MONTANA RESOURCES LLP

DATA REPORT FOR TSP AND DUSTFALL MONITORING STATIONS IN BUTTE, MONTANA

QUARTER 1, 2024

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CERTIFICATION OF DATA INTEGRITY

Bison Engineering, Inc. certifies the data in this report is an accurate summary of the air quality and meteorological conditions measured at the Greeley School ambient monitoring site. Every reasonable effort was made to obtain accurate and representative data and to comply with the procedures set forth in the project-specific *Quality Assurance Project Plan (QAPP)*, *State of Montana Ambient Air Monitoring Program Quality Assurance Project Plan (April 2013)*, and the Environmental Protection Agency's *Volume II: Ambient Air Quality Program (January 2017)*

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1.0 INTRODUCTION

Particulate monitoring has been conducted in the Greeley School area for many years, since the days of the Anaconda Company operation during the 1970s. Montana Department of Environmental Quality (MDEQ) and Butte-Silver Bow (BSB) County are currently performing the following monitoring:

- Continuous monitoring for PM_{10} using a Met One Model 1020 Beta Attenuation Monitor (BAM-1020).

- Continuous monitoring for $PM_{2.5}$ using a second Met One BAM-1020.

- Episodic monitoring for $PM_{2.5}$ using a BGI Model PQ-200 sampler. This sampler collects particulate matter on a filter over a 24-hour period, which is subsequently analyzed gravimetrically to determine the average airborne $PM_{2.5}$ concentration during the sampling period. The filter is then analyzed by an EPA laboratory for trace elements and mineralized compounds. This episodic sampling is performed every six days, concurrent with EPA's national one-in-six-day sampling schedule.

- The Greeley School site includes meteorological instruments that measure wind speed, wind direction and temperature.

MDEQ/BSB's monitoring provides continuous, real-time hourly $PM_{2.5}$ and PM_{10} concentrations, as well as $PM_{2.5}$ chemical composition data. In March 2019 and at Montana Resources' (MR) request, Bison Engineering Inc. (Bison) installed additional collocated monitoring equipment at the Greeley School:

- Total Suspended Particulate Sampler: A Met One E-Sampler that continuously measures hourly total suspended particulate (TSP) concentrations using a nephelometric technique that relates light scattering to ambient particulate concentration. Additionally, the sampler includes a filter that is analyzed for total particulate mass and trace elements. Prior to this study, no ongoing TSP monitoring was being performed,

- PM_{10} Particulate Sampler: A BGI Model PQ-200 sampler that collects 24-hour inhalable particulate (PM_{10}) samples on a filter, concurrent with the EPA one-in-six-day sampling schedule. The filter is analyzed for particulate mass and for selected trace elements. The MDEQ BAM-1020 that is used for PM_{10} hourly monitoring does not produce a filter suitable for chemical analysis.

The Bison data have been presented in quarterly reports since the first quarter of 2019. With few exceptions, the trace element data have shown airborne concentrations below the Guideline values shown in Section 4.0 of this report. However, citizens in the area between the Greeley school and MTR have expressed concerns about airborne particulate and the

associated trace element concentrations, as well as the composition of settled dust that residents have observed.

In response, MTR contracted Bison to perform additional monitoring as described below:

- BGI Model PQ-200 samplers are being used to collect 24-hour TSP samples on filters, concurrent with the EPA one-in-six-day sampling schedule. The filters are analyzed for particulate mass and for selected trace elements. These samplers were deployed at 2616 Pine Street and 1910 Walnut Street, with the first samples collected on July 11, 2023.

- Monthly Dustfall sampling was initiated on August 4, 2023, at the Pine Street and Walnut Street sites, and also at the existing Greeley School site. This sampling involves exposing a 15 cm diameter bucket to ambient conditions for a period of approximately 30 days, and then analyzing the collected particulate for total mass and trace elements. From these results, monthly particulate and trace element deposition rates are calculated.

- All sample collection duties are performed by Bison. Gravimetric analysis of TSP filters is also performed by Bison, while chemical analysis of those filters is performed by the Energy Laboratory Billings, MT facility. Both gravimetric and chemical analyses of the Dustfall samples are performed by the Energy Laboratory Helena facility.

Monitoring locations are depicted in Figure 1.

Figure 1: Butte Ambient Monitoring Locations

2.0 TSP SAMPLING DATA

The National Ambient Air Quality Standards (NAAQS) for TSP were first promulgated in 1971. The TSP standards were superseded by PM_{10} standards in 1987, and additional particulate standards have been enacted since. Although no longer a criteria pollutant, TSP monitoring is appropriate for the objectives of the expanded monitoring since residents' concerns arose from visual observations of ***total*** particulate, rather than a particular size fraction.

Normally, TSP samples are collected for a period of 24 hours on the National EPA 6th-day sampling schedule. However, starting in December it was discovered that snow easily blows into the BGI PQ-200 TSP sampling heads and accumulates on the sampling filters – to the extent that it compromises the integrity of the sample. Additionally, in early January it was discovered that sufficient windblown snow accumulation on the filter could cause a sampling failure due to an overpressure error. Starting in January 2024, samples were scheduled for dates when snow was not expected. They were scheduled as close to the National 6th-day schedule as possible but constrained by expected weather conditions. Similarly, sample retrieval was often expedited to minimize the possibility of windblown snow accumulating following exposure.

All TSP samples were collected as planned during the first quarter of 2024, with the following exceptions:

- Both samplers were set up to run on January 14 but failed to run successfully due to extreme cold.

- The sample collection scheduled for February 19 at Pine St failed to initiate due to a programming error. A make-up sample was collected on March 3.

- The Walnut St sample for February 24 overran due to a faulty Main PC board, which failed to stop sampling as scheduled. This resulted in a sampling duration of over 35 hours.[1]

Table 1 summarizes the TSP data collected during the first quarter of 2024. The average TSP concentrations were 38 µg/m^3 at both the Pine St and Walnut St sites. This is similar to the third quarter of 2023, when average TSP concentrations at both locations were almost equal.[2] The maximum TSP concentrations of 112 µg/m^3 at Pine St and 113 µg/m^3 at Walnut St were virtually identical, although they occurred on different dates.

[1] Since late December operation of the Walnut St TSP sampler has been accomplished using an external programmable timer. This is because of a defect in the sampler's main PC board that caused the sampler to continue running beyond its scheduled shutoff time. The PC board was replaced in early December, to no avail. A second PC board was obtained in February 2024 and set up to control sample collection on February 24. Unfortunately, the new board failed to shut the sampler off as scheduled. The remaining Walnut St sampling events for the first quarter of 2024 were controlled using the external timer.

[2] During the fourth quarter of 2023 average TSP concentrations at Pine St and Walnut St were 63 µg/m^3 and 46 µg/m^3, respectively. However, many samples at the two sites were not collected over concurrent periods.

The quarterly TSP averages were 51 percent of the historical annual standard (75 µg/m^3)[3] at both sites. The maximum daily values were 63 percent of the historical 24-hour standard (260 µg/m^3)[4] at both sites.

Data used to calculate average TSP concentrations from gravimetric analysis are presented in Appendix A. Chemical analysis results for the TSP filters are presented in Section 4.0 of this report.

[3] Both the annual and 24-hour TSP standards were revoked in 1987. The annual standard was calculated as a geometric mean of all daily values in a single year. The 24-hour standard was determined as the 2nd highest recorded value per year (on an assumed one-day-in-six schedule)
[4] *Ibid.*

Table 1: Summary of TSP Monitoring Data for Quarter 1, 2024

Pine Street		Walnut Street	
Sample Collection Date (2024)	**TSP[1] (µg/m³)**	**Sample Collection Date (2024)[2]**	**TSP[1] (µg/m³)**
Jan 01	66	Jan 01	43
Jan 07	75	Jan 07	113
Jan 14[3]	ND	Jan 14[3]	ND
Jan 22	29	Jan 22	41
Jan 25	30	Jan 25	27
Jan 31	38	Jan 31	45
Feb 05	14	Feb 05	21
Feb 11	36	Feb 11	37
----------	---	Feb 19	35
Feb 24	22	Feb 24 @ 0000 – Feb 25 @ 1125	10
Feb 28	12	Feb 28	14
Mar 03[4]	22	----------	---
Mar 07	112	Mar 07	49
Mar 14	23	Mar 14	27
Mar 19	39	Mar 19	35
Mar 27	18	Mar 27	31
Average	**38**	**Average**	**38**
Single Day Maximum	**112**	**Single Day Maximum**	**113**
Historical 24-Hour Standard [5]	**260**		
Historical Annual Standard [6]	**75**		

[1]All values at local temperature and pressure (LTP).
[2]Samples were collected from midnight to midnight (± 10 minutes) on a single calendar day unless noted otherwise.
[3]Sampling events scheduled for Jan 14 failed due to extreme cold.
[4]Makeup run in lieu of unsuccessful sample collection on Feb 19.

