Your Project #: M193215
Site#: CASCADE STEEL
Site Location: ROOF MONITOR/BILLET CUTTING

Attention: Data Reporting

Mostardi Platt
888 Industrial Rd
Elmhurst, IL
USA 60126-1121

Your C.O.C. #: 019, 015, 016, 017, 018, 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014

Report Date: 2019/09/18
Report #: R5885174
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9M9024
Received: 2019/08/16, 14:00

Sample Matrix: Stack Sampling Train
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Total Metals on Hi-Vol Filter (6010Cmod)	13	2019/08/27	2019/08/28	CAM SOP-00408	EPA 6010D m
Metals F.H. in Filter + Rinses (6020B m)	10	2019/08/26	2019/08/28	BRL SOP-00103/ BRL SOP-00102	EPA M29/CARB 436 m
Total Metals on Hi-Vol Filter (6020Bmod)	13	2019/08/27	2019/08/30	BRL SOP-00103 / BRL SOP-00102	EPA 6020B m
Particulates/Acetone Rinse (M5/315/M201)	17	2019/08/20	2019/08/22	BRL SOP-00109	EPA 5/315 m
Particulates on Filter (Method IO-3.1)	20	2019/08/22	2019/08/22	CAM SOP-00942	Method IO-3.1

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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Your Project #: M193215
Site#: CASCADE STEEL
Site Location: ROOF MONITOR/BILLET CUTTING

Attention: Data Reporting

Mostardi Platt
888 Industrial Rd
Elmhurst, IL
USA 60126-1121

Your C.O.C. #: 019, 015, 016, 017, 018, 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014

Report Date: 2019/09/18
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CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9M9024
Received: 2019/08/16, 14:00

Encryption Key

Clayton Johnson
Project Manager - Air Toxics,
Source Evaluation
18 Sep 2019 16:08:06

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: Clayton.Johnson@bvlabs.com
Phone# (905)817-5769

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BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

EPA M29 METALS (FRONT & BACK SEPARATE)

BV Labs ID		KNY041	KNY042	KNY043		KNY197		
Sampling Date		2019/08/08	2019/08/06	2019/08/07		2019/08/06		
COC Number		019	015	016		001		
	UNITS	ACETONE REAGENT BLANK	RM RECOVERY BLANK	BC RECOVERY BLANK	RDL	RM RUN 1	RDL	QC Batch
Front Half Aluminum (Al)	ug	<60	<60	<60	60	5440	60	6299976
Front Half Antimony (Sb)	ug	<3.0	<3.0	<3.0	3.0	<3.0	3.0	6299976
Front Half Arsenic (As)	ug	<0.80	<0.80	<0.80	0.80	3.59	0.80	6299976
Front Half Beryllium (Be)	ug	<0.18	<0.18	<0.18	0.18	<0.18	0.18	6299976
Front Half Cadmium (Cd)	ug	<0.18	<0.18	<0.18	0.18	0.72	0.18	6299976
Front Half Chromium (Cr)	ug	<3.0	<3.0	8.0	3.0	68.5	3.0	6299976
Front Half Cobalt (Co)	ug	<0.18	<0.18	0.80	0.18	8.32	0.18	6299976
Front Half Copper (Cu)	ug	<1.8	<1.8	6.1	1.8	49.5	1.8	6299976
Front Half Lead (Pb)	ug	<0.60	<0.60	<0.60	0.60	43.2	0.60	6299976
Front Half Manganese (Mn)	ug	<1.2	14.2	58.1	1.2	4540	6.0	6299976
Front Half Nickel (Ni)	ug	<1.0	<1.0	5.7	1.0	19.7	1.0	6299976
Front Half Phosphorus (P)	ug	<90	<90	<90	90	103	90	6299976
Front Half Selenium (Se)	ug	<2.0	<2.0	<2.0	2.0	2.7	2.0	6299976
Front Half Vanadium (V)	ug	<0.60	<0.60	1.81	0.60	20.7	0.60	6299976
Front Half Zinc (Zn)	ug	<10	<10	<10	10	449	10	6299976

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

EPA M29 METALS (FRONT & BACK SEPARATE)

