



284 Sheffield Street, Mountainside, New Jersey - 07092

Phone: (908) 789 8900 Fax: (908) 789 8922

LAB CHRONICLE

OrderID: O1232
Client: Louis Berger U.S., Inc., A WSP Company
Contact: Jonathan Ganz

OrderDate: 1/19/2023 1:44:00 PM
Project: NYCDDC Phase II SCI Arthur Kill Road CEQR
Location: N11,VOA Ref. #2 Soil

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
O1232-01	B-P-17A	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/20/23	
O1232-02	B-P-17B	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/20/23	
O1232-03	WC-17	TCLP	TCLP ICP Metals	6010D	01/18/23	01/24/23	01/25/23	01/19/23
			TCLP Mercury	7470A		01/23/23	01/24/23	
O1232-04	B-P-18A	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/20/23	
O1232-05	B-P-18B	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/20/23	
O1232-06	B-P-19A	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/20/23	
O1232-07	B-P-19B	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/24/23	
O1232-08	B-P-35A	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Metals ICP-TAL	6010D		01/20/23	01/24/23	
O1232-09	B-P-35B	SOIL	Mercury	7471B	01/18/23	01/20/23	01/23/23	01/19/23
			Mercury	7471B		01/20/23	01/23/23	



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O1232-10	DUP01	SOIL	Metals ICP-TAL	6010D	01/18/23	01/20/23	01/24/23	01/19/23
			Mercury	7471B		01/20/23	01/23/23	
			Metals ICP-TAL	6010D		01/20/23	01/24/23	



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Hit Summary Sheet
SW-846

SDG No.:	O1232	Order ID:	O1232
Client:	Louis Berger U.S., Inc., A WSP Company	Project ID:	NYCDDC Phase II SCI Arthur Kill Road C

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID :	WC-17							
O1232-03	WC-17	TCLP	Barium	3210		77.9	500	ug/L

- A
- B
- C
- D
- E
- F
- G
- H

SAMPLE DATA

A

B

C

D

E

F

G

H

Report of Analysis

Client:	Louis Berger U.S., Inc., A WSP Company	Date Collected:	01/18/23
Project:	NYCDDC Phase II SCI Arthur Kill Road CEQR	Date Received:	01/19/23
Client Sample ID:	WC-17	SDG No.:	O1232
Lab Sample ID:	O1232-03	Matrix:	TCLP
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7440-38-2	Arsenic	30.8	U	1	30.8	100	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050
7440-39-3	Barium	3210		1	77.9	500	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050
7440-43-9	Cadmium	2.60	U	1	2.60	30.0	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050
7440-47-3	Chromium	10.4	U	1	10.4	50.0	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050
7439-92-1	Lead	19.4	U	1	19.4	60.0	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050
7439-97-6	Mercury	0.70	U	1	0.70	2.00	ug/L	01/23/23 14:15	01/24/23 11:13	SW7470A	
7782-49-2	Selenium	35.3	U	1	35.3	100	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050
7440-22-4	Silver	8.20	U	1	8.20	50.0	ug/L	01/24/23 14:00	01/25/23 15:55	SW6010	SW3050

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	TCLP METALS			

U = Not Detected
 LOQ = Limit of Quantitation
 MDL = Method Detection Limit
 LOD = Limit of Detection
 D = Dilution
 Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
 B = Analyte Found in Associated Method Blank
 * = indicates the duplicate analysis is not within control limits.
 E = Indicates the reported value is estimated because of the presence of interference.
 OR = Over Range
 N = Spiked sample recovery not within control limits

METAL
CALIBRATION
DATA

A

B

C

D

E

F

G

H



Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client:

Louis Berger U.S., Inc., A WSP Company

SDG No.:

O1232

Contract:

loui01

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Initial Calibration Source:

EPA

Continuing Calibration Source:

PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV15	Mercury	4.01	4.0	100	90 - 110	CV	01/24/2023	10:47	LB123775



Metals

- 2a -

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EPA

Continuing Calibration Source:

PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV08	Mercury	4.98	5.0	100	90 - 110	CV	01/24/2023	10:52	LB123775
CCV09	Mercury	5.02	5.0	100	90 - 110	CV	01/24/2023	11:24	LB123775
CCV10	Mercury	4.83	5.0	97	90 - 110	CV	01/24/2023	11:51	LB123775
CCV11	Mercury	5.00	5.0	100	90 - 110	CV	01/24/2023	12:19	LB123775
CCV12	Mercury	5.04	5.0	101	90 - 110	CV	01/24/2023	12:46	LB123775