[5] *Ibid.*
[6] *Ibid.*

3.0 DUSTFALL SAMPLING DATA

Dustfall monitoring was initiated at the Walnut, Pine and Greeley sites on August 4, 2023. Samples were collected over the following time periods at each site during the first quarter of 2024:

- January 2 – February 1
- February 1 – February 29
- February 29 – April 1

Samples were collected using ASTM Method D1739-98R17. Each sampling event was started by placing clean, dry dustfall buckets at each site. They were then exposed to ambient conditions for approximately 30 days. No water was added to the buckets prior to deployment, although they collected any rain or snow that fell during the sampling period. Following collection, they were submitted to the Energy Lab Helena facility. Samples were visually inspected for insects or other non-dustfall detritus. Wet masses of each sample were collected, as received. Samples with insects present were passed through a No. 10 (2mm) sieve, removing the insects but allowing the dust and liquid to pass through. Sieves were rinsed with laboratory reagent water to ensure no dust was lost on the sieve. Samples were then air dried on a clean non-porous plastic to remove moisture. The dry weight of each sample was then recorded using the plastic as a tared mass. Collected dust was transferred to a digestion vessel using digestion reagents to ensure all dust was removed from the plastic; and digested for total metals analysis.

Table 2 summarizes the dustfall monitoring results for the first quarter of 2024. All dustfall results were below the Montana Dustfall standard of 10 $g/m^2/30$ days.

Table 2: Summary of Dustfall Monitoring Data for Quarter 1, 2024

Sample Collection Date (2024)	Greeley School DF ($g/m^2/30$ days)	Pine Street DF ($g/m^2/30$ days)	Walnut Street DF ($g/m^2/30$ days)
Jan 2 – Feb 1	1.4	3.2	2.8
Feb 1 – Feb 29	2.5	2.1	3.8
Feb 29 – Apr 1	4.6	4.2	5.3
Maximum	**4.6**	**4.2**	**5.3**
Montana Standard [7]	**10**		

Chemical analysis results for the Dustfall samples are presented in Section 5.0 of this report.

[7] ARM 17.8.220

4.0 CHEMICAL ANALYSIS DATA – TSP SAMPLES

Following gravimetric analysis, the particulate samples were submitted to Energy Laboratories, Inc. (ELI) in Billings, Montana, for elemental analysis including arsenic, cadmium, copper, lead, manganese, molybdenum and zinc. This analyte list may be subject to modification as results from this monitoring are obtained, and as other information becomes available.

All TSP samples were digested and then analyzed by ICP-MS using EPA Method E200.8. Laboratory results are presented in Appendix B and are reported in units of micrograms (µg) per filter. Fourteen TSP samples collected from both the Walnut Street and Pine Street sites during the first quarter were analyzed for trace elements, as well as four Field Blanks and four filter lot blanks (Lab Blanks).

Tables 3a and 3b summarize the total particulate mass and ELI analytical results for samples collected during the first quarter. Detectable results were always obtained for copper, and often were obtained for manganese, molybdenum, lead and zinc. Results for arsenic were all non-detectable; cadmium was also non-detectable except for one sample from Pine St. Table 3c shows the Field Blank and Lab Blank results associated with the first quarter samples. The bottom row of Table 3c shows the range of laboratory Method Blank (MB) Method Detection Limits (MDL) during the quarter. Field Blank, Lab (filter) Blank and MB concentrations for the first quarter were all non-detectable, except for the following:

- The Lab Blank result for copper in analysis batch B24021462 was 0.35 µg/filter; this was barely above the MB MDL of 0.3 µg/filter.

Tables 4a and 4b show the calculated airborne concentration of each trace element over the indicated sampling periods. To facilitate data interpretation, the number of leading zeroes in the results has been minimized by expressing results in units of ***nanograms*** (ng) per cubic meter rather than micrograms.

- All individual trace element concentrations for the Pine Street site were below suggested Guideline values. The closest approach to a Guideline was for manganese, which reached 30 ng/m^3 on January 7; this is 60% of the Guideline value of 50 ng/m^3. All other trace element maxima were less than 15% of their respective Guideline values.

- All individual trace element concentrations for the Walnut Street site were also below suggested Guideline values. The closest approach to a Guideline was for manganese, which reached 42 ng/m^3 on January 7; this is 84% of the Guideline value of 50 ng/m^3. All other trace element maxima were less than 10% of their respective Guideline values.

Table 5 shows the sources of the "Guideline" values used for these analyses, and their derivations.[8] Additionally, Table 5 shows the approximate airborne concentration corresponding to each MDL range listed in Table 4c.

Laboratory results are included in Appendix B.[9] A detailed table showing commonly accepted values from regulatory agencies and reputable private organizations is provided in Appendix D.

[8] The guideline values were updated (starting with the Greeley School 4th quarter report 2020) to be consistent with those from the Montana Department of Public Health and Human Services (MDPHHS). Guidelines for copper and molybdenum are lower than those used in previous quarterly reports. Although MDPHHS suggested a higher guideline for manganese, the lower previously reported value was retained. Guidelines for arsenic, cadmium, lead and zinc are unchanged.

[9] Laboratory report B24021462 includes samples designated Field Blank 2 and Field Blank 3. These are filters that were left in the samplers from January 8 to January 16, during which time they were impacted by windblown snow on multiple occasions. They were analyzed as a matter of curiosity, but do not represent true Field Blanks. The sample designated Field Blank 1 was a true Field Blank obtained in the normal manner, and those results are shown in Table 3c.

Table 3a: Summary of Analytical Results – TSP Pine Street

DATE	PART MASS (µg)	As (µg)	Cd (µg)	Cu (µg)	Mn (µg)	Mo (µg)	Pb (µg)	Zn (µg)
01/01	1593	ND	0.013	4.2	0.55	0.13	0.19	1.2
01/07	1808	ND	ND	2.9	0.72	0.26	0.14	0.94
01/22	696	ND	ND	2.5	0.24	0.27	ND	0.82
01/25	733	ND	ND	2.0	0.33	ND	0.091	0.94
01/31	921	ND	ND	2.3	0.37	0.084	0.12	ND
02/05	341	ND	ND	1.6	ND	0.13	ND	ND
02/11	869	ND	ND	1.4	0.38	0.11	ND	0.81
02/24	518	ND	ND	1.3	0.24	0.095	ND	ND
02/28	289	ND	ND	0.51	ND	ND	ND	ND
03/03	528	ND	ND	1.1	ND	ND	ND	ND
03/07	2694	ND	ND	5.1	0.60	0.34	0.25	0.72
03/14	557	ND	ND	0.90	ND	ND	0.072	ND
03/19	930	ND	ND	3.1	0.39	ND	0.18	0.32
03/27	435	ND	ND	0.67	ND	ND	0.060	ND

All values expressed as micrograms per filter. ND denotes not detected.

Table 3b: Summary of Analytical Results – TSP Walnut Street

DATE	PART MASS (µg)	As (µg)	Cd (µg)	Cu (µg)	Mn (µg)	Mo (µg)	Pb (µg)	Zn (µg)
01/01	1024	ND	ND	2.0	0.30	0.095	0.11	1.3
01/07	2683	ND	ND	3.0	1.0	0.31	0.27	1.4
01/22	966	ND	ND	2.4	0.33	0.14	ND	1.0
01/25	638	ND	ND	0.82	0.22	ND	ND	0.91
01/31	1071	ND	ND	2.0	0.36	0.094	0.13	0.97
02/05	502	ND	ND	1.2	ND	0.18	ND	ND
02/11	871	ND	ND	1.4	0.34	0.081	0.090	ND
02/19	822	ND	ND	1.6	0.37	0.96	0.097	1.3
02/24	337	ND	ND	0.32	0.20	ND	ND	ND
02/28	322	ND	ND	0.41	ND	ND	ND	ND
03/07	1156	ND	ND	1.8	0.40	0.079	0.16	0.38
03/14	639	ND	ND	0.62	ND	ND	0.083	ND
03/19	839	ND	ND	1.3	0.52	ND	0.18	0.48
03/27	741	ND	ND	0.55	0.22	ND	0.076	ND

All values expressed as micrograms per filter. ND denotes not detected.

Table 3c: Summary of Analytical Results – Blanks

DATE	PART MASS (µg)	As (µg)	Cd (µg)	Cu (µg)	Mn (µg)	Mo (µg)	Pb (µg)	Zn (µg)
01/08-FFB	34	ND	ND	ND	ND	ND	ND	ND
03/01-LB	0	ND	ND	0.35	ND	ND	ND	ND
03/07-LB	0	ND	ND	ND	ND	ND	ND	ND
02/04-FFB	12	ND	ND	ND	ND	ND	ND	ND
03/14-LB	-1	ND	ND	ND	ND	ND	ND	ND
03/04-FFB	13	ND	ND	ND	ND	ND	ND	ND
05/08-LB	5	ND	ND	ND	ND	ND	ND	ND
03/20-FFB	6	ND	ND	ND	ND	ND	ND	ND
Lab Method Blank MDL Range		0.06-0.08	0.006-0.009	0.2-0.3	0.2	0.005-0.07	0.04-0.09	0.3-0.8

All values expressed as micrograms per filter. ND denotes not detected.
LB denotes laboratory filter blank. FFB denotes field filter blank.