BV Labs ID		KNY197		KNY199	KNY201	KNY203	KNY205	KNY207	KNY209		
Sampling Date		2019/08/06		2019/08/06	2019/08/06	2019/08/07	2019/08/07	2019/08/07	2019/08/08		
COC Number		001		003	005	007	009	011	013		
	UNITS	RM RUN 1 Lab-Dup	RDL	RM RUN 3	RM RUN 5	BC RUN 1	BC RUN 3	BC RUN 5	BC RUN 7	RDL	QC Batch
Front Half Aluminum (Al)	ug	5340	60	884	941	239	223	<60	140	60	6299976
Front Half Antimony (Sb)	ug	<3.0	3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	6299976
Front Half Arsenic (As)	ug	3.47	0.80	<0.80	<0.80	<0.80	0.90	<0.80	<0.80	0.80	6299976
Front Half Beryllium (Be)	ug	<0.18	0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	0.18	6299976
Front Half Cadmium (Cd)	ug	0.75	0.18	<0.18	0.20	<0.18	<0.18	<0.18	<0.18	0.18	6299976
Front Half Chromium (Cr)	ug	69.9	3.0	15.4	19.6	29.4	53.1	5.0	78.5	3.0	6299976
Front Half Cobalt (Co)	ug	8.49	0.18	1.20	1.74	3.10	5.27	0.56	4.51	0.18	6299976
Front Half Copper (Cu)	ug	51.0	1.8	11.3	15.5	20.7	37.5	7.4	40.3	1.8	6299976
Front Half Lead (Pb)	ug	44.3	0.60	7.13	9.99	2.59	2.23	<0.60	1.89	0.60	6299976
Front Half Manganese (Mn)	ug	4580	6.0	519	672	325	420	48.1	467	1.2	6299976
Front Half Nickel (Ni)	ug	20.2	1.0	6.6	8.8	18.3	36.8	4.4	37.9	1.0	6299976
Front Half Phosphorus (P)	ug	98	90	<90	<90	<90	<90	<90	<90	90	6299976
Front Half Selenium (Se)	ug	2.7	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	6299976
Front Half Vanadium (V)	ug	21.1	0.60	3.40	3.96	10.9	12.2	<0.60	7.39	0.60	6299976
Front Half Zinc (Zn)	ug	454	10	97	119	46	37	<10	21	10	6299976

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

EPA M5 PARTICULATE MATTER (PM)

BV Labs ID		KNY041	KNY042	KNY043		
Sampling Date		2019/08/08	2019/08/06	2019/08/07		
COC Number		019	015	016		
	UNITS	ACETONE REAGENT BLANK	RM RECOVERY BLANK	BC RECOVERY BLANK	RDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	<0.5	1.9	18.7	0.5	6289306

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KNY197	KNY198	KNY199	KNY200	KNY201		
Sampling Date		2019/08/06	2019/08/06	2019/08/06	2019/08/06	2019/08/06		
COC Number		001	002	003	004	005		
	UNITS	RM RUN 1	RM RUN 2	RM RUN 3	RM RUN 4	RM RUN 5	RDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	498	73.9	168	200	64.6	0.5	6289306

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KNY202	KNY203	KNY204	KNY205	KNY206		
Sampling Date		2019/08/06	2019/08/07	2019/08/07	2019/08/07	2019/08/07		
COC Number		006	007	008	009	010		
	UNITS	RM RUN 6	BC RUN 1	BC RUN 2	BC RUN 3	BC RUN 4	RDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	61.7	102	136	103	75.4	0.5	6289306

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KNY207	KNY208	KNY209	KNY210		
Sampling Date		2019/08/07	2019/08/08	2019/08/08	2019/08/08		
COC Number		011	012	013	014		
	UNITS	BC RUN 5	BC RUN 6	BC RUN 7	BC RUN 8	RDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	8.0	55.7	79.9	51.0	0.5	6289306

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

BV Labs ID		KNY042	KNY043	KNY191	KNY193		
Sampling Date		2019/08/06	2019/08/07	2019/08/06	2019/08/06		
COC Number		015	016	017	017		
	UNITS	RM RECOVERY BLANK	BC RECOVERY BLANK	RM FILTER BLANK #1	RM FILTER BLANK #2	RDL	QC Batch
Particulate Weight on Filter	mg	<5.0	<5.0	<5.0	<5.0	5.0	6295346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KNY194	KNY195	KNY197	KNY198	KNY199	KNY200		
Sampling Date		2019/08/07	2019/08/07	2019/08/06	2019/08/06	2019/08/06	2019/08/06		
COC Number		018	018	001	002	003	004		
	UNITS	BC FILTER BLANK #1	BC FILTER BLANK #2	RM RUN 1	RM RUN 2	RM RUN 3	RM RUN 4	RDL	QC Batch
Particulate Weight on Filter	mg	<5.0	<5.0	<5.0 (1)	64.7 (2)	<5.0 (2)	206 (2)	5.0	6295346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) *DE**LPC**LFT**parts of the filter missing*

FE = Filter ID did not match envelope ID
DE = Edge of the filter frayed
FT = Filter torn
LFT = Loose filter material
LPC = Loose particulate material in the filter container
SPS = Sampled on the printed side
FNF = Filter not folded

Results are bias low due to missing filter material
(2) *DE**LPC**LFT**parts of the filter missing*

BV Labs ID		KNY201	KNY202	KNY203	KNY204	KNY205	KNY206	KNY207		
Sampling Date		2019/08/06	2019/08/06	2019/08/07	2019/08/07	2019/08/07	2019/08/07	2019/08/07		
COC Number		005	006	007	008	009	010	011		
	UNITS	RM RUN 5	RM RUN 6	BC RUN 1	BC RUN 2	BC RUN 3	BC RUN 4	BC RUN 5	RDL	QC Batch
Particulate Weight on Filter	mg	154 (1)	165 (1)	274 (1)	409 (1)	628 (1)	578 (1)	378 (1)	5.0	6295346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) *DE**LPC**LFT**parts of the filter missing*

