000	8.552	µg/L	167%	75-125	
	Tl	0.036	0.2500	0.361	µg/L	130%	75-125	
<b>B111341-DUP2</b>	<b>Duplicate (1133001-04)</b>							
	As	108.5		104.4	µg/L			4% 30
	Cd	0.174		0.166	µg/L			5% 30
	Cu	5.53		5.39	µg/L			2% 30
	Pb	4.702		4.613	µg/L			2% 30
	Se	0.480		0.482	µg/L			0.5% 30
	Tl	0.055		0.053	µg/L			5% 30
<b>B111341-PS3</b>	<b>Post Spike (1133001-04)</b>							
	As	108.5	5.000	113.2	µg/L	95%	75-125	
	Cd	0.174	0.5000	0.904	µg/L	146%	75-125	
	Cu	5.53	5.000	12.32	µg/L	136%	75-125	
	Pb	4.702	1.250	6.233	µg/L	122%	75-125	
	Se	0.480	5.000	9.195	µg/L	174%	75-125	
	Tl	0.055	0.2500	0.374	µg/L	127%	75-125	
<b>B111341-PS4</b>	<b>Post Spike (1133001-04)</b>							
	As	108.5	5.000	112.2	µg/L	76%	75-125	
	Cd	0.174	0.5000	0.907	µg/L	147%	75-125	
	Cu	5.53	5.000	12.11	µg/L	132%	75-125	
	Pb	4.702	1.250	6.191	µg/L	119%	75-125	
	Se	0.480	5.000	9.259	µg/L	176%	75-125	
	Tl	0.055	0.2500	0.384	µg/L	131%	75-125	

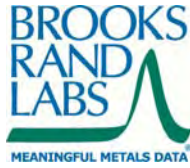


## Method Blanks & Reporting Limits

**Batch:** B111224  
**Matrix:** Water  
**Method:** EPA 1631  
**Analyte:** Hg

Sample	Result	Units
B111224-BLK1	0.08	ng/L
B111224-BLK2	0.09	ng/L
B111224-BLK3	0.08	ng/L
B111224-BLK4	0.04	ng/L

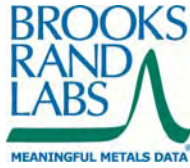
<b>Average:</b> 0.07	<b>Standard Deviation:</b> 0.02	<b>MDL:</b> 0.15
<b>Limit:</b> 0.50	<b>Limit:</b> 0.10	<b>MRL:</b> 0.40



## Method Blanks & Reporting Limits

**Batch:** B111251  
**Matrix:** Water  
**Method:** EPA 1630  
**Analyte:** MeHg

Sample	Result	Units			
B111251-BLK1	0.026	ng/L			
B111251-BLK2	0.024	ng/L			
B111251-BLK3	0.024	ng/L			
B111251-BLK4	0.024	ng/L			
	<b>Average:</b> 0.025		<b>Standard Deviation:</b> 0.001	<b>MDL:</b> 0.022	
	<b>Limit:</b> 0.045		<b>Limit:</b> 0.015	<b>MRL:</b> 0.055	



## Method Blanks & Reporting Limits

**Batch:** B111341  
**Matrix:** Water  
**Method:** EPA 1640 RP  
**Analyte:** As 75

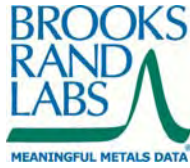
Sample	Result	Units			
B111341-BLK1	0.01	µg/L			
B111341-BLK2	0.01	µg/L			
B111341-BLK3	-0.004	µg/L			
B111341-BLK4	0.02	µg/L			
<b>Average:</b>	<b>0.01</b>		<b>Standard Deviation:</b>	<b>0.01</b>	<b>MDL:</b> 0.06
<b>Limit:</b>	<b>0.20</b>		<b>Limit:</b>	<b>0.06</b>	<b>MRL:</b> 0.20

**Analyte:** Cd 114

Sample	Result	Units			
B111341-BLK1	-0.002	µg/L			
B111341-BLK2	-0.003	µg/L			
B111341-BLK3	-0.001	µg/L			
B111341-BLK4	-0.004	µg/L			
<b>Average:</b>	<b>-0.003</b>		<b>Standard Deviation:</b>	<b>0.001</b>	<b>MDL:</b> 0.006
<b>Limit:</b>	<b>0.020</b>		<b>Limit:</b>	<b>0.006</b>	<b>MRL:</b> 0.020