Table 4a: Summary of Airborne Trace Element Concentrations – TSP Pine Street

DATE	Sample Volume (m^3)	As (ng/m^3)	Cd (ng/m^3)	Cu (ng/m^3)	Mn (ng/m^3)	Mo (ng/m^3)	Pb (ng/m^3)	Zn (ng/m^3)
01/01	24.05	ND	0.54	170	23	5.4	7.9	50
01/07	24.05	ND	ND	120	30	11	5.8	39
01/22	24.05	ND	ND	100	10	11	ND	34
01/25	24.05	ND	ND	83	14	ND	3.8	39
01/31	24.05	ND	ND	96	15	3.5	5.0	ND
02/05	24.05	ND	ND	67	ND	5.4	ND	ND
02/11	24.05	ND	ND	58	16	4.6	ND	34
02/24	24.05	ND	ND	54	10	4.0	ND	ND
02/28	24.05	ND	ND	21	ND	ND	ND	ND
03/03	24.05	ND	ND	46	ND	ND	ND	ND
03/07	24.05	ND	ND	210	25	14	10	30
03/14	24.05	ND	ND	37	ND	ND	3.0	ND
03/19	24.05	ND	ND	130	16	ND	7.5	13
03/27	24.05	ND	ND	28	ND	ND	2.5	ND
Mean (ng/m^3)*		1.5	0.20	87	13	4.5	4.1	24
Guideline (ng/m^3) **		15	10	2,000	50	400	150	47,619

* Rather than treat non detectable (ND) data as zero, the mean was calculated using ½ of the detectable value (Table 5) for the parameter and date in question.

** The guideline values, except lead (Pb), are applicable to a lifetime or chronic exposure. The lead (Pb) guideline is an ambient air quality standard applicable to a 3-month average. The quarterly average lead concentration of 4.1 ng/m^3 was 3 percent of the guideline value; non-detect lead concentrations were set at ½ of the lead detection limit for the sample group in question.

Table 4b: Summary of Airborne Trace Element Concentrations – TSP Walnut Street

DATE	Sample Volume (m^3)	As (ng/m^3)	Cd (ng/m^3)	Cu (ng/m^3)	Mn (ng/m^3)	Mo (ng/m^3)	Pb (ng/m^3)	Zn (ng/m^3)
01/01	23.71	ND	ND	84	13	4.0	4.6	55
01/07	23.71	ND	ND	127	42	13	11	59
01/22	23.71	ND	ND	101	14	5.9	ND	42
01/25	23.71	ND	ND	35	9.3	ND	ND	38
01/31	23.71	ND	ND	84	15	4.0	5.5	41
02/05	23.71	ND	ND	51	ND	7.6	ND	ND
02/11	23.71	ND	ND	59	14	3.4	3.8	ND
02/19	23.71	ND	ND	67	16	40	4.1	55
02/24	35.47	ND	ND	9.0	5.6	ND	ND	ND
02/28	23.71	ND	ND	17	ND	ND	ND	ND
03/07	23.71	ND	ND	76	17	3.3	6.7	16
03/14	23.71	ND	ND	26	ND	ND	3.5	ND
03/19	23.71	ND	ND	55	22	ND	7.6	20
03/27	23.71	ND	ND	23	9.3	ND	3.2	ND
Mean (ng/m^3) *		1.5	0.17	58	14	6.1	4.2	29
Guideline (ng/m^3) **		15	10	2,000	50	400	150	47,619

* Rather than treat non detectable (ND) data as zero, the mean was calculated using ½ of the detectable value (Table 5) for the parameter and date in question.

**The guideline values, except lead (Pb), are applicable to a lifetime or chronic exposure. The lead (Pb) guideline is an ambient air quality standard applicable to a 3-month average. The quarterly average lead concentration of 4.2 ng/m^3 was 3 percent of the guideline value; non-detect lead concentrations were set at ½ of the lead detection limit for the sample group in question.

Table 5: Summary of Airborne Trace Element Concentration Guidelines (ng/m³)

Analyte	Dose/ Risk[A]	Source	Description	Time Period	Detectable TSP[D]
Arsenic (inorganic)	15	EPA / DPHHS[F]	RfC[B]	Lifetime	2.50-3.33
Cadmium	10	ATSDR / DPHHS[F]	Non-cancer / CV[F]	Chronic	0.25-0.38
	200	IRIS	Cancer	Chronic	
Copper	2,000	DPHHS[F] / Michigan DEQ	RfC[B]	Chronic	8.33-12.5
Lead	150	EPA / ATSDR / DPHHS[F]	National Ambient Air Quality Standard [C]	3-month	1.67-3.75
Manganese	50	EPA	RfC[B]	Lifetime	8.33
Molybdenum	11,905 (=500,000/42) [E]	CAL/OSHA, ACGIH	CAL/OSHA, ACGIH	Chronic [E]	0.21-2.92
	400	DPHHS[F] / Michigan DEQ	CV	Chronic	
Zinc	47,619 (=2,000,000/42)[E]	ACGIH TLV	ACGIH TLV	Chronic [E]	12.5-33.3

[A] See Appendix D for definitions and listing of dose and risk assessment values reviewed to produce this summary table.
[B] RfC = Reference Concentration (EPA) is an estimate (with uncertainty added) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.
[C] This standard is based on a three-month average.
[D] Based on 24-hour sampling period and total sample volume of 24 m³. Range reflects maximum and minimum laboratory MDLs during Q1 2024.
[E] This value derived by dividing the OSHA/NIOSH exposure limit by 42. This was done to include a factor of 10 to account for a general population, not just healthy adults and then including another factor of 4.2 to include a year-long exposure as opposed to 8 hours per day, 5 days a week and 52 weeks per year.
[F] Reference information from letter and analysis by DPHHS (regarding Greeley School ambient data) to Butte-Silver Bow Health Department dated October 28,2020.

EPA = Environmental Protection Agency
ATSDR = Agency for Toxic Substances & Disease Registry
CV = "Comparison Value" – a term used by DPHHS (10/28/20 letter) to indicate an ATSDR (or other) guideline or reference value
DPHHS = Montana Department of Health and Human Services
RfC = Reference Concentration (see above)
RSL = EPA Regional Screening Levels (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables)
OSHA = Occupational Safety and Health Administration
ACGIH = American Congress of Governmental Industrial Hygienists
NIOSH= National Institute of Occupational Safety and Health
TLV = Threshold limit value

5.0 CHEMICAL ANALYSIS DATA – DUSTFALL SAMPLES

After each Dustfall sample was prepared as described in Section 3.0, the remaining particulate mass was transferred to a digestion vessel using digestion reagents to ensure that all dust was removed from the plastic and digested for total metals analysis. The digestate was analyzed using EPA Method SW6020 "Inductively Coupled Plasma - Mass Spectrometry."

Laboratory results are presented in Appendix C and are reported in units of milligrams per kilogram (mg/kg) in the captured particulate, along with the total dried particulate mass. Six Dustfall samples collected from the Walnut Street, Pine Street and Greeley School sites during the first quarter of 2024 were analyzed for trace elements. Three Field Blanks also were analyzed.

Tables 6a through 6c present the Dustfall analysis data for the first quarter. Each Table shows the sample collection information, amount of particulate captured from each sample, and the concentrations of seven parameters in the particulate mass on a mg/kg basis. Finally, each table shows a calculated deposition rate for each parameter in units of milligrams per square meter per 30-days (g/m^2/30-days).

The 30-day total particulate deposition rates were all below the MAAQS of 10 g/m^2/30-days.[10] The highest observed deposition rate was 5.3 g/m^2/30-days at the Walnut Street site between February 29 and April 1, 2024.

[10] It should be noted that the sampling procedure and analysis were conducted with quality in mind, they were not necessarily conducted in strict accordance with the specific methods outlined in the Montana standard (ARM17.8.220).

Table 6a: Dustfall Results for January 2 – February 1, 2024

Sample Collection Information

	Greeley School	Pine Street	Walnut Street	Field Blank
Start Date	01/02/24	01/02/24	01/02/24	
End Date	02/01/24	02/01/24	02/01/24	
Days of Exposure	30	30	30	
Dry Particulate Weight (g)	0.0243	0.0566	0.0499	0.0038
Dustfall (g/m²/30-days)	**1.4**	**3.2**	**2.8**	**0.2**

Trace Element Concentration in Particulate (mg/kg)

Analyte	Greeley School	Pine Street	Walnut Street	Field Blank
As	29	15	11	ND
Cd	7	2	2	ND
Cu	4,260	3,030	2,670	87
Pb	152	73	73	ND
Mn	562	341	447	590
Mo	4,280	1,410	1,320	ND
Zn	762	474	506	ND

Trace Element Deposition Rate (mg/m²/30-days)

Analyte	Greeley School	Pine Street	Walnut Street	Field Blank
As	0.04	0.05	0.03	ND
Cd	0.01	0.01	0.01	ND
Cu	5.86	9.71	7.54	0.02
Pb	0.21	0.23	0.21	ND
Mn	0.77	1.09	1.26	0.13
Mo	5.89	4.52	3.73	ND
Zn	1.05	1.52	1.43	ND

Table 6b: Dustfall Results for February 1 – February 29, 2024

Sample Collection Information

	Greeley School	Pine Street	Walnut Street	Field Blank
Start Date	02/01/24	02/01/24	02/01/24	
End Date	02/29/24	02/29/24	02/29/24	
Days of Exposure	28	28	28	
Dry Particulate Weight (g)	0.0411	0.0349	0.0629	0.0000
Dustfall (g/m²/30-days)	**2.5**	**2.1**	**3.8**	**0.0**

Trace Element Concentration in Particulate (mg/kg)