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

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Client Project #: M193215
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RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

BV Labs ID		KNY208	KNY209	KNY210		
Sampling Date		2019/08/08	2019/08/08	2019/08/08		
COC Number		012	013	014		
	UNITS	**BC RUN 6**	**BC RUN 7**	**BC RUN 8**	**RDL**	**QC Batch**
Particulate Weight on Filter	mg	270 (1)	226 (1)	95.3 (1)	5.0	6295346

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) *DE**LPC**LFT**parts of the filter missing*

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

ELEMENTS BY ICP-AES (STACK SAMPLING TRAIN)

BV Labs ID		KNY042	KNY043	KNY191	KNY193		
Sampling Date		2019/08/06	2019/08/07	2019/08/06	2019/08/06		
COC Number		015	016	017	017		
	UNITS	RM RECOVERY BLANK	BC RECOVERY BLANK	RM FILTER BLANK #1	RM FILTER BLANK #2	RDL	QC Batch
Phosphorus (P)	ug	<25	<25	<25	<25	25	6301440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KNY194	KNY195	KNY197	KNY199	KNY201	KNY203		
Sampling Date		2019/08/07	2019/08/07	2019/08/06	2019/08/06	2019/08/06	2019/08/07		
COC Number		018	018	001	003	005	007		
	UNITS	BC FILTER BLANK #1	BC FILTER BLANK #2	RM RUN 1	RM RUN 3	RM RUN 5	BC RUN 1	RDL	QC Batch
Phosphorus (P)	ug	<25	<25	61	27	72	54	25	6301440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		KNY205	KNY207	KNY209	KNY209		
Sampling Date		2019/08/07	2019/08/07	2019/08/08	2019/08/08		
COC Number		009	011	013	013		
	UNITS	BC RUN 3	BC RUN 5	BC RUN 7	BC RUN 7 Lab-Dup	RDL	QC Batch
Phosphorus (P)	ug	111	152	65	63	25	6301440

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

ELEMENTS BY ATOMIC SPECTROSCOPY (STACK SAMPLING TRAIN)

BV Labs ID		KNY042	KNY043	KNY191	KNY193		
Sampling Date		2019/08/06	2019/08/07	2019/08/06	2019/08/06		
COC Number		015	016	017	017		
	UNITS	RM RECOVERY BLANK	BC RECOVERY BLANK	RM FILTER BLANK #1	RM FILTER BLANK #2	RDL	QC Batch
Aluminum (Al)	ug	21	20	19	18	18	6301443
Antimony (Sb)	ug	<0.45	<0.45	<0.45	<0.45	0.45	6301443
Arsenic (As)	ug	<0.45	<0.45	<0.45	<0.45	0.45	6301443
Beryllium (Be)	ug	<0.27	<0.27	<0.27	<0.27	0.27	6301443
Cadmium (Cd)	ug	<0.09	<0.09	<0.09	<0.09	0.09	6301443
Chromium (Cr)	ug	2.4	2.3	2.4	2.4	0.45	6301443
Cobalt (Co)	ug	<0.27	<0.27	<0.27	<0.27	0.27	6301443
Copper (Cu)	ug	<0.27	<0.27	<0.27	<0.27	0.27	6301443
Lead (Pb)	ug	<0.27	<0.27	<0.27	<0.27	0.27	6301443
Manganese (Mn)	ug	<0.45	<0.45	<0.45	<0.45	0.45	6301443
Nickel (Ni)	ug	0.67	0.57	0.63	0.62	0.45	6301443
Selenium (Se)	ug	<0.9	<0.9	<0.9	<0.9	0.9	6301443
Vanadium (V)	ug	<0.27	<0.27	<0.27	<0.27	0.27	6301443
Zinc (Zn)	ug	<4.5	<4.5	<4.5	<4.5	4.5	6301443

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (STACK SAMPLING TRAIN)

BV Labs ID		KNY194	KNY195		KNY197		KNY199	KNY199		
Sampling Date		2019/08/07	2019/08/07		2019/08/06		2019/08/06	2019/08/06		
COC Number		018	018		001		003	003		
	UNITS	BC FILTER BLANK #1	BC FILTER BLANK #2	RDL	RM RUN 1	RDL	RM RUN 3	RM RUN 3 Lab-Dup	RDL	QC Batch
Aluminum (Al)	ug	20	19	18	3100	180	920	890	18	6301443
Antimony (Sb)	ug	<0.45	<0.45	0.45	7.4	4.5	6.6	6.3	0.45	6301443
Arsenic (As)	ug	<0.45	<0.45	0.45	13	4.5	12	11	0.45	6301443
Beryllium (Be)	ug	<0.27	<0.27	0.27	<2.7	2.7	<0.27	<0.27	0.27	6301443
Cadmium (Cd)	ug	<0.09	<0.09	0.09	1.0	0.9	1.3	1.2	0.09	6301443
Chromium (Cr)	ug	2.4	2.4	0.45	43	4.5	35	33	0.45	6301443
Cobalt (Co)	ug	<0.27	<0.27	0.27	9.9	2.7	3.8	3.6	0.27	6301443
Copper (Cu)	ug	<0.27	<0.27	0.27	340	2.7	360	350	0.27	6301443
Lead (Pb)	ug	<0.27	<0.27	0.27	1300	2.7	250	240	0.27	6301443
Manganese (Mn)	ug	<0.45	<0.45	0.45	7200	4.5	2700	2700	4.5	6301443
Nickel (Ni)	ug	0.68	0.69	0.45	35	4.5	39	37	0.45	6301443
Selenium (Se)	ug	<0.9	<0.9	0.9	13	9	13	12	0.9	6301443
Vanadium (V)	ug	<0.27	<0.27	0.27	15	2.7	4.6	4.3	0.27	6301443
Zinc (Zn)	ug	<4.5	<4.5	4.5	5200	45	1800	1700	4.5	6301443