**Analyte:** Cu 63

Sample	Result	Units			
B111341-BLK1	0.05	µg/L			
B111341-BLK2	0.02	µg/L			
B111341-BLK3	0.02	µg/L			
B111341-BLK4	0.02	µg/L			
<b>Average:</b>	<b>0.03</b>		<b>Standard Deviation:</b>	<b>0.02</b>	<b>MDL:</b> 0.08
<b>Limit:</b>	<b>0.20</b>		<b>Limit:</b>	<b>0.08</b>	<b>MRL:</b> 0.20



## Method Blanks & Reporting Limits

**Analyte: Pb**

Sample	Result	Units			
B111341-BLK1	0.006	µg/L			
B111341-BLK2	0.009	µg/L			
B111341-BLK3	0.007	µg/L			
B111341-BLK4	0.006	µg/L			
	<b>Average: 0.007</b>		<b>Standard Deviation: 0.001</b>	<b>MDL: 0.004</b>	
	<b>Limit: 0.026</b>		<b>Limit: 0.004</b>	<b>MRL: 0.026</b>	

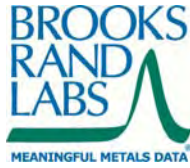
**Analyte: Se 82**

Sample	Result	Units			
B111341-BLK1	0.007	µg/L			
B111341-BLK2	0.024	µg/L			
B111341-BLK3	-0.021	µg/L			
B111341-BLK4	0.019	µg/L			
	<b>Average: 0.007</b>		<b>Standard Deviation: 0.020</b>	<b>MDL: 0.140</b>	
	<b>Limit: 0.400</b>		<b>Limit: 0.140</b>	<b>MRL: 0.400</b>	

**Analyte: Tl**

Sample	Result	Units			
B111341-BLK1	0.0003	µg/L			
B111341-BLK2	-0.0003	µg/L			
B111341-BLK3	-0.0007	µg/L			
B111341-BLK4	-0.0008	µg/L			
	<b>Average: 0.000</b>		<b>Standard Deviation: 0.000</b>	<b>MDL: 0.004</b>	
	<b>Limit: 0.020</b>		<b>Limit: 0.004</b>	<b>MRL: 0.020</b>	





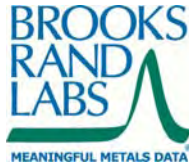
## Sample Containers

<b>Lab ID:</b> 1133001-01		<b>Report Matrix:</b> Water				<b>Collected:</b> 07/28/2011	
<b>Sample:</b> GSL 2267 0.2m		<b>Sample Type:</b> Sample				<b>Received:</b> 08/05/2011	
<b>Des</b>	<b>Container</b>	<b>Size</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

<b>Lab ID:</b> 1133001-02		<b>Report Matrix:</b> Water				<b>Collected:</b> 07/28/2011	
<b>Sample:</b> GSL 2267 0.5m		<b>Sample Type:</b> Sample				<b>Received:</b> 08/05/2011	
<b>Des</b>	<b>Container</b>	<b>Size</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

<b>Lab ID:</b> 1133001-03		<b>Report Matrix:</b> Water				<b>Collected:</b> 07/28/2011	
<b>Sample:</b> GSL 2565 0.2m		<b>Sample Type:</b> Sample				<b>Received:</b> 08/05/2011	
<b>Des</b>	<b>Container</b>	<b>Size</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

<b>Lab ID:</b> 1133001-04		<b>Report Matrix:</b> Water				<b>Collected:</b> 07/28/2011	
<b>Sample:</b> GSL 2565 0.5m		<b>Sample Type:</b> Sample				<b>Received:</b> 08/05/2011	
<b>Des</b>	<b>Container</b>	<b>Size</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler



## Sample Containers

**Lab ID:** 1133001-05      **Report Matrix:** Water      **Collected:** 07/29/2011  
**Sample:** GSL@ AIC 0.2m      **Sample Type:** Sample      **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserved	<2	Cooler

**Lab ID:** 1133001-06      **Report Matrix:** Water      **Collected:** 07/29/2011  
**Sample:** GSL@ AIC 0.5m      **Sample Type:** Sample      **Received:** 08/05/2011

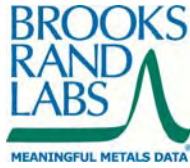
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserved	<2	Cooler

**Lab ID:** 1133001-07      **Report Matrix:** Water      **Collected:** 07/29/2011  
**Sample:** GSL 2767 0.2m      **Sample Type:** Sample      **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserved	<2	Cooler

**Lab ID:** 1133001-08      **Report Matrix:** Water      **Collected:** 07/29/2011  
**Sample:** GSL 2767 0.5m      **Sample Type:** Sample      **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserved	<2	Cooler