Analyte	Greeley School	Pine Street	Walnut Street	Field Blank
As	10	25	15	ND
Cd	2	3	2	ND
Cu	2,120	4,150	2,440	0.3
Pb	78	108	87	ND
Mn	344	515	400	ND
Mo	1,390	2,740	722	ND
Zn	382	675	432	ND

Trace Element Deposition Rate (mg/m²/30-days)

Analyte	Greeley School	Pine Street	Walnut Street	Field Blank
As	0.02	0.05	0.06	ND
Cd	0.00	0.01	0.01	ND
Cu	5.28	8.78	9.31	0.00
Pb	0.19	0.23	0.33	ND
Mn	0.86	1.09	1.53	ND
Mo	3.46	5.80	2.75	ND
Zn	0.95	1.43	1.65	ND

Table 6c: Dustfall Results for February 29 – April 1, 2024

Sample Collection Information

	Greeley School	Pine Street	Walnut Street	Field Blank
Start Date	02/29/24	02/29/24	02/29/24	
End Date	04/01/24	04/01/24	04/01/24	
Days of Exposure	32	32	32	
Dry Particulate Weight (g)	0.0860	0.0800	0.1000	0.0003
Dustfall (g/m²/30-days)	**4.6**	**4.2**	**5.3**	**0.0**

Trace Element Concentration in Particulate (mg/kg)

Analyte	Greeley School	Pine Street	Walnut Street	Field Blank
As	12	25	15	ND
Cd	1	3	2	ND
Cu	1,620	3,050	1,890	0.3
Pb	62	100	74	ND
Mn	325	507	440	ND
Mo	1,070	2,100	714	ND
Zn	387	610	447	ND

Trace Element Deposition Rate (mg/m²/30-days)

Analyte	Greeley School	Pine Street	Walnut Street	Field Blank
As	0.05	0.11	0.08	ND
Cd	0.00	0.01	0.01	ND
Cu	7.39	12.94	10.03	0.00
Pb	0.28	0.42	0.39	ND
Mn	1.48	2.15	2.33	ND
Mo	4.88	8.91	3.79	ND
Zn	1.77	2.59	2.37	ND

6.0 CALIBRATION DATA

Calibration checks of the BGI TSP samplers are performed in at least two months of each quarter. In the third month, an audit is performed by a different person using different calibration standards. Routine monthly verification checks were performed on the TSP samplers on January 29, February 22 and March 15.[11] Additional verification checks were performed on the Walnut Street sampler on February 22 when the malfunctioning main PC board was replaced.

Table 7 summarizes the verification checks performed each month and the applicable acceptance criteria. In the event of unsatisfactory results, corrective actions are performed as specified in the rightmost column. Table 8 summarizes the results of the calibration checks performed during the first quarter, as well as any corrective actions. Detailed verification check results are shown in Appendix E. Appendix F presents certifications for flow calibration standards used during the quarter.

Table 7: Summary of Montana Resources – Pine St and Walnut St Sites Calibration/ Audit Activities and Acceptance Criteria

Activity	**Acceptance Criteria / Actions**	
TSP Sampler Calibration Checks		
Flow Verification	±4%	Multipoint recalibration if flow error exceeds ±2%
Leak Check	Investigate / correct if vacuum drop exceeds 4 cm of water in 2 minutes	
Temperature Verification	±2.0°C	Multipoint recalibration if error exceeds ±2.0°C
Pressure	±10 mmHg	Adjust calibration if error exceeds ±10 mmHg
Other		
TSP Inlet Head	Disassemble and clean	

[11] The calibration checks performed on April 11, 2024, also are shown to demonstrate data validity through the end of the quarter.

Table 8: Summary of Quarter 1, 2024 Calibration Verification Results

Date	Calibration Check	Results	Limits	Actions
01/29/2024	BGI TSP Flow Verification (A)	-2.9%	±4%	
Pine Street	BGI TSP Flow Verification (B)	+3.0%	±4%	
	BGI Ambient Temperature	-0.5°C	±2.0°C	
	BGI Filter Temperature	-0.4°C	±2.0°C	
	BGI Ambient Pressure	+0.2 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	
01/29/2024	BGI TSP Flow Verification (A)	-1.1%	±4%	
Walnut Street	BGI TSP Flow Verification (B)	+1.1%	±4%	
	BGI Ambient Temperature	-0.9°C	±2.0°C	
	BGI Filter Temperature	-0.2°C	±2.0°C	
	BGI Ambient Pressure	-0.7 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	
02/22/2024	BGI TSP Flow Verification (A)	0.0%	±4%	
Pine Street	BGI TSP Flow Verification (B)	0.0%	±4%	
	BGI Ambient Temperature	-0.2°C	±2.0°C	
	BGI Filter Temperature	+0.9°C	±2.0°C	
	BGI Ambient Pressure	-1.0 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	
02/22/2024	BGI TSP Flow Verification (A)	-0.4%	±4%	C
Walnut Street	BGI TSP Flow Verification (B)	+0.4%	±4%	C
	BGI Ambient Temperature	-0.8°C	±2.0°C	C
	BGI Filter Temperature	+0.5°C	±2.0°C	C
	BGI Ambient Pressure	-1.8 mm Hg	±10 mmHg	C
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	C
02/22/2024	BGI TSP Flow Verification (A)	-0.2%	±4%	D
Walnut Street	BGI TSP Flow Verification (B)	+0.2%	±4%	D
	BGI Ambient Temperature	-0.1°C	±2.0°C	D
	BGI Filter Temperature	+1.0°C	±2.0°C	D
	BGI Ambient Pressure	-0.4 mm Hg	±10 mmHg	D
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	D
03/15/2024	BGI TSP Flow Verification (A)	-3.2%	±4%	E
Pine Street	BGI TSP Flow Verification (B)	+3.3%	±4%	E
	BGI Ambient Temperature	-0.5°C	±2.0°C	
	BGI Filter Temperature	+0.3°C	±2.0°C	
	BGI Ambient Pressure	-0.3 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	
03/15/2024	BGI TSP Flow Verification (A)	-0.9%	±4%	
Walnut Street	BGI TSP Flow Verification (B)	+0.9%	±4%	
	BGI Ambient Temperature	-0.3°C	±2.0°C	
	BGI Filter Temperature	-0.2°C	±2.0°C	
	BGI Ambient Pressure	+0.2 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	2 cm H_2O	≤4 cm H_20	

Date	Calibration Check	Results	Limits	Actions
04/11/2024	BGI TSP Flow Verification (A)	-2.7%	±4%	
Pine Street	BGI TSP Flow Verification (B)	+2.8%	±4%	
	BGI Ambient Temperature	-0.4°C	±2.0°C	
	BGI Filter Temperature	-0.2°C	±2.0°C	
	BGI Ambient Pressure	-0.4 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	
04/11/2024	BGI TSP Flow Verification (A)	-1.9%	±4%	
Walnut Street	BGI TSP Flow Verification (B)	+2.0%	±4%	
	BGI Ambient Temperature	-0.5°C	±2.0°C	
	BGI Filter Temperature	-0.1°C	±2.0°C	
	BGI Ambient Pressure	-0.2 mm Hg	±10 mmHg	
	BGI Leak Test (pressure drop)	1 cm H_2O	≤4 cm H_20	

Codes:
A = Difference of reported flow from reference standard flow.
B = Difference of reference standard flow from design flow of 16.7 LPM.
C = Results prior to installation of new main controller board.
D = Results following installation of new main controller board.
E = Performed multipoint flow calibration. New operating flow at 16.69 LPM.

7.0 QUARTERLY AUDIT/CALIBRATION RESULTS

An audit is performed once in each full calendar quarter. The checks and acceptance criteria are identical to those for monthly calibrations (see Table 7). The primary difference is that the audits are performed by a different person, using different calibration standards. Calibration adjustments then are made as necessary, based on the as-found audit results. The first quarter audit was performed on February 22, 2024, at both sites. Results for both samplers were satisfactory as shown in Table 9, and no adjustments were required.

Table 9: Quarter 1, 2024 Audit Results

BGI PQ200 TSP Sampler – Performance Audit			
Date: 02/22/2024	Time: 1215-1228	Sampler Serial Number: 90133 (Pine)	
Performed By: Daniel Bitz		Observer: Steve Heck	
Ref Standard: Delta Cal SN 1288		Certification Date: 01/03/2024	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Audit (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	626	625.9	+0.1
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Audit (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	3.2	3.9	-0.7
Filter Temperature	5.9	6.6	-0.7
Leak Check			
Vacuum Readings (cm H2O)	Start 135	End 134	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Audit (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.06	+4.0%
Reading (liters per minute)	Audit (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.06	16.7	-3.8%
Comments:			

BGI PQ200 TSP Sampler – Performance Audit			
Date: 02/22/2024	Time: 1430-1445	Sampler Serial Number: 90129 Walnut	
Performed By: Daniel Bitz		Observer: Steve Heck	
Ref Std: Delta Cal SN 1288		Certification Date: 01/03/2024	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Audit (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	627	626.4	+0.6
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Audit (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	3.9	4.3	-0.4
Filter Temperature	6.3	5.4	+0.9
Leak Check			
Vacuum Readings (cm H20)	Start 134	End 132	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Audit (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.21	+3.0%
Reading (liters per minute)	Audit (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.21	16.7	-2.9%
Comments: Performed with new main PC board installed.			