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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ELEMENTS BY ATOMIC SPECTROSCOPY (STACK SAMPLING TRAIN)

BV Labs ID		KNY201	KNY203	KNY205	KNY207	KNY209		
Sampling Date		2019/08/06	2019/08/07	2019/08/07	2019/08/07	2019/08/08		
COC Number		005	007	009	011	013		
	UNITS	RM RUN 5	BC RUN 1	BC RUN 3	BC RUN 5	BC RUN 7	RDL	QC Batch
Aluminum (Al)	ug	1800	230	220	340	<180	180	6301443
Antimony (Sb)	ug	20	8.1	23	31	13	4.5	6301443
Arsenic (As)	ug	31	52	84	70	33	4.5	6301443
Beryllium (Be)	ug	<2.7	<2.7	<2.7	<2.7	<2.7	2.7	6301443
Cadmium (Cd)	ug	1.2	<0.9	<0.9	<0.9	<0.9	0.9	6301443
Chromium (Cr)	ug	98	54	120	110	59	4.5	6301443
Cobalt (Co)	ug	8.2	23	39	29	13	2.7	6301443
Copper (Cu)	ug	670	810	2100	2800	1200	2.7	6301443
Lead (Pb)	ug	970	8.1	10	91	110	2.7	6301443
Manganese (Mn)	ug	4200	570	1100	1400	590	4.5	6301443
Nickel (Ni)	ug	85	180	400	330	170	4.5	6301443
Selenium (Se)	ug	29	<9	<9	<9	<9	9	6301443
Vanadium (V)	ug	9.7	23	24	4.8	5.7	2.7	6301443
Zinc (Zn)	ug	8500	160	84	550	210	45	6301443

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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TEST SUMMARY

BV Labs ID: KNY041 **Collected:** 2019/08/08
Sample ID: ACETONE REAGENT BLANK **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman

BV Labs ID: KNY042 **Collected:** 2019/08/06
Sample ID: RM RECOVERY BLANK **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY043 **Collected:** 2019/08/07
Sample ID: BC RECOVERY BLANK **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY191 **Collected:** 2019/08/06
Sample ID: RM FILTER BLANK #1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY193 **Collected:** 2019/08/06
Sample ID: RM FILTER BLANK #2 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

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TEST SUMMARY

BV Labs ID: KNY194 **Collected:** 2019/08/07
Sample ID: BC FILTER BLANK #1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY195 **Collected:** 2019/08/07
Sample ID: BC FILTER BLANK #2 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY197 **Collected:** 2019/08/06
Sample ID: RM RUN 1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY197 Dup **Collected:** 2019/08/06
Sample ID: RM RUN 1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha

BV Labs ID: KNY198 **Collected:** 2019/08/06
Sample ID: RM RUN 2 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY199 **Collected:** 2019/08/06
Sample ID: RM RUN 3 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha

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TEST SUMMARY

BV Labs ID: KNY199 **Collected:** 2019/08/06
Sample ID: RM RUN 3 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY199 Dup **Collected:** 2019/08/06
Sample ID: RM RUN 3 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti

BV Labs ID: KNY200 **Collected:** 2019/08/06
Sample ID: RM RUN 4 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY201 **Collected:** 2019/08/06
Sample ID: RM RUN 5 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY202 **Collected:** 2019/08/06
Sample ID: RM RUN 6 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY203 **Collected:** 2019/08/07
Sample ID: BC RUN 1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti

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TEST SUMMARY

BV Labs ID: KNY203 **Collected:** 2019/08/07
Sample ID: BC RUN 1 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY204 **Collected:** 2019/08/07
Sample ID: BC RUN 2 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY205 **Collected:** 2019/08/07
Sample ID: BC RUN 3 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY206 **Collected:** 2019/08/07
Sample ID: BC RUN 4 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY207 **Collected:** 2019/08/07
Sample ID: BC RUN 5 **Shipped:**
Matrix: Stack Sampling Train **Received:** 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

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BV Labs Job #: B9M9024
Report Date: 2019/09/18

Mostardi Platt
Client Project #: M193215
Site Location: ROOF MONITOR/BILLET CUTTING