Metals

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CHEM

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O1232

Initial Calibration Source:

EPA

Continuing Calibration Source:

Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Arsenic	1040	1000	104	90 - 110	P	01/25/2023	12:15	LB123806
	Barium	498	520	96	90 - 110	P	01/25/2023	12:15	LB123806
	Cadmium	507	510	99	90 - 110	P	01/25/2023	12:15	LB123806
	Chromium	530	520	102	90 - 110	P	01/25/2023	12:15	LB123806
	Lead	1010	1000	101	90 - 110	P	01/25/2023	12:15	LB123806
	Selenium	1040	1000	104	90 - 110	P	01/25/2023	12:15	LB123806
	Silver	257	250	103	90 - 110	P	01/25/2023	12:15	LB123806



Metals

- 2a -

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Initial Calibration Source:

EPA

Continuing Calibration Source:

Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Arsenic	4970	5000	100	90 - 110	P	01/25/2023	12:57	LB123806
	Barium	9770	10000	98	90 - 110	P	01/25/2023	12:57	LB123806
	Cadmium	2490	2500	100	90 - 110	P	01/25/2023	12:57	LB123806
	Chromium	1040	1000	104	90 - 110	P	01/25/2023	12:57	LB123806
	Lead	4960	5000	99	90 - 110	P	01/25/2023	12:57	LB123806
	Selenium	4960	5000	99	90 - 110	P	01/25/2023	12:57	LB123806
	Silver	1280	1250	102	90 - 110	P	01/25/2023	12:57	LB123806



Metals

- 2a -

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SAS No.:

O1232

Initial Calibration Source:

EPA

Continuing Calibration Source:

Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLCCV01	Arsenic	22.9	20.0	115	80 - 120	P	01/25/2023	13:00	LB123806
	Barium	106	100	106	80 - 120	P	01/25/2023	13:00	LB123806
	Cadmium	6.48	6.0	108	80 - 120	P	01/25/2023	13:00	LB123806
	Chromium	10.9	10.0	109	80 - 120	P	01/25/2023	13:00	LB123806
	Lead	13.2	12.0	110	80 - 120	P	01/25/2023	13:00	LB123806
	Selenium	17.8	20.0	89	80 - 120	P	01/25/2023	13:00	LB123806
	Silver	10.7	10.0	107	80 - 120	P	01/25/2023	13:00	LB123806



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SAS No.:

O1232

Initial Calibration Source:

EPA

Continuing Calibration Source:

Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Arsenic	4830	5000	96	90 - 110	P	01/25/2023	13:48	LB123806
	Barium	9480	10000	95	90 - 110	P	01/25/2023	13:48	LB123806
	Cadmium	2400	2500	96	90 - 110	P	01/25/2023	13:48	LB123806
	Chromium	995	1000	100	90 - 110	P	01/25/2023	13:48	LB123806
	Lead	4770	5000	95	90 - 110	P	01/25/2023	13:48	LB123806
	Selenium	4810	5000	96	90 - 110	P	01/25/2023	13:48	LB123806
	Silver	1220	1250	97	90 - 110	P	01/25/2023	13:48	LB123806
CCV03	Arsenic	4920	5000	98	90 - 110	P	01/25/2023	14:39	LB123806
	Barium	9600	10000	96	90 - 110	P	01/25/2023	14:39	LB123806
	Cadmium	2420	2500	97	90 - 110	P	01/25/2023	14:39	LB123806
	Chromium	978	1000	98	90 - 110	P	01/25/2023	14:39	LB123806
	Lead	4800	5000	96	90 - 110	P	01/25/2023	14:39	LB123806
	Selenium	4910	5000	98	90 - 110	P	01/25/2023	14:39	LB123806
	Silver	1200	1250	96	90 - 110	P	01/25/2023	14:39	LB123806
CCV04	Arsenic	5120	5000	102	90 - 110	P	01/25/2023	15:32	LB123806
	Barium	10100	10000	101	90 - 110	P	01/25/2023	15:32	LB123806
	Cadmium	2530	2500	101	90 - 110	P	01/25/2023	15:32	LB123806
	Chromium	1040	1000	104	90 - 110	P	01/25/2023	15:32	LB123806
	Lead	4990	5000	100	90 - 110	P	01/25/2023	15:32	LB123806
	Selenium	5080	5000	102	90 - 110	P	01/25/2023	15:32	LB123806
	Silver	1310	1250	105	90 - 110	P	01/25/2023	15:32	LB123806
CCV05	Arsenic	5150	5000	103	90 - 110	P	01/25/2023	16:20	LB123806
	Barium	10300	10000	103	90 - 110	P	01/25/2023	16:20	LB123806
	Cadmium	2560	2500	102	90 - 110	P	01/25/2023	16:20	LB123806
	Chromium	1020	1000	102	90 - 110	P	01/25/2023	16:20	LB123806
	Lead	4990	5000	100	90 - 110	P	01/25/2023	16:20	LB123806
	Selenium	5070	5000	101	90 - 110	P	01/25/2023	16:20	LB123806
	Silver	1260	1250	101	90 - 110	P	01/25/2023	16:20	LB123806
CCV06	Arsenic	4870	5000	98	90 - 110	P	01/25/2023	17:19	LB123806
	Barium	9950	10000	100	90 - 110	P	01/25/2023	17:19	LB123806
	Cadmium	2430	2500	97	90 - 110	P	01/25/2023	17:19	LB123806
	Chromium	958	1000	96	90 - 110	P	01/25/2023	17:19	LB123806
	Lead	4680	5000	94	90 - 110	P	01/25/2023	17:19	LB123806
	Selenium	4740	5000	95	90 - 110	P	01/25/2023	17:19	LB123806



Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client:

Louis Berger U.S., Inc., A WSP Company

SDG No.:

O1232

Contract:

loui01

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Initial Calibration Source:

EPA

Continuing Calibration Source:

Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV06	Silver	1170	1250	94	90 - 110	P	01/25/2023	17:19	LB123806
CCV07	Arsenic	4890	5000	98	90 - 110	P	01/25/2023	18:09	LB123806
	Barium	9710	10000	97	90 - 110	P	01/25/2023	18:09	LB123806
	Cadmium	2430	2500	97	90 - 110	P	01/25/2023	18:09	LB123806
	Chromium	968	1000	97	90 - 110	P	01/25/2023	18:09	LB123806
	Lead	4690	5000	94	90 - 110	P	01/25/2023	18:09	LB123806
	Selenium	4760	5000	95	90 - 110	P	01/25/2023	18:09	LB123806
	Silver	1190	1250	95	90 - 110	P	01/25/2023	18:09	LB123806
CCV08	Arsenic	4900	5000	98	90 - 110	P	01/25/2023	18:44	LB123806
	Barium	9630	10000	96	90 - 110	P	01/25/2023	18:44	LB123806
	Cadmium	2450	2500	98	90 - 110	P	01/25/2023	18:44	LB123806
	Chromium	963	1000	96	90 - 110	P	01/25/2023	18:44	LB123806
	Lead	4670	5000	93	90 - 110	P	01/25/2023	18:44	LB123806
	Selenium	4730	5000	95	90 - 110	P	01/25/2023	18:44	LB123806
	Silver	1190	1250	95	90 - 110	P	01/25/2023	18:44	LB123806



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Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: Louis Berger U.S., Inc., A WSP Company

SDG No.: O1232

Contract: loui01

Lab Code: CHEM

Case No.: O1232

SAS No.: O1232

Initial Calibration Source: _____

Continuing Calibration Source: _____

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRA	Mercury	0.18	0.2	89	40 - 160	CV	01/24/2023	10:59	LB123775
CRI01	Arsenic	22.1	20.0	110	40 - 160	P	01/25/2023	12:24	LB123806
	Barium	109	100	109	40 - 160	P	01/25/2023	12:24	LB123806
	Cadmium	6.67	6.0	111	40 - 160	P	01/25/2023	12:24	LB123806
	Chromium	11.4	10.0	114	40 - 160	P	01/25/2023	12:24	LB123806
	Lead	12.3	12.0	102	40 - 160	P	01/25/2023	12:24	LB123806
	Selenium	20.5	20.0	103	40 - 160	P	01/25/2023	12:24	LB123806
	Silver	11.0	10.0	110	40 - 160	P	01/25/2023	12:24	LB123806



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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client:

Louis Berger U.S., Inc., A WSP Company

SDG No.:

O1232

Contract:

loui01

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB15	Mercury	0.20	+/-0.20	U	0.20	CV	01/24/2023	10:49	LB123775



Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client:

Louis Berger U.S., Inc., A WSP Company

SDG No.:

O1232

Contract:

loui01

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB08	Mercury	0.20	+/-0.20	U	0.20	CV	01/24/2023	10:54	LB123775
CCB09	Mercury	0.20	+/-0.20	U	0.20	CV	01/24/2023	11:26	LB123775
CCB10	Mercury	0.20	+/-0.20	U	0.20	CV	01/24/2023	11:54	LB123775
CCB11	Mercury	0.20	+/-0.20	U	0.20	CV	01/24/2023	12:21	LB123775
CCB12	Mercury	0.20	+/-0.20	U	0.20	CV	01/24/2023	12:48	LB123775



Metals

- 3a -

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O1232

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	12:20	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	12:20	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	12:20	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	12:20	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	12:20	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	12:20	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	12:20	LB123806



Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

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SDG No.: O1232

Contract: loui01

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SAS No.: O1232

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	13:04	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	13:04	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	13:04	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	13:04	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	13:04	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	13:04	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	13:04	LB123806
CCB02	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	13:52	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	13:52	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	13:52	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	13:52	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	13:52	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	13:52	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	13:52	LB123806
CCB03	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	14:43	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	14:43	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	14:43	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	14:43	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	14:43	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	14:43	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	14:43	LB123806
CCB04	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	15:36	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	15:36	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	15:36	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	15:36	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	15:36	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	15:36	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	15:36	LB123806
CCB05	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	16:24	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	16:24	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	16:24	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	16:24	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	16:24	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	16:24	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	16:24	LB123806
CCB06	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	17:23	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	17:23	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	17:23	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	17:23	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	17:23	LB123806

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Louis Berger U.S., Inc., A WSP Company

SDG No.: O1232

Contract: loui01

Lab Code: CHEM

Case No.: O1232

SAS No.: O1232

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB06	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	17:23	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	17:23	LB123806
CCB07	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	18:13	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	18:13	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	18:13	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	18:13	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	18:13	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	18:13	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	18:13	LB123806
CCB08	Arsenic	20.0	+/-20.0	U	20.0	P	01/25/2023	18:48	LB123806
	Barium	100	+/-100	U	100	P	01/25/2023	18:48	LB123806
	Cadmium	6.00	+/-6.00	U	6.00	P	01/25/2023	18:48	LB123806
	Chromium	10.0	+/-10.0	U	10.0	P	01/25/2023	18:48	LB123806
	Lead	12.0	+/-12.0	U	12.0	P	01/25/2023	18:48	LB123806
	Selenium	20.0	+/-20.0	U	20.0	P	01/25/2023	18:48	LB123806
	Silver	10.0	+/-10.0	U	10.0	P	01/25/2023	18:48	LB123806



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SDG No.: 01232

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB150368TB		WATER		Batch Number:	PB150390		Prep Date:	01/23/2023	
	Mercury	2.00	<2.00	U	2.00	CV	01/24/2023	12:32	LB123775
Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB150390BL		WATER		Batch Number:	PB150390		Prep Date:	01/23/2023	
	Mercury	0.20	<0.20	U	0.20	CV	01/24/2023	11:06	LB123775



Client: Louis Berger U.S., Inc., A WSP Company

SDG No.: 01232

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB150368TB	WATER			Batch Number:	PB150432		Prep Date:	01/24/2023	
	Arsenic	100	<100	U	100	P	01/25/2023	14:11	LB123806
	Barium	500	<500	U	500	P	01/25/2023	14:11	LB123806
	Cadmium	30.0	<30.0	U	30.0	P	01/25/2023	14:11	LB123806
	Chromium	14.3	<50.0	J	50.0	P	01/25/2023	14:11	LB123806
	Lead	60.0	<60.0	U	60.0	P	01/25/2023	14:11	LB123806
	Selenium	100	<100	U	100	P	01/25/2023	14:11	LB123806
	Silver	50.0	<50.0	U	50.0	P	01/25/2023	14:11	LB123806
Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB150432BL	WATER			Batch Number:	PB150432		Prep Date:	01/24/2023	
	Arsenic	100	<100	U	100	P	01/25/2023	14:03	LB123806
	Barium	500	<500	U	500	P	01/25/2023	14:03	LB123806
	Cadmium	30.0	<30.0	U	30.0	P	01/25/2023	14:03	LB123806
	Chromium	50.0	<50.0	U	50.0	P	01/25/2023	14:03	LB123806
	Lead	60.0	<60.0	U	60.0	P	01/25/2023	14:03	LB123806
	Selenium	100	<100	U	100	P	01/25/2023	14:03	LB123806
	Silver	50.0	<50.0	U	50.0	P	01/25/2023	14:03	LB123806