8.0 DATA COMPLETENESS

Data recovery statistics for the particulate filter samples are presented in Table 10. The typical quarterly data recovery goal for TSP filter samples is ≥80 percent for both the gravimetric and trace element analyses. The actual data recovery was 87 percent for the TSP gravimetric and trace element analyses for the Pine St site; thirteen of fifteen possible samples were collected. One sampling event was unsuccessful due to extreme cold. A second sample was not collected on the scheduled date, although a make-up sample was collected approximately two weeks later.

At the Walnut St site, fourteen of fifteen possible samples were collected giving a data recovery of 93 percent. One sampling event was unsuccessful due to extreme cold.

Dustfall sampling involves no active instrumentation; it merely requires exposure of a 15-cm diameter open container for a period of approximately 30-days. It would therefore be highly unusual for any scheduled sample to not be collected and analyzed. Three rounds of ~30-day sampling at the Greeley School, Pine Street and Walnut Street sites were possible during the first quarter of 2024 – for a total of nine possible samples. All nine samples were collected as scheduled, giving a data recovery of 100 percent.

Table 10: Quarterly Data Completeness Summary – Filter Analysis Data

Montana Resources LLP			
Parameter	Readings Possible	Valid Results	Percent Recovery
January 2024			
TSP – Pine St / Gravimetric	6	5	83.3
TSP – Pine St / Trace Elements	42	35	83.3
TSP – Walnut St / Gravimetric	6	5	83.3
TSP – Walnut St / Trace Elements	42	35	83.3
Total	96	80	83.3
February 2024			
TSP – Pine St / Gravimetric	5	4 (1)	80.0
TSP – Pine St / Trace Elements	35	28 (1)	80.0
TSP – Walnut St / Gravimetric	5	5 (2)	100.0
TSP – Walnut St / Trace Elements	35	35 (2)	100.0
Total	80	72	90.0
March 2024			
TSP – Pine St / Gravimetric	4	4	100.0
TSP – Pine St / Trace Elements	28	28	100.0
TSP – Walnut St / Gravimetric	4	4	100.0
TSP – Walnut St / Trace Elements	28	28	100.0
Total	64	64	100.0
Quarter 1, 2024			
TSP – Pine St / Gravimetric	15	13	86.7
TSP – Pine St / Trace Elements	105	91	86.7
TSP – Walnut St / Gravimetric	15	14	93.3
TSP – Walnut St / Trace Elements	105	98	93.3
Total	240	216	90.0

(1) Sample scheduled for February 19 not collected. Make-up sample collected on March 3.
(2) One sample collected over non-standard sampling period. See Section 2.0 for discussion.

9.0 COMPARISON TO AMBIENT AIR QUALITY STANDARDS

This study is not intended to determine compliance with the NAAQS[12] or the Montana ambient air quality standards[13] (MAAQS). Nonetheless, a generalized comparison is possible. The filter-based TSP data collected indicate ambient TSP concentrations well below the historical 24-hour standard of 260 μg/m^3 and the historical annual geometric average standard of 75 μg/m^3. ***Note that all TSP standards were superseded by PM_{10} standards in 1987.[14]***

Similarly, the lead concentrations analyzed from the exposed TSP filters indicate quarterly average airborne concentrations well below the 0.15 μg/m^3 ambient NAAQS based on a 3-month average of the 24-hour samples. The MAAQS is 1.5 μg/m^3 and is based on a 90-day rolling average of 24-hour samples. The TSP samples presented herein were collected for 24-hour periods, at a much lower sampling rate (16.7 liters per minute) compared to the standard method (≥40 standard cubic feet per minute). Nonetheless, the results indicate quarterly average ambient lead concentrations below the MAAQS and NAAQS. Table 11 summarizes these comparisons through the first quarter of 2024.

Additionally, the analyses presented in Section 4.0 indicate that average airborne concentrations of the other six trace elements were below the suggested guidelines presented in Table 5.

Finally, the MAAQS for Dustfall specifies a particulate deposition rate not to exceed 10 g/m^2/30-days. All Dustfall samples collected during the first quarter were below this value. There is no NAAQS for Dustfall.

[12] 40 CFR 50 *et seq.*
[13] ARM 17.8.201 *et. seq.*
[14] 52 FR 24634, July 1, 1987

Table 11: Summary of Airborne Concentration vs. NAAQS

Analyte	Location	Observed Concentration (µg/m³)	Averaging Period	Ambient Standard (µg/m³)	Authority
TSP	Pine St	112[1]	24-hour (max)	260[3]	NAAQS
	Walnut St	113[1]			
TSP	Pine St	38	Annual Average	75[3]	NAAQS
	Walnut St	38			
Pb	Pine St	0.004[2]	90-day	1.50	MAAQS
	Walnut St	0.004[2]	3-month	0.15	NAAQS
Analyte	**Location**	**Max. Observed Deposition Rate (g/m²/30-days)**	**Averaging Period**	**Ambient Standard (g/m²/30-days)**	**Authority**
Dustfall	Greeley Sch.	4.6	30-days	10	MAAQS
	Pine St	4.2			
	Walnut St	5.3			

[1] This value was the maximum 24-hour value from the filter-based TSP sampler.

[2] This value was the quarterly average from the filter-based TSP sampler. Non-detect results were set to ½ of the applicable detection limit when calculating the average.

[3] The historical TSP standard shown for comparison purposes is no longer in effect. NAAQS standard for TSP was based on geometric mean and MAAQS on arithmetic average. Value shown represents arithmetic average for monitoring period of Quarter 1, 2024, based on gravimetric filter analysis.

APPENDIX A: GRAVIMETRIC ANALYSIS DATA

Quarter 1, 2024 Filter Analysis Results - Pine & Walnut - Blanks

FILTER	TYPE	DATE*	PRE WEIGHT (MG)	PRE-WEIGHT DATE	POST WEIGHT (MG)	POST-WEIGHT DATE	PART MASS (MG)
C1708127	Field	8-Jan	121.704	22-Dec	121.738	22-Feb	0.034
C1708130	Lab	1-Mar	121.392	22-Dec	121.392	22-Feb	0.000
C1708135	Lab	7-Mar	121.980	12-Jan	121.980	23-Feb	0.000
C1708139	Field	4-Feb	120.005	12-Jan	120.017	23-Feb	0.012
C1733459	Lab	14-Mar	119.743	7-Feb	119.742	11-Mar	-0.001
C1733462	Field	4-Mar	120.505	7-Feb	120.518	11-Mar	0.013
C1733454	Lab	8-May	119.623	27-Feb	119.628	30-Apr	0.005
C1733479	Field	20-Mar	119.932	27-Feb	119.938	30-Apr	0.006

*Denotes collection date for Field Blank, analysis date for Laboratory Blanks

Quarter 1, 2024 Filter Analysis Results - TSP - Pine St

FILTER	DATE	AVG FLOW LPM	HOURS	SAMPLE VOLUME (M3)	PRE WEIGHT (MG)	PRE-WEIGHT DATE	POST WEIGHT (MG)	POST-WEIGHT DATE	PART MASS (MG)	CONC (UG/M3)
C1708103	01/01	16.70	24:00	24.05	120.592	22-Dec	122.185	22-Feb	1.593	66.2
C1708105	01/07	16.70	24:00	24.05	119.603	22-Dec	121.411	22-Feb	1.808	75.2
C1708131	01/22	16.70	24:00	24.05	122.437	12-Jan	123.133	23-Feb	0.696	28.9
C1708134	01/25	16.70	24:00	24.05	122.998	12-Jan	123.731	23-Feb	0.733	30.5
C1708136	01/31	16.70	24:00	24.05	123.264	12-Jan	124.185	23-Feb	0.921	38.3
C1708138	02/05	16.70	24:00	24.05	120.158	12-Jan	120.499	23-Feb	0.341	14.2
C1733456	02/11	16.70	24:00	24.05	119.335	7-Feb	120.204	11-Mar	0.869	36.1
C1733461	02/24	16.70	24:00	24.05	120.294	7-Feb	120.812	11-Mar	0.518	21.5
C1733465	02/28	16.70	24:00	24.05	120.356	7-Feb	120.645	11-Mar	0.289	12.0
C1733458	03/03	16.70	24:00	24.05	119.919	7-Feb	120.447	11-Mar	0.528	22.0
C1733451	03/07	16.70	24:00	24.05	120.739	27-Feb	123.433	30-Apr	2.694	112.0
C1733453	03/14	16.70	24:00	24.05	121.525	27-Feb	122.082	30-Apr	0.557	23.2
C1733476	03/19	16.70	24:00	24.05	120.816	27-Feb	121.746	30-Apr	0.930	38.7
C1733478	03/27	16.70	24:00	24.05	119.499	27-Feb	119.934	30-Apr	0.435	18.1