TEST SUMMARY

BV Labs ID: KNY208
Sample ID: BC RUN 6
Matrix: Stack Sampling Train

Collected: 2019/08/08
Shipped:
Received: 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY209
Sample ID: BC RUN 7
Matrix: Stack Sampling Train

Collected: 2019/08/08
Shipped:
Received: 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	6299976	2019/08/26	2019/08/28	Nan Raykha
Total Metals on Hi-Vol Filter (6020Bmod)	ICP1/MS	6301443	2019/08/27	2019/08/30	Prempal Bhatti
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

BV Labs ID: KNY209 Dup
Sample ID: BC RUN 7
Matrix: Stack Sampling Train

Collected: 2019/08/08
Shipped:
Received: 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals on Hi-Vol Filter (6010Cmod)	ICPX	6301440	2019/08/27	2019/08/28	Jolly John

BV Labs ID: KNY210
Sample ID: BC RUN 8
Matrix: Stack Sampling Train

Collected: 2019/08/08
Shipped:
Received: 2019/08/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Acetone Rinse (M5/315/M201)	BAL	6289306	2019/08/20	2019/08/22	Muhammad M Rahman
Particulates on Filter (Method IO-3.1)	BAL	6295346	2019/08/22	2019/08/22	Violeta Porcila

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GENERAL COMMENTS

Dried samples received. Reconstitute the samples to 50 ml with Acetone and proceeded.

Sample KNY197 [RM RUN 1] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample KNY201 [RM RUN 5] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample KNY203 [BC RUN 1] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample KNY205 [BC RUN 3] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample KNY207 [BC RUN 5] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample KNY209 [BC RUN 7] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

EPA M29 METALS (FRONT & BACK SEPARATE)

Metals F.H. in Filter + Rinses (6020B m): Post digestion duplicate and spike were done on sample KNY197.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
6289306	MOR	Method Blank	Acetone Rinse Particulate Weight in Acetone Ri	2019/08/22	<0.5		mg	
6299976	N_R	Matrix Spike(KNY197)	Front Half Aluminum (Al)	2019/08/28		92	%	75 - 125
			Front Half Antimony (Sb)	2019/08/28		99	%	75 - 125
			Front Half Arsenic (As)	2019/08/28		97	%	75 - 125
			Front Half Beryllium (Be)	2019/08/28		100	%	75 - 125
			Front Half Cadmium (Cd)	2019/08/28		99	%	75 - 125
			Front Half Chromium (Cr)	2019/08/28		97	%	75 - 125
			Front Half Cobalt (Co)	2019/08/28		101	%	75 - 125
			Front Half Copper (Cu)	2019/08/28		101	%	75 - 125
			Front Half Lead (Pb)	2019/08/28		99	%	75 - 125
			Front Half Manganese (Mn)	2019/08/28		NC	%	75 - 125
			Front Half Nickel (Ni)	2019/08/28		98	%	75 - 125
			Front Half Phosphorus (P)	2019/08/28		102	%	75 - 125
			Front Half Selenium (Se)	2019/08/28		100	%	75 - 125
			Front Half Vanadium (V)	2019/08/28		97	%	75 - 125
			Front Half Zinc (Zn)	2019/08/28		98	%	75 - 125
6299976	N_R	Matrix Spike DUP(KNY197)	Front Half Aluminum (Al)	2019/08/28		92	%	75 - 125
			Front Half Antimony (Sb)	2019/08/28		98	%	75 - 125
			Front Half Arsenic (As)	2019/08/28		100	%	75 - 125
			Front Half Beryllium (Be)	2019/08/28		96	%	75 - 125
			Front Half Cadmium (Cd)	2019/08/28		97	%	75 - 125
			Front Half Chromium (Cr)	2019/08/28		101	%	75 - 125
			Front Half Cobalt (Co)	2019/08/28		102	%	75 - 125
			Front Half Copper (Cu)	2019/08/28		99	%	75 - 125
			Front Half Lead (Pb)	2019/08/28		103	%	75 - 125
			Front Half Manganese (Mn)	2019/08/28		NC	%	75 - 125
			Front Half Nickel (Ni)	2019/08/28		99	%	75 - 125
			Front Half Phosphorus (P)	2019/08/28		98	%	75 - 125
			Front Half Selenium (Se)	2019/08/28		100	%	75 - 125
			Front Half Vanadium (V)	2019/08/28		99	%	75 - 125
			Front Half Zinc (Zn)	2019/08/28		103	%	75 - 125
6299976	N_R	MS/MSD RPD	Front Half Aluminum (Al)	2019/08/28	0.75		%	20
			Front Half Antimony (Sb)	2019/08/28	0.44		%	20
			Front Half Arsenic (As)	2019/08/28	3.1		%	20
			Front Half Beryllium (Be)	2019/08/28	4.5		%	20
			Front Half Cadmium (Cd)	2019/08/28	1.6		%	20
			Front Half Chromium (Cr)	2019/08/28	3.2		%	20
			Front Half Cobalt (Co)	2019/08/28	1.4		%	20
			Front Half Copper (Cu)	2019/08/28	1.9		%	20
			Front Half Lead (Pb)	2019/08/28	3.5		%	20
			Front Half Manganese (Mn)	2019/08/28	0		%	20
			Front Half Nickel (Ni)	2019/08/28	1.5		%	20
			Front Half Phosphorus (P)	2019/08/28	4.0		%	20
			Front Half Selenium (Se)	2019/08/28	0.37		%	20
			Front Half Vanadium (V)	2019/08/28	1.9		%	20
			Front Half Zinc (Zn)	2019/08/28	4.7		%	20
6299976	N_R	Spiked Blank	Front Half Aluminum (Al)	2019/08/28		102	%	85 - 115
			Front Half Antimony (Sb)	2019/08/28		98	%	85 - 115
			Front Half Arsenic (As)	2019/08/28		98	%	85 - 115
			Front Half Beryllium (Be)	2019/08/28		97	%	85 - 115
			Front Half Cadmium (Cd)	2019/08/28		98	%	85 - 115
			Front Half Chromium (Cr)	2019/08/28		96	%	85 - 115