## Sample Containers

<b>Lab ID:</b> 1133001-09		<b>Report Matrix:</b> Water				<b>Collected:</b> 07/28/2011	
<b>Sample:</b> GSL 2820 0.2m		<b>Sample Type:</b> Sample				<b>Received:</b> 08/05/2011	
<b>Des</b>	<b>Container</b>	<b>Size</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

<b>Lab ID:</b> 1133001-10		<b>Report Matrix:</b> Water				<b>Collected:</b> 07/28/2011	
<b>Sample:</b> GSL 2820 0.5m		<b>Sample Type:</b> Sample				<b>Received:</b> 08/05/2011	
<b>Des</b>	<b>Container</b>	<b>Size</b>	<b>Lot</b>	<b>Preservation</b>	<b>P-Lot</b>	<b>pH</b>	<b>Ship. Cont.</b>
A	Bottle FLPE Hg-T	250 mL	71443390 30	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	71443390 30	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

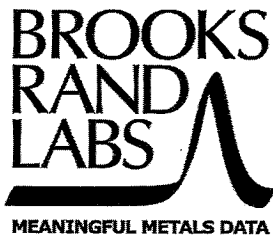
## Shipping Containers

### Cooler

**Received:** August 5, 2011 9:30  
**Tracking No:** 8764 0642 8179 via FedEx  
**Coolant Type:** Ice  
**Temperature:** 5.8 °C

**Description:** Cooler  
**Damaged in transit?** No  
**Returned to client?** No

**Custody seals present?** No  
**Custody seals intact?** No  
**COC present?** Yes



3958 6<sup>th</sup> Avenue NW  
 Seattle, WA 98107  
 Phone: 206-632-6206  
 Fax: 206-632-6017

samples@brooksrand.com  
 www.brooksrand.com

### Chain of Custody Record

1133001

White: LAB COPY  
 Yellow: CUSTOMER COPY

Client: <u>USGS - UT Water Science Ctr.</u>	Address: <u>2329 West Orton Circle</u>	COC receipt confirmation? <input checked="" type="checkbox"/> N If so, by: <u>email</u> / fax (circle one)
Contact: <u>Tom Marston</u>	<u>Salt Lake City, UT 84119</u>	
Client project ID: <u>WSU-061101</u>	Phone #: <u>801-908-5030</u>	Email: <u>tmarston@usgs.gov</u>
PO #:		Fax #:

Requested TAT in business days: <input checked="" type="checkbox"/> 20 (standard) <input type="checkbox"/> 15 <input type="checkbox"/> 10 <input type="checkbox"/> 5 <input type="checkbox"/> Other _____ <small>Surcharges apply for expedited turn around times.</small>	Collection		Miscellaneous					Field Preservation			Analyses required						Comments	
	Date	Time	Sampler (initials)	Matrix type	# of containers	Field filtered? (Y/N)	Unpreserved / ice only	HCl (HNO <sub>3</sub> circle one)	Other (specify) <u>Sulfuric</u>	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As / Se species (specify)	% Solids	Filtration	Other (specify)		Other (specify)
Sample ID																		
1	GS2 2267 0.2m	7/28/11 11:15	TM	H <sub>2</sub> O	3	N	THg											Each site has 3 bottles, one unpreserved THg bottle, one preserved Methylg bottle, and one 250mL bottle preserved with HNO <sub>3</sub> for Se, As, Cd, Cr, Ag, and Zn.
2	GS2 2267 0.5m	7/28/11 10:45	TM		3	N	THg											
3	GS2 2565 0.2m	7/28/11 13:15	TM		3	N	THg											
4	GS2 2565 0.5m	7/28/11 12:45	TM		3	N	THg											
5	GS2 @ AIC 0.2m	7/29/11 10:15	TM		3	N	THg											
6	GS2 @ AIC 0.5m	7/29/11 11:00	TM		3	N	THg											
7	GS2 2767 0.2m	7/29/11 14:20	TM		3	N	THg											
8	GS2 2767 0.5m	7/29/11 15:05	TM		3	N	THg											
9	GS2 2820 0.2m	7/28/11 14:45	TM		3	N	THg											
10	GS2 2820 0.5m	7/28/11 14:15	TM		3	N	THg											

Relinquished by: <u>Tom Marston</u>	Date: <u>8/4/11</u>	Time: <u>16:00</u>	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by: <u>[Signature]</u>	Date: <u>8/5/11</u>	Time: <u>0930</u>
Shipping carrier:	# of coolers:	BRL work order ID:	BRL project ID:		