Quarter 1, 2024 Filter Analysis Results - TSP - Walnut St

FILTER	TYPE	DATE	AVG FLOW LPM	HOURS	SAMPLE VOLUME (M3)	PRE WEIGHT (MG)	PRE-WEIGHT DATE	POST WEIGHT (MG)	POST-WEIGHT DATE	PART MASS (MG)	CONC (UG/M3)
C1708104	TSP	01/01	16.70	23:40	23.71	121.599	22-Dec	122.623	22-Feb	1.024	43.2
C1708126	TSP	01/07	16.70	23:40	23.71	120.941	22-Dec	123.624	22-Feb	2.683	113.2
C1708132	TSP	01/22	16.70	23:40	23.71	121.497	12-Jan	122.463	23-Feb	0.966	40.7
C1708133	TSP	01/25	16.70	23:40	23.71	122.325	12-Jan	122.963	23-Feb	0.638	26.9
C1708137	TSP	01/31	16.70	23:40	23.71	121.045	12-Jan	122.116	23-Feb	1.071	45.2
C1708140	TSP	02/05	16.70	23:40	23.71	119.650	12-Jan	120.152	23-Feb	0.502	21.2
C1733457	TSP	02/11	16.70	23:40	23.71	120.250	7-Feb	121.121	11-Mar	0.871	36.7
C1733460	TSP	02/19	16.70	23:40	23.71	120.936	7-Feb	121.758	11-Mar	0.822	34.7
C1733463	TSP	02/24	16.70	35:24	35.47	119.855	7-Feb	120.192	11-Mar	0.337	9.5
C1733464	TSP	02/28	16.70	23:40	23.71	121.405	7-Feb	121.727	11-Mar	0.322	13.6
C1733452	TSP	03/07	16.70	23:40	23.71	120.280	27-Feb	121.436	30-Apr	1.156	48.8
C1733455	TSP	03/14	16.70	23:40	23.71	120.415	27-Feb	121.054	30-Apr	0.639	27.0
C1733477	TSP	03/19	16.70	23:40	23.71	120.403	27-Feb	121.242	30-Apr	0.839	35.4
C1733480	TSP	03/27	16.70	23:40	23.71	118.550	27-Feb	119.291	30-Apr	0.741	31.3

Sample for 02/24 overrand due to problem with new Main PC Board

APPENDIX B: LABORATORY ANALYSIS REPORTS - TSP

ANALYTICAL SUMMARY REPORT

March 15, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B24021462 Quote ID: B4795

Project Name: Montana Resources/Greely School PW

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 2/23/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B24021462-001	Particulate filter #C1708101 Walnut ST TSP	12/29/23 00:00	02/23/24	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B24021462-002	Particulate filter #C1708102 Pine ST TSP	12/29/23 00:00	02/23/24	Air	Same As Above
B24021462-003	Particulate filter #C1708103 Pine ST TSP	01/01/24 00:00	02/23/24	Air	Same As Above
B24021462-004	Particulate filter #PC1708104 Walnut ST TSP	01/01/24 00:00	02/23/24	Air	Same As Above
B24021462-005	Particulate filter #C17081005 Pine ST TSP	01/07/24 00:00	02/23/24	Air	Same As Above
B24021462-006	Particulate filter #C1708126 Walnut ST TSP	01/07/24 00:00	02/23/24	Air	Same As Above
B24021462-007	Particulate filter #C1708127 Field Blank 1	01/13/24 00:00	02/23/24	Air	Same As Above
B24021462-008	Particulate filter #C1708128 Field Blank 2	01/16/24 12:14	02/23/24	Air	Same As Above
B24021462-009	Particulate filter #C1708129 Field Blank 3	01/16/24 16:35	02/23/24	Air	Same As Above
B24021462-010	Particulate filter #C1708130 Lab Blank	12/22/23 12:55	02/23/24	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Bison Engineering
Project: Montana Resources/Greely School PW
Work Order: B24021462

Revised Date: 03/15/24
Report Date: 03/13/24

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

Revised Date: 3/15/2024

On 3/14/2024 a request was received from Steve Heck at Bison Engineering to revise this workorder by changing the method detection limits (MDLs) to match historical client request and to change significant figures on results to report at least two significant figures on all samples.

The report has been revised and replaces the previously issued report dated 3/13/2024 in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-001
Client Sample ID: Particulate filter #C1708101 Walnut ST TSP

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 12/29/23
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 16:02 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 04:03 / aem
Copper	1.1	ug/filter		1.0		E200.8	03/01/24 04:03 / aem
Lead	0.091	ug/filter	J	1.0		E200.8	03/01/24 04:03 / aem
Manganese	0.23	ug/filter	J	1.0		E200.8	03/01/24 04:03 / aem
Molybdenum	0.072	ug/filter	J	1.0		E200.8	03/07/24 16:02 / jks
Zinc	1.3	ug/filter		1.0		E200.8	03/01/24 04:03 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-002
Client Sample ID: Particulate filter #C1708102 Pine ST TSP

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 12/29/23
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 16:08 / jks
Cadmium	0.0090	ug/filter	J	1.0		E200.8	03/01/24 04:09 / aem
Copper	2.0	ug/filter		1.0		E200.8	03/01/24 04:09 / aem
Lead	0.12	ug/filter	J	1.0		E200.8	03/01/24 04:09 / aem
Manganese	0.55	ug/filter	J	1.0		E200.8	03/01/24 04:09 / aem
Molybdenum	0.16	ug/filter	J	1.0		E200.8	03/07/24 16:08 / jks
Zinc	0.89	ug/filter	J	1.0		E200.8	03/01/24 04:09 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/01/24
DateReceived: 02/23/24
Matrix: Air

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-003
Client Sample ID: Particulate filter #C1708103 Pine ST TSP

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 16:14 / jks
Cadmium	0.013	ug/filter	J	1.0		E200.8	03/01/24 04:15 / aem
Copper	4.2	ug/filter		1.0		E200.8	03/01/24 04:15 / aem
Lead	0.19	ug/filter	J	1.0		E200.8	03/01/24 04:15 / aem
Manganese	0.55	ug/filter	J	1.0		E200.8	03/01/24 04:15 / aem
Molybdenum	0.13	ug/filter	J	1.0		E200.8	03/07/24 16:14 / jks
Zinc	1.2	ug/filter		1.0		E200.8	03/01/24 04:15 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-004
Client Sample ID: Particulate filter #PC1708104 Walnut ST TSP

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/01/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 16:20 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 04:21 / aem
Copper	2.0	ug/filter		1.0		E200.8	03/01/24 04:21 / aem
Lead	0.11	ug/filter	J	1.0		E200.8	03/01/24 04:21 / aem
Manganese	0.30	ug/filter	J	1.0		E200.8	03/01/24 04:21 / aem
Molybdenum	0.095	ug/filter	J	1.0		E200.8	03/07/24 16:20 / jks
Zinc	1.3	ug/filter		1.0		E200.8	03/01/24 04:21 / aem

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-005
Client Sample ID: Particulate filter #C17081005 Pine ST TSP

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/07/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 16:25 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 04:27 / aem
Copper	2.9	ug/filter		1.0		E200.8	03/01/24 04:27 / aem
Lead	0.14	ug/filter	J	1.0		E200.8	03/01/24 04:27 / aem
Manganese	0.72	ug/filter	J	1.0		E200.8	03/01/24 04:27 / aem
Molybdenum	0.26	ug/filter	J	1.0		E200.8	03/07/24 16:25 / jks
Zinc	0.94	ug/filter	J	1.0		E200.8	03/01/24 04:27 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-006
Client Sample ID: Particulate filter #C1708126 Walnut ST TSP

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/07/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/11/24 18:31 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 04:33 / aem
Copper	3.0	ug/filter		1.0		E200.8	03/01/24 04:33 / aem
Lead	0.27	ug/filter	J	1.0		E200.8	03/01/24 04:33 / aem
Manganese	1.0	ug/filter		1.0		E200.8	03/01/24 04:33 / aem
Molybdenum	0.31	ug/filter	J	1.0		E200.8	03/07/24 16:31 / jks
Zinc	1.4	ug/filter		1.0		E200.8	03/01/24 04:33 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/13/24
DateReceived: 02/23/24
Matrix: Air

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-007
Client Sample ID: Particulate filter #C1708127 Field Blank 1

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 16:37 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 04:39 / aem
Copper	ND	ug/filter		1.0		E200.8	03/01/24 04:39 / aem
Lead	ND	ug/filter		1.0		E200.8	03/01/24 04:39 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/01/24 04:39 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/07/24 16:37 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/01/24 04:39 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-008
Client Sample ID: Particulate filter #C1708128 Field Blank 2

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/16/24 12:14
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	0.086	ug/filter	J	1.0		E200.8	03/07/24 16:43 / jks
Cadmium	0.0092	ug/filter	J	1.0		E200.8	03/01/24 04:45 / aem
Copper	11	ug/filter		1.0		E200.8	03/01/24 04:45 / aem
Lead	0.42	ug/filter	J	1.0		E200.8	03/01/24 04:45 / aem
Manganese	1.6	ug/filter		1.0		E200.8	03/01/24 04:45 / aem
Molybdenum	0.74	ug/filter	J	1.0		E200.8	03/07/24 16:43 / jks
Zinc	2.5	ug/filter		1.0		E200.8	03/01/24 04:45 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-009
Client Sample ID: Particulate filter #C1708129 Field Blank 3

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 01/16/24 16:35
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/11/24 18:37 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 05:03 / aem
Copper	2.3	ug/filter		1.0		E200.8	03/01/24 05:03 / aem
Lead	0.17	ug/filter	J	1.0		E200.8	03/01/24 05:03 / aem
Manganese	0.66	ug/filter	J	1.0		E200.8	03/01/24 05:03 / aem
Molybdenum	0.11	ug/filter	J	1.0		E200.8	03/08/24 16:16 / aem
Zinc	1.0	ug/filter		1.0		E200.8	03/01/24 05:03 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021462-010
Client Sample ID: Particulate filter #C1708130 Lab Blank