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Cobalt (Co)	2019/08/28		101	%	85 - 115
			Front Half Copper (Cu)	2019/08/28		101	%	85 - 115
			Front Half Lead (Pb)	2019/08/28		101	%	85 - 115
			Front Half Manganese (Mn)	2019/08/28		99	%	85 - 115
			Front Half Nickel (Ni)	2019/08/28		97	%	85 - 115
			Front Half Phosphorus (P)	2019/08/28		106	%	85 - 115
			Front Half Selenium (Se)	2019/08/28		99	%	85 - 115
			Front Half Vanadium (V)	2019/08/28		96	%	85 - 115
			Front Half Zinc (Zn)	2019/08/28		98	%	85 - 115
6299976	N_R	Spiked Blank DUP	Front Half Aluminum (Al)	2019/08/28		100	%	85 - 115
			Front Half Antimony (Sb)	2019/08/28		100	%	85 - 115
			Front Half Arsenic (As)	2019/08/28		99	%	85 - 115
			Front Half Beryllium (Be)	2019/08/28		101	%	85 - 115
			Front Half Cadmium (Cd)	2019/08/28		99	%	85 - 115
			Front Half Chromium (Cr)	2019/08/28		96	%	85 - 115
			Front Half Cobalt (Co)	2019/08/28		100	%	85 - 115
			Front Half Copper (Cu)	2019/08/28		99	%	85 - 115
			Front Half Lead (Pb)	2019/08/28		100	%	85 - 115
			Front Half Manganese (Mn)	2019/08/28		98	%	85 - 115
			Front Half Nickel (Ni)	2019/08/28		98	%	85 - 115
			Front Half Phosphorus (P)	2019/08/28		104	%	85 - 115
			Front Half Selenium (Se)	2019/08/28		99	%	85 - 115
			Front Half Vanadium (V)	2019/08/28		96	%	85 - 115
			Front Half Zinc (Zn)	2019/08/28		98	%	85 - 115
6299976	N_R	RPD	Front Half Aluminum (Al)	2019/08/28	1.8		%	20
			Front Half Antimony (Sb)	2019/08/28	2.1		%	20
			Front Half Arsenic (As)	2019/08/28	0.63		%	20
			Front Half Beryllium (Be)	2019/08/28	4.0		%	20
			Front Half Cadmium (Cd)	2019/08/28	0.53		%	20
			Front Half Chromium (Cr)	2019/08/28	0.17		%	20
			Front Half Cobalt (Co)	2019/08/28	1.3		%	20
			Front Half Copper (Cu)	2019/08/28	1.6		%	20
			Front Half Lead (Pb)	2019/08/28	1.2		%	20
			Front Half Manganese (Mn)	2019/08/28	0.79		%	20
			Front Half Nickel (Ni)	2019/08/28	0.22		%	20
			Front Half Phosphorus (P)	2019/08/28	1.8		%	20
			Front Half Selenium (Se)	2019/08/28	0.36		%	20
			Front Half Vanadium (V)	2019/08/28	0.45		%	20
			Front Half Zinc (Zn)	2019/08/28	0.32		%	20
6299976	N_R	Method Blank	Front Half Aluminum (Al)	2019/08/28	<60		ug	
			Front Half Antimony (Sb)	2019/08/28	<3.0		ug	
			Front Half Arsenic (As)	2019/08/28	<0.80		ug	
			Front Half Beryllium (Be)	2019/08/28	<0.18		ug	
			Front Half Cadmium (Cd)	2019/08/28	<0.18		ug	
			Front Half Chromium (Cr)	2019/08/28	<3.0		ug	
			Front Half Cobalt (Co)	2019/08/28	<0.18		ug	
			Front Half Copper (Cu)	2019/08/28	<1.8		ug	
			Front Half Lead (Pb)	2019/08/28	<0.60		ug	
			Front Half Manganese (Mn)	2019/08/28	<1.2		ug	
			Front Half Nickel (Ni)	2019/08/28	<1.0		ug	
			Front Half Phosphorus (P)	2019/08/28	<90		ug	
			Front Half Selenium (Se)	2019/08/28	<2.0		ug	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Vanadium (V)	2019/08/28	<0.60		ug	
			Front Half Zinc (Zn)	2019/08/28	<10		ug	
6299976	N_R	RPD - Sample/Sample Dup	Front Half Aluminum (Al)	2019/08/28	1.7		%	20
			Front Half Antimony (Sb)	2019/08/28	NC		%	20
			Front Half Arsenic (As)	2019/08/28	3.3		%	20