Metals
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INTERFERENCE CHECK SAMPLE

Client:

Louis Berger U.S., Inc., A WSP Company

Contract:

loui01

Lab Code:

CHEM

ICS Source:

EPA

SDG No.:

O1232

Case No.:

O1232

SAS No.:

O1232

Instrument ID:

P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSA01	Arsenic	1.24			-20	20	01/25/2023	12:33	LB123806
	Barium	11.4	6.0	190	-94	106	01/25/2023	12:33	LB123806
	Cadmium	2.75	1.0	275	-5	7	01/25/2023	12:33	LB123806
	Chromium	56.5	52.0	109	42	62	01/25/2023	12:33	LB123806
	Lead	4.10			-12	12	01/25/2023	12:33	LB123806
	Selenium	1.75			-20	20	01/25/2023	12:33	LB123806
	Silver	-0.64			-10	10	01/25/2023	12:33	LB123806
ICSAB01	Arsenic	107	100	107	85	120	01/25/2023	12:37	LB123806
	Barium	483	540	89	440	640	01/25/2023	12:37	LB123806
	Cadmium	1010	970	104	820	1100	01/25/2023	12:37	LB123806
	Chromium	565	540	105	460	620	01/25/2023	12:37	LB123806
	Lead	50.7	49.0	104	37	61	01/25/2023	12:37	LB123806
	Selenium	51.2	46.0	111	26	66	01/25/2023	12:37	LB123806
	Silver	210	200	105	170	230	01/25/2023	12:37	LB123806

METAL
QC
DATA



metals
- 5a -
MATRIX SPIKE SUMMARY

client:

Louis Berger U.S., Inc., A WSP Company

level:

low

sdg no.:

O1232

contract:

loui01

lab code:

CHEM

case no.:

O1232

sas no.:

O1232

matrix:

Water

sample id:

O1255-02

client id:

BORING-1MS

Percent Solids for Sample:

NA

Spiked ID:

O1255-02MS

Percent Solids for Spike Sample:

NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	3850		100	U	4000	96		P
Barium	ug/L	75 - 125	1360		447	J	1000	91		P
Cadmium	ug/L	75 - 125	970		30.0	U	1000	97		P
Chromium	ug/L	75 - 125	1990		16.7	J	2000	98		P
Lead	ug/L	75 - 125	4750		60.0	U	5000	95		P
Mercury	ug/L	75 - 125	42.9		2.00	U	40.0	107		CV
Selenium	ug/L	75 - 125	9460		100	U	10000	95		P
Silver	ug/L	75 - 125	353		50.0	U	380	93		P

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metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client:

Louis Berger U.S., Inc., A WSP Company

level:

low

sdg no.:

O1232

contract:

loui01

lab code:

CHEM

case no.:

O1232

sas no.:

O1232

matrix:

Water

sample id:

O1255-02

client id:

BORING-1MSD

Percent Solids for Sample:

NA

Spiked ID:

O1255-02MSD

Percent Solids for Spike Sample:

NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Arsenic	ug/L	75 - 125	3860		100	U	4000	96		P
Barium	ug/L	75 - 125	1310		447	J	1000	86		P
Cadmium	ug/L	75 - 125	965		30.0	U	1000	96		P
Chromium	ug/L	75 - 125	1950		16.7	J	2000	97		P
Lead	ug/L	75 - 125	4720		60.0	U	5000	94		P
Mercury	ug/L	75 - 125	42.9		2.00	U	40.0	107		CV
Selenium	ug/L	75 - 125	9440		100	U	10000	94		P
Silver	ug/L	75 - 125	349		50.0	U	380	92		P



Metals
- 5b -

Client:

Louis Berger U.S., Inc., A WSP Company

SDG No.:

O1232

Contract:

loui01

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Matrix:

Level:

LOW

Client ID:

Sample ID:

Spiked ID:

Analyte	Units	Acceptance Limit %R	C	Sample Result	C	Spike Added	% Recovery	Qual	M
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Metals