Revised Date: 03/15/24
Report Date: 03/13/24
Collection Date: 12/22/23 12:55
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:07 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/01/24 05:09 / aem
Copper	0.35	ug/filter	J	1.0		E200.8	03/01/24 05:09 / aem
Lead	ND	ug/filter		1.0		E200.8	03/01/24 05:09 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/01/24 05:09 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/07/24 17:07 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/01/24 05:09 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 03/15/24

Client: Bison Engineering

Work Order: B24021462

Report Date: 03/13/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Analytical Run: ICPMS207-B_240307A	
Lab ID: **QCS**	2	Initial Calibration Verification Standard							03/07/24 14:34	
Arsenic		0.0494	mg/L	0.0050	99	90	110			
Molybdenum		0.0501	mg/L	0.0050	100	90	110			
Lab ID: **CCV**	2	Continuing Calibration Verification Standard							03/07/24 15:39	
Arsenic		0.0475	mg/L	0.0050	95	90	110			
Molybdenum		0.0480	mg/L	0.0050	96	90	110			
Lab ID: **CCV**	2	Continuing Calibration Verification Standard							03/07/24 16:55	
Arsenic		0.0476	mg/L	0.0050	95	90	110			
Molybdenum		0.0472	mg/L	0.0050	94	90	110			
Method: **E200.8**									Batch: 187449	
Lab ID: **MB-187449**	2	Method Blank				Run: ICPMS207-B_240307A			03/07/24 15:56	
Arsenic		ND	ug/filter	0.08						
Molybdenum		ND	ug/filter	0.07						
Method: **E200.8**									Analytical Run: ICPMS207-B_240311A	
Lab ID: **QCS**		Initial Calibration Verification Standard							03/11/24 11:43	
Arsenic		0.0544	mg/L	0.0050	109	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							03/11/24 13:06	
Arsenic		0.0497	mg/L	0.0050	99	90	110			
Lab ID: **QCS**		Initial Calibration Verification Standard							03/11/24 16:45	
Arsenic		0.0500	mg/L	0.0050	100	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard							03/11/24 17:26	
Arsenic		0.0498	mg/L	0.0050	100	90	110			
Method: **E200.8**									Batch: 187449	
Lab ID: **MB-187449**		Method Blank				Run: ICPMS207-B_240311A			03/11/24 13:17	
Arsenic		ND	ug/filter	0.08						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 03/15/24

Client: Bison Engineering

Work Order: B24021462

Report Date: 03/13/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Analytical Run: ICPMS208-B_240229A
Lab ID: QCS	5	Initial Calibration Verification Standard								03/01/24 00:22
Cadmium		0.0242	mg/L	0.0010	97	90	110			
Copper		0.0494	mg/L	0.010	99	90	110			
Lead		0.0484	mg/L	0.0010	97	90	110			
Manganese		0.245	mg/L	0.0050	98	90	110			
Zinc		0.0491	mg/L	0.0050	98	90	110			
Lab ID: CCV	5	Continuing Calibration Verification Standard								03/01/24 03:34
Cadmium		0.0454	mg/L	0.0010	91	90	110			
Copper		0.0463	mg/L	0.010	93	90	110			
Lead		0.0458	mg/L	0.0010	92	90	110			
Manganese		0.0460	mg/L	0.0050	92	90	110			
Zinc		0.0457	mg/L	0.0050	91	90	110			
Lab ID: CCV	5	Continuing Calibration Verification Standard								03/01/24 04:51
Cadmium		0.0457	mg/L	0.0010	91	90	110			
Copper		0.0470	mg/L	0.010	94	90	110			
Lead		0.0467	mg/L	0.0010	93	90	110			
Manganese		0.0467	mg/L	0.0050	93	90	110			
Zinc		0.0479	mg/L	0.0050	96	90	110			
Method: E200.8										Batch: 187449
Lab ID: MB-187449	5	Method Blank				Run: ICPMS208-B_240229A				03/01/24 03:28
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Zinc		ND	ug/filter	0.8						
Lab ID: LCS-187449	7	Laboratory Control Sample				Run: ICPMS208-B_240229A				03/01/24 03:46
Arsenic		91.7	ug/filter	1.0	92	85	115			
Cadmium		45.6	ug/filter	1.0	91	85	115			
Copper		92.3	ug/filter	5.0	92	85	115			
Lead		92.1	ug/filter	1.0	92	85	115			
Manganese		462	ug/filter	5.0	92	85	115			
Molybdenum		88.6	ug/filter	1.0	89	85	115			
Zinc		93.2	ug/filter	5.0	93	85	115			
Lab ID: LCSD-187449	7	Laboratory Control Sample Duplicate				Run: ICPMS208-B_240229A				03/01/24 03:52
Arsenic		91.3	ug/filter	1.0	91	85	115			
Cadmium		44.9	ug/filter	1.0	90	85	115			
Copper		96.3	ug/filter	5.0	96	85	115			
Lead		90.2	ug/filter	1.0	90	85	115			
Manganese		460	ug/filter	5.0	92	85	115			
Molybdenum		87.5	ug/filter	1.0	88	85	115			
Zinc		92.4	ug/filter	5.0	92	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 03/15/24

Client: Bison Engineering

Work Order: B24021462

Report Date: 03/13/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Analytical Run: ICPMS208-B_240308A	
Lab ID: **QCS**		Initial Calibration Verification Standard								03/08/24 11:47
Molybdenum		0.0509	mg/L	0.0050	102	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								03/08/24 13:19
Molybdenum		0.0473	mg/L	0.0050	95	90	110			
Lab ID: **QCS**		Initial Calibration Verification Standard								03/08/24 15:28
Molybdenum		0.0480	mg/L	0.0050	96	90	110			
Lab ID: **CCV**		Continuing Calibration Verification Standard								03/08/24 15:34
Molybdenum		0.0490	mg/L	0.0050	98	90	110			
Method: **E200.8**										Batch: 187449
Lab ID: **MB-187449**		Method Blank				Run: ICPMS208-B_240308A				03/08/24 15:46
Molybdenum		ND	ug/filter	0.07						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B24021462

Login completed by: Danielle N. Harris
Date Received: 2/23/2024
Reviewed by: lleprowse
Received by: DNH
Reviewed Date: 2/29/2024
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	3.0°C Blue Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None

Chain of Custody & Analytical Request Record

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Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Brown-Argott
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	MTR221018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources / Greely School PW
Sampler Name	Sampler Phone
Sample Origin State	Montana
EPA/State Compliance	■ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	Particulate filter #C1708101 Walnut ST TSP	12/29/23	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					B24021462
2	Particulate filter #C1708102 Pine ST TSP	12/29/23	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
3	Particulate filter #C1708103 Pine ST TSP	1/1/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
4	Particulate filter #PC1708104 Walnut ST TSP	1/1/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
5	Particulate filter #C1708105 Pine ST TSP	1/7/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
6	Particulate filter #C1708126 Walnut ST TSP	1/7/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
7	Particulate filter #C1708127 Field Blank 1	1/13/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
8	Particulate filter #C1708128 Field Blank 2	1/16/24	1214	1	on Teflon filter	x	x	x	x	x	x	x					
9	Particulate filter #C1708129 Field Blank 3	1/16/24	1635	1	on Teflon filter	x	x	x	x	x	x	x					
10	Particulate filter #C1708130 Lab Blank	12/22/23	1255	1	on Teflon filter	x	x	x	x	x	x	x					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	2/23/24 1618	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Darlene Hess	2/23/24 1618	Darlene Hess

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

April 02, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B24021464 Quote ID: B4795

Project Name: Montana Resources/Greely School PW

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 2/23/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B24021464-001	Particulate filter #C1708131 Pine ST TSP	01/22/24 00:00	02/23/24	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B24021464-002	Particulate filter #C1708132 Walnut ST TSP	01/22/24 00:00	02/23/24	Air	Same As Above
B24021464-003	Particulate filter #C1708133 Walnut ST TSP	01/25/24 00:00	02/23/24	Air	Same As Above
B24021464-004	Particulate filter #PC1708134 Pine ST TSP	01/25/24 00:00	02/23/24	Air	Same As Above
B24021464-005	Particulate filter #C1708135 Lab Blank	01/12/24 12:45	02/23/24	Air	Same As Above
B24021464-006	Particulate filter #C1708136 Pine ST TSP	01/31/24 00:00	02/23/24	Air	Same As Above
B24021464-007	Particulate filter #C1708137 Walnut ST TSP	01/31/24 00:00	02/23/24	Air	Same As Above
B24021464-008	Particulate filter #C1708138 Pine ST TSP	02/05/24 00:00	02/23/24	Air	Same As Above
B24021464-009	Particulate filter #C1708139 Field Blank	02/04/24 14:12	02/23/24	Air	Same As Above
B24021464-010	Particulate filter #C1708140 Walnut ST TSP	02/05/24 00:00	02/23/24	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Bison Engineering
Project: Montana Resources/Greely School PW
Work Order: B24021464

Revised Date: 04/02/24
Report Date: 03/08/24

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

Revised Date: 3/27/2024

On 3/26/2024 a request was received from Steve Heck at Bison Engineering to revise this workorder by changing the method detection limits (MDLs) to match historical client request and to change significant figures on results to report at least two significant figures on all samples.