			Front Half Beryllium (Be)	2019/08/28	NC		%	20
			Front Half Cadmium (Cd)	2019/08/28	5.1		%	20
			Front Half Chromium (Cr)	2019/08/28	2.0		%	20
			Front Half Cobalt (Co)	2019/08/28	2.0		%	20
			Front Half Copper (Cu)	2019/08/28	3.0		%	20
			Front Half Lead (Pb)	2019/08/28	2.3		%	20
			Front Half Manganese (Mn)	2019/08/28	0.75		%	20
			Front Half Nickel (Ni)	2019/08/28	2.3		%	20
			Front Half Phosphorus (P)	2019/08/28	5.7		%	20
			Front Half Selenium (Se)	2019/08/28	1.3		%	20
			Front Half Vanadium (V)	2019/08/28	2.1		%	20
			Front Half Zinc (Zn)	2019/08/28	1.0		%	20
6301440	JOH	Matrix Spike(KNY209)	Phosphorus (P)	2019/08/28		103	%	75 - 125
6301440	JOH	Matrix Spike DUP(KNY209)	Phosphorus (P)	2019/08/28		105	%	75 - 125
6301440	JOH	MS/MSD RPD	Phosphorus (P)	2019/08/28	1.3		%	20
6301440	JOH	Spiked Blank	Phosphorus (P)	2019/08/28		104	%	85 - 115
6301440	JOH	Spiked Blank DUP	Phosphorus (P)	2019/08/28		105	%	85 - 115
6301440	JOH	RPD	Phosphorus (P)	2019/08/28	0.48		%	20
6301440	JOH	Method Blank	Phosphorus (P)	2019/08/28	<25		ug	
6301440	JOH	RPD - Sample/Sample Dup	Phosphorus (P)	2019/08/28	2.6		%	20
6301443	PBA	Matrix Spike(KNY199)	Aluminum (Al)	2019/08/30		NC	%	70 - 130
			Antimony (Sb)	2019/08/30		77	%	70 - 130
			Arsenic (As)	2019/08/30		91	%	70 - 130
			Beryllium (Be)	2019/08/30		92	%	70 - 130
			Cadmium (Cd)	2019/08/30		95	%	70 - 130
			Chromium (Cr)	2019/08/30		92	%	70 - 130
			Cobalt (Co)	2019/08/30		92	%	70 - 130
			Copper (Cu)	2019/08/30		NC	%	70 - 130
			Lead (Pb)	2019/08/30		NC	%	70 - 130
			Manganese (Mn)	2019/08/30		NC	%	70 - 130
			Nickel (Ni)	2019/08/30		88	%	70 - 130
			Selenium (Se)	2019/08/30		88	%	70 - 130
			Vanadium (V)	2019/08/30		88	%	70 - 130
			Zinc (Zn)	2019/08/30		NC	%	70 - 130
6301443	PBA	Matrix Spike DUP(KNY199)	Aluminum (Al)	2019/08/30		NC	%	70 - 130
			Antimony (Sb)	2019/08/30		78	%	70 - 130
			Arsenic (As)	2019/08/30		90	%	70 - 130
			Beryllium (Be)	2019/08/30		97	%	70 - 130
			Cadmium (Cd)	2019/08/30		96	%	70 - 130
			Chromium (Cr)	2019/08/30		92	%	70 - 130
			Cobalt (Co)	2019/08/30		92	%	70 - 130
			Copper (Cu)	2019/08/30		NC	%	70 - 130
			Lead (Pb)	2019/08/30		NC	%	70 - 130
			Manganese (Mn)	2019/08/30		NC	%	70 - 130
			Nickel (Ni)	2019/08/30		87	%	70 - 130
			Selenium (Se)	2019/08/30		87	%	70 - 130
			Vanadium (V)	2019/08/30		88	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Zinc (Zn)	2019/08/30		NC	%	70 - 130
6301443	PBA	MS/MSD RPD	Aluminum (Al)	2019/08/30	0		%	20
			Antimony (Sb)	2019/08/30	1.0		%	20
			Arsenic (As)	2019/08/30	0.51		%	20
			Beryllium (Be)	2019/08/30	5.4		%	20
			Cadmium (Cd)	2019/08/30	0.41		%	20
			Chromium (Cr)	2019/08/30	0.38		%	20
			Cobalt (Co)	2019/08/30	0.25		%	20
			Copper (Cu)	2019/08/30	0		%	20
			Lead (Pb)	2019/08/30	0		%	20
			Manganese (Mn)	2019/08/30	0		%	20
			Nickel (Ni)	2019/08/30	1.3		%	20
			Selenium (Se)	2019/08/30	0.93		%	20
			Vanadium (V)	2019/08/30	0.024		%	20
			Zinc (Zn)	2019/08/30	0		%	20
6301443	PBA	Spiked Blank	Aluminum (Al)	2019/08/30		97	%	85 - 115
			Antimony (Sb)	2019/08/30		97	%	85 - 115