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DUPLICATE SAMPLE SUMMARY

Client: Louis Berger U.S., Inc., A WSP Company Level: LOW SDG No.: O1232
Contract: loui01 Lab Code: CHEM Case No.: O1232 SAS No.: O1232
Matrix: Water Sample ID: O1255-02 Client ID: BORING-1DUP
Percent Solids for Sample: NA Duplicate ID O1255-02DUP Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	100	U	100	U			P
Barium	ug/L	20	447	J	435	J	3		P
Cadmium	ug/L	20	30.0	U	30.0	U			P
Chromium	ug/L	20	16.7	J	15.1	J	10		P
Lead	ug/L	20	60.0	U	60.0	U			P
Mercury	ug/L	20	2.00	U	2.00	U			CV
Selenium	ug/L	20	100	U	100	U			P
Silver	ug/L	20	50.0	U	50.0	U			P

“A control limit of +20% RPD for each matrix applies for sample values greater than 10 times Detection Limit”



Metals

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DUPLICATE SAMPLE SUMMARY

Client: Louis Berger U.S., Inc., A WSP Company **Level:** LOW **SDG No.:** O1232
Contract: lou01 **Lab Code:** CHEM **Case No.:** O1232 **SAS No.:** O1232
Matrix: Water **Sample ID:** O1255-02MS **Client ID:** BORING-1MSD
Percent Solids for Sample: NA **Duplicate ID** O1255-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Arsenic	ug/L	20	3850		3860		0		P
Barium	ug/L	20	1360		1310		4		P
Cadmium	ug/L	20	970		965		1		P
Chromium	ug/L	20	1990		1950		2		P
Lead	ug/L	20	4750		4720		1		P
Mercury	ug/L	20	42.9		42.9		0		CV
Selenium	ug/L	20	9460		9440		0		P
Silver	ug/L	20	353		349		1		P



Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Louis Berger U.S., Inc., A WSP Company

SDG No.: O1232

Contract: loui01

Lab Code: CHEM

Case No.: O1232

SAS No.: O1232

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB150390BS Mercury	ug/L	4.0	3.88		97	80 - 120	CV



Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client:

Louis Berger U.S., Inc., A WSP Company

SDG No.:

O1232

Contract:

loui01

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB150432BS							
Arsenic	ug/L	4000	3980		100	80 - 120	P
Barium	ug/L	1000	981		98	80 - 120	P
Cadmium	ug/L	1000	971		97	80 - 120	P
Chromium	ug/L	2000	2050		102	80 - 120	P
Lead	ug/L	5000	4870		97	80 - 120	P
Selenium	ug/L	10000	10100		101	80 - 120	P
Silver	ug/L	380	379		100	80 - 120	P



Metals
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ICP SERIAL DILUTIONS

SAMPLE NO.

BORING-1L

Lab Name: Chemtech Consulting Group Contract: loui01
Lab Code: CHEM Lb No.: lb123806 Lab Sample ID : O1255-02L SDG No.: O1232
Matrix (soil/water): Water Level (low/med): LOW
Concentration Units: ug/L

Analyte	Initial Sample Result (I)			Serial Dilution Result (S)			% Differ- ence	Q	M
	C			C					
Arsenic	100	U		500	U				P
Barium	447	J		546	J		22		P
Cadmium	30.0	U		150	U				P
Chromium	16.7	J		250	U		100.0		P
Lead	60.0	U		300	U				P
Mercury	2.00	U		10.0	U				CV
Selenium	100	U		500	U				P
Silver	50.0	U		250	U				P

METAL
PREPARATION &
INSTRUMENT
DATA

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Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client:

Louis Berger U.S., Inc., A WSP Company

Contract:

loui01

Instrument ID:

SDG No.:

O1232

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Al	Ca	Fe	Mg	Ag
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0001380	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000890	0.0000000	0.0000460	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001960	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001430	0.0000000	0.0000000



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ICP INTERELEMENT CORRECTION FACTORS

Client: Louis Berger U.S., Inc., A WSP Company

Contract: loui01

Instrument ID:

Lab Code: CHEM

Case No.: O1232

Date:

SDG No.: O1232

SAS No.: O1232

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		As	Ba	Be	Cd	Co
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0005750
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000



Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client:

Louis Berger U.S., Inc., A WSP Company

Contract:

loui01

Instrument ID:

SDG No.:

O1232

Case No.:

O1232

SAS No.:

O1232

Lab Code:

CHEM

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Cr	Cu	K	Mn	Mo
Arsenic	193.759	-0.0019440	0.0000000	0.0000000	0.0000000	0.0003800
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0002110	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000700	-0.0014440
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0004280	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0001890	0.0000000



Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client:

Louis Berger U.S., Inc., A WSP Company

Contract:

loui01

Instrument ID:

SDG No.:

O1232

Case No.:

O1232

SAS No.:

O1232

Lab Code:

CHEM

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Na	Ni	Pb	Sb	Se
Arsenic	193.759	0.0000000	0.0002020	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	-0.0001570	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0001070	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000



Metals
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ICP INTERELEMENT CORRECTION FACTORS

Client:

Louis Berger U.S., Inc., A WSP Company

Contract:

loui01

Instrument ID:

SDG No.:

O1232

Lab Code:

CHEM

Case No.:

O1232

SAS No.:

O1232

Date:

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Sn	Ti	Tl	V	Zn
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0001560	-0.0003220
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0001090
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	-0.0001700	0.0000000	-0.0007490	0.0000000

METAL
PREPARATION &
ANALYICAL
SUMMARY



Metals
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SAMPLE PREPARATION SUMMARY

Client: Louis Berger U.S., Inc., A WSP Company

SDG No.: O1232

Contract: loui01

Lab Code: CHEM

Method:

Case No.: O1232

SAS No.: O1232

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB150390							
O1232-03	WC-17	SAM	WATER	01/23/2023	3.0	30.0	
O1255-02DUP	BORING-1DUP	DUP	WATER	01/23/2023	3.0	30.0	
O1255-02MS	BORING-1MS	MS	WATER	01/23/2023	3.0	30.0	
O1255-02MSD	BORING-1MSD	MSD	WATER	01/23/2023	3.0	30.0	
PB150368TB	PB150368TB	MB	WATER	01/23/2023	3.0	30.0	
PB150390BL	PB150390BL	MB	WATER	01/23/2023	30.0	30.0	
PB150390BS	PB150390BS	LCS	WATER	01/23/2023	30.0	30.0	



Metals
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SAMPLE PREPARATION SUMMARY

Client: Louis Berger U.S., Inc., A WSP Company

SDG No.: O1232

Contract: loui01

Lab Code: CHEM

Method:

Case No.: O1232

SAS No.: O1232

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB150432							
O1232-03	WC-17	SAM	WATER	01/24/2023	5.0	25.0	
O1255-02DUP	BORING-1DUP	DUP	WATER	01/24/2023	5.0	25.0	
O1255-02MS	BORING-1MS	MS	WATER	01/24/2023	5.0	25.0	
O1255-02MSD	BORING-1MSD	MSD	WATER	01/24/2023	5.0	25.0	
PB150368TB	PB150368TB	MB	WATER	01/24/2023	5.0	25.0	
PB150432BL	PB150432BL	MB	WATER	01/24/2023	5.0	25.0	
PB150432BS	PB150432BS	LCS	WATER	01/24/2023	5.0	25.0	



metals
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ANALYSIS RUN LOG

Client: Louis Berger U.S., Inc., A WSP CompanyContract: louie01Lab code: CHEMCase no.: O1232Sas no.: O1232Sdg no.: O1232

Instrument id number: _____

Method: _____

Run number: LB123775Start date: 01/24/2023End date: 01/24/2023

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1025	HG
S0.2	S0.2	1	1027	HG
S2.5	S2.5	1	1030	HG
S5	S5	1	1035	HG
S7.5	S7.5	1	1037	HG
S10	S10	1	1042	HG
ICV15	ICV15	1	1047	HG
ICB15	ICB15	1	1049	HG
CCV08	CCV08	1	1052	HG
CCB08	CCB08	1	1054	HG
CRA	CRA	1	1059	HG
PB150390BL	PB150390BL	1	1106	HG
PB150390BS	PB150390BS	1	1110	HG
O1232-03	WC-17	1	1113	HG
CCV09	CCV09	1	1124	HG
CCB09	CCB09	1	1126	HG
O1255-02DUP	BORING-1DUP	1	1147	HG
O1255-02MS	BORING-1MS	1	1149	HG
CCV10	CCV10	1	1151	HG
CCB10	CCB10	1	1154	HG
O1255-02MSD	BORING-1MSD	1	1156	HG
CCV11	CCV11	1	1219	HG
CCB11	CCB11	1	1221	HG
PB150368TB	PB150368TB	1	1232	HG
O1255-02L	BORING-1L	5	1237	HG
CCV12	CCV12	1	1246	HG
CCB12	CCB12	1	1248	HG