			Arsenic (As)	2019/08/30		98	%	85 - 115
			Beryllium (Be)	2019/08/30		94	%	85 - 115
			Cadmium (Cd)	2019/08/30		96	%	85 - 115
			Chromium (Cr)	2019/08/30		95	%	85 - 115
			Cobalt (Co)	2019/08/30		101	%	85 - 115
			Copper (Cu)	2019/08/30		96	%	85 - 115
			Lead (Pb)	2019/08/30		101	%	85 - 115
			Manganese (Mn)	2019/08/30		96	%	85 - 115
			Nickel (Ni)	2019/08/30		97	%	85 - 115
			Selenium (Se)	2019/08/30		95	%	85 - 115
			Vanadium (V)	2019/08/30		96	%	85 - 115
			Zinc (Zn)	2019/08/30		94	%	85 - 115
6301443	PBA	Spiked Blank DUP	Aluminum (Al)	2019/08/30		94	%	85 - 115
			Antimony (Sb)	2019/08/30		95	%	85 - 115
			Arsenic (As)	2019/08/30		98	%	85 - 115
			Beryllium (Be)	2019/08/30		97	%	85 - 115
			Cadmium (Cd)	2019/08/30		95	%	85 - 115
			Chromium (Cr)	2019/08/30		95	%	85 - 115
			Cobalt (Co)	2019/08/30		100	%	85 - 115
			Copper (Cu)	2019/08/30		95	%	85 - 115
			Lead (Pb)	2019/08/30		99	%	85 - 115
			Manganese (Mn)	2019/08/30		94	%	85 - 115
			Nickel (Ni)	2019/08/30		97	%	85 - 115
			Selenium (Se)	2019/08/30		94	%	85 - 115
			Vanadium (V)	2019/08/30		96	%	85 - 115
			Zinc (Zn)	2019/08/30		94	%	85 - 115
6301443	PBA	RPD	Aluminum (Al)	2019/08/30	3.9		%	20
			Antimony (Sb)	2019/08/30	1.4		%	20
			Arsenic (As)	2019/08/30	0.064		%	20
			Beryllium (Be)	2019/08/30	3.4		%	20
			Cadmium (Cd)	2019/08/30	1.0		%	20
			Chromium (Cr)	2019/08/30	0.64		%	20
			Cobalt (Co)	2019/08/30	0.62		%	20
			Copper (Cu)	2019/08/30	1.1		%	20
			Lead (Pb)	2019/08/30	1.8		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Manganese (Mn)	2019/08/30	1.6		%	20
			Nickel (Ni)	2019/08/30	0.61		%	20
			Selenium (Se)	2019/08/30	1.2		%	20
			Vanadium (V)	2019/08/30	0.35		%	20
			Zinc (Zn)	2019/08/30	0.23		%	20
6301443	PBA	Method Blank	Aluminum (Al)	2019/08/30	<18		ug	
			Antimony (Sb)	2019/08/30	<0.45		ug	
			Arsenic (As)	2019/08/30	<0.45		ug	
			Beryllium (Be)	2019/08/30	<0.27		ug	
			Cadmium (Cd)	2019/08/30	<0.09		ug	
			Chromium (Cr)	2019/08/30	<0.45		ug	
			Cobalt (Co)	2019/08/30	<0.27		ug	
			Copper (Cu)	2019/08/30	<0.27		ug	
			Lead (Pb)	2019/08/30	<0.27		ug	
			Manganese (Mn)	2019/08/30	<0.45		ug	
			Nickel (Ni)	2019/08/30	<0.45		ug	
			Selenium (Se)	2019/08/30	<0.9		ug	
			Vanadium (V)	2019/08/30	<0.27		ug	
			Zinc (Zn)	2019/08/30	<4.5		ug	
6301443	PBA	RPD - Sample/Sample Dup	Aluminum (Al)	2019/08/30	3.7		%	20
			Antimony (Sb)	2019/08/30	4.7		%	20
			Arsenic (As)	2019/08/30	4.0		%	20
			Beryllium (Be)	2019/08/30	NC		%	20
			Cadmium (Cd)	2019/08/30	5.6		%	20
			Chromium (Cr)	2019/08/30	4.7		%	20
			Cobalt (Co)	2019/08/30	6.6		%	20
			Copper (Cu)	2019/08/30	3.0		%	20
			Lead (Pb)	2019/08/30	4.6		%	20
			Manganese (Mn)	2019/08/30	2.6		%	20
			Nickel (Ni)	2019/08/30	5.8		%	20
			Selenium (Se)	2019/08/30	3.4		%	20
			Vanadium (V)	2019/08/30	6.7		%	20
			Zinc (Zn)	2019/08/30	5.2		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brenda Moore, Team Lead, Inorganic

Frank Mo, B.Sc., Inorganic Lab. Manager

John Bowman, Supervisor, Metals Group

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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