metals
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ANALYSIS RUN LOG

Client: Louis Berger U.S., Inc., A WSP Company
Contract: lou01
Lab code: CHEM
Case no.: O1232
Sas no.: O1232
Sdg no.: O1232
Instrument id number:
Method:
Run number: LB123806
Start date: 01/25/2023
End date: 01/25/2023

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1152	Ag,As,Ba,Cd,Cr,Pb,Se
S1	S1	1	1156	Ag,As,Ba,Cd,Cr,Pb,Se
S2	S2	1	1200	Ag,As,Ba,Cd,Cr,Pb,Se
S3	S3	1	1204	Ag,As,Ba,Cd,Cr,Pb,Se
S4	S4	1	1208	Ag,As,Ba,Cd,Cr,Pb,Se
S5	S5	1	1212	Ag,As,Ba,Cd,Cr,Pb,Se
ICV01	ICV01	1	1215	Ag,As,Ba,Cd,Cr,Pb,Se
ICB01	ICB01	1	1220	Ag,As,Ba,Cd,Cr,Pb,Se
CRI01	CRI01	1	1224	Ag,As,Ba,Cd,Cr,Pb,Se
ICSA01	ICSA01	1	1233	Ag,As,Ba,Cd,Cr,Pb,Se
ICSAB01	ICSAB01	1	1237	Ag,As,Ba,Cd,Cr,Pb,Se
CCV01	CCV01	1	1257	Ag,As,Ba,Cd,Cr,Pb,Se
LLCCV01	LLCCV01	1	1300	Ag,As,Ba,Cd,Cr,Pb,Se
CCB01	CCB01	1	1304	Ag,As,Ba,Cd,Cr,Pb,Se
O1255-02DUP	BORING-1DUP	1	1328	Ag,As,Ba,Cd,Cr,Pb,Se
O1255-02L	BORING-1L	5	1332	Ag,As,Ba,Cd,Cr,Pb,Se
O1255-02MS	BORING-1MS	1	1336	Ag,As,Ba,Cd,Cr,Pb,Se
O1255-02MSD	BORING-1MSD	1	1340	Ag,As,Ba,Cd,Cr,Pb,Se
CCV02	CCV02	1	1348	Ag,As,Ba,Cd,Cr,Pb,Se
CCB02	CCB02	1	1352	Ag,As,Ba,Cd,Cr,Pb,Se
PB150432BL	PB150432BL	1	1403	Ag,As,Ba,Cd,Cr,Pb,Se
PB150432BS	PB150432BS	1	1407	Ag,As,Ba,Cd,Cr,Pb,Se
PB150368TB	PB150368TB	1	1411	Ag,As,Ba,Cd,Cr,Pb,Se
CCV03	CCV03	1	1439	Ag,As,Ba,Cd,Cr,Pb,Se
CCB03	CCB03	1	1443	Ag,As,Ba,Cd,Cr,Pb,Se
CCV04	CCV04	1	1532	Ag,As,Ba,Cd,Cr,Pb,Se
CCB04	CCB04	1	1536	Ag,As,Ba,Cd,Cr,Pb,Se
O1232-03	WC-17	1	1555	Ag,As,Ba,Cd,Cr,Pb,Se
CCV05	CCV05	1	1620	Ag,As,Ba,Cd,Cr,Pb,Se
CCB05	CCB05	1	1624	Ag,As,Ba,Cd,Cr,Pb,Se
CCV06	CCV06	1	1719	Ag,As,Ba,Cd,Cr,Pb,Se
CCB06	CCB06	1	1723	Ag,As,Ba,Cd,Cr,Pb,Se
CCV07	CCV07	1	1809	Ag,As,Ba,Cd,Cr,Pb,Se
CCB07	CCB07	1	1813	Ag,As,Ba,Cd,Cr,Pb,Se
CCV08	CCV08	1	1844	Ag,As,Ba,Cd,Cr,Pb,Se
CCB08	CCB08	1	1848	Ag,As,Ba,Cd,Cr,Pb,Se