The report has been revised and replaces the previously issued report dated 3/8/2024 in its entirety.

Revised Date: 4/2/2024

On 4/1/2024 a request was received from Steve Heck at Bison Engineering to revise this workorder by changing the MDLs and significant figures on all samples as requested in the previous revision, not just quality control samples. We apologize for any inconvenience this may have caused.

The report has been revised and replaces the previously issued report dated 3/27/2024 in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/22/24
DateReceived: 02/23/24
Matrix: Air

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-001
Client Sample ID: Particulate filter #C1708131 Pine ST TSP

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:12 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:12 / jks
Copper	2.5	ug/filter		1.0		E200.8	03/07/24 17:12 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 17:12 / jks
Manganese	0.24	ug/filter	J	1.0		E200.8	03/07/24 17:12 / jks
Molybdenum	0.27	ug/filter	J	1.0		E200.8	03/07/24 17:12 / jks
Zinc	0.82	ug/filter	J	1.0		E200.8	03/07/24 17:12 / jks

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
QCL - Quality Control Limit
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-002
Client Sample ID: Particulate filter #C1708132 Walnut ST TSP

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/22/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:18 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:18 / jks
Copper	2.4	ug/filter		1.0		E200.8	03/07/24 17:18 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 17:18 / jks
Manganese	0.33	ug/filter	J	1.0		E200.8	03/07/24 17:18 / jks
Molybdenum	0.14	ug/filter	J	1.0		E200.8	03/07/24 17:18 / jks
Zinc	1.0	ug/filter		1.0		E200.8	03/07/24 17:18 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-003
Client Sample ID: Particulate filter #C1708133 Walnut ST TSP

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/25/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:24 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:24 / jks
Copper	0.82	ug/filter	J	1.0		E200.8	03/07/24 17:24 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 17:24 / jks
Manganese	0.22	ug/filter	J	1.0		E200.8	03/07/24 17:24 / jks
Molybdenum	ND	ug/filter		1.0		E200.8	03/07/24 17:24 / jks
Zinc	0.91	ug/filter	J	1.0		E200.8	03/07/24 17:24 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/25/24
DateReceived: 02/23/24
Matrix: Air

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-004
Client Sample ID: Particulate filter #PC1708134 Pine ST TSP

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:30 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:30 / jks
Copper	2.0	ug/filter		1.0		E200.8	03/07/24 17:30 / jks
Lead	0.091	ug/filter	J	1.0		E200.8	03/07/24 17:30 / jks
Manganese	0.33	ug/filter	J	1.0		E200.8	03/07/24 17:30 / jks
Molybdenum	ND	ug/filter		1.0		E200.8	03/07/24 17:30 / jks
Zinc	0.94	ug/filter	J	1.0		E200.8	03/07/24 17:30 / jks

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-005
Client Sample ID: Particulate filter #C1708135 Lab Blank

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/12/24 12:45
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks
Copper	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks
Manganese	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks
Molybdenum	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/07/24 17:36 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-006
Client Sample ID: Particulate filter #C1708136 Pine ST TSP

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/31/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:42 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:42 / jks
Copper	2.3	ug/filter		1.0		E200.8	03/07/24 17:42 / jks
Lead	0.12	ug/filter	J	1.0		E200.8	03/07/24 17:42 / jks
Manganese	0.37	ug/filter	J	1.0		E200.8	03/07/24 17:42 / jks
Molybdenum	0.084	ug/filter	J	1.0		E200.8	03/07/24 17:42 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/07/24 17:42 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-007
Client Sample ID: Particulate filter #C1708137 Walnut ST TSP

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 01/31/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:48 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:48 / jks
Copper	2.0	ug/filter		1.0		E200.8	03/07/24 17:48 / jks
Lead	0.13	ug/filter	J	1.0		E200.8	03/07/24 17:48 / jks
Manganese	0.36	ug/filter	J	1.0		E200.8	03/07/24 17:48 / jks
Molybdenum	0.094	ug/filter	J	1.0		E200.8	03/07/24 17:48 / jks
Zinc	0.97	ug/filter	J	1.0		E200.8	03/07/24 17:48 / jks

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-008
Client Sample ID: Particulate filter #C1708138 Pine ST TSP

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 02/05/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:53 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:53 / jks
Copper	1.6	ug/filter		1.0		E200.8	03/07/24 17:53 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 17:53 / jks
Manganese	ND	ug/filter		1.0		E200.8	03/07/24 17:53 / jks
Molybdenum	0.13	ug/filter	J	1.0		E200.8	03/07/24 17:53 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/07/24 17:53 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-009
Client Sample ID: Particulate filter #C1708139 Field Blank

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 02/04/24 14:12
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks
Copper	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks
Manganese	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks
Molybdenum	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/07/24 17:59 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24021464-010
Client Sample ID: Particulate filter #C1708140 Walnut ST TSP

Revised Date: 04/02/24
Report Date: 03/08/24
Collection Date: 02/05/24
DateReceived: 02/23/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/07/24 18:17 / jks
Cadmium	ND	ug/filter		1.0		E200.8	03/07/24 18:17 / jks
Copper	1.2	ug/filter		1.0		E200.8	03/07/24 18:17 / jks
Lead	ND	ug/filter		1.0		E200.8	03/07/24 18:17 / jks
Manganese	ND	ug/filter		1.0		E200.8	03/07/24 18:17 / jks
Molybdenum	0.18	ug/filter	J	1.0		E200.8	03/07/24 18:17 / jks
Zinc	ND	ug/filter		1.0		E200.8	03/07/24 18:17 / jks

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 03/27/24

Client: Bison Engineering

Work Order: B24021464

Report Date: 03/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Analytical Run: ICPMS207-B_240307A	
Lab ID: **QCS**	7	Initial Calibration Verification Standard								03/07/24 14:34
Arsenic		0.0494	mg/L	0.0050	99	90	110			
Cadmium		0.0251	mg/L	0.0010	100	90	110			
Copper		0.0501	mg/L	0.010	100	90	110			
Lead		0.0474	mg/L	0.0010	95	90	110			
Manganese		0.248	mg/L	0.0050	99	90	110			
Molybdenum		0.0501	mg/L	0.0050	100	90	110			
Zinc		0.0493	mg/L	0.0050	99	90	110			
Lab ID: **CCV**	7	Continuing Calibration Verification Standard								03/07/24 16:55
Arsenic		0.0476	mg/L	0.0050	95	90	110			
Cadmium		0.0483	mg/L	0.0010	97	90	110			
Copper		0.0483	mg/L	0.010	97	90	110			
Lead		0.0472	mg/L	0.0010	94	90	110			
Manganese		0.0448	mg/L	0.0050	90	90	110			
Molybdenum		0.0472	mg/L	0.0050	94	90	110			
Zinc		0.0470	mg/L	0.0050	94	90	110			
Lab ID: **CCV**	7	Continuing Calibration Verification Standard								03/07/24 18:05
Arsenic		0.0475	mg/L	0.0050	95	90	110			
Cadmium		0.0490	mg/L	0.0010	98	90	110			
Copper		0.0485	mg/L	0.010	97	90	110			
Lead		0.0453	mg/L	0.0010	91	90	110			
Manganese		0.0449	mg/L	0.0050	90	90	110			
Molybdenum		0.0484	mg/L	0.0050	97	90	110			
Zinc		0.0470	mg/L	0.0050	94	90	110			
Lab ID: **CCV**	7	Continuing Calibration Verification Standard								03/07/24 16:55
Arsenic		0.0476	mg/L	0.0050	95	90	110			
Cadmium		0.0483	mg/L	0.0010	97	90	110			
Copper		0.0483	mg/L	0.010	97	90	110			
Lead		0.0472	mg/L	0.0010	94	90	110			
Manganese		0.0448	mg/L	0.0050	90	90	110			
Molybdenum		0.0472	mg/L	0.0050	94	90	110			
Zinc		0.0470	mg/L	0.0050	94	90	110			
Lab ID: **CCV**	7	Continuing Calibration Verification Standard								03/07/24 18:05
Arsenic		0.0475	mg/L	0.0050	95	90	110			
Cadmium		0.0490	mg/L	0.0010	98	90	110			
Copper		0.0485	mg/L	0.010	97	90	110			
Lead		0.0453	mg/L	0.0010	91	90	110			
Manganese		0.0449	mg/L	0.0050	90	90	110			
Molybdenum		0.0484	mg/L	0.0050	97	90	110			
Zinc		0.0470	mg/L	0.0050	94	90	110			
Method: **E200.8**									Batch: 187449	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 03/27/24

Client: Bison Engineering

Work Order: B24021464

Report Date: 03/08/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**										Batch: 187449
Lab ID: **MB-187449**	7	Method Blank				Run: ICPMS207-B_240307A				03/07/24 15:56
Arsenic		ND	ug/filter	0.08						
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						
Zinc		ND	ug/filter	0.8						
Method: **E200.8**										Batch: 187449
Lab ID: **LCS-187449**	7	Laboratory Control Sample				Run: ICPMS208-B_240229A				03/01/24 03:46
Arsenic		91.7	ug/filter	1.0	92	85	115			
Cadmium		45.6	ug/filter	1.0	91	85	115			
Copper		92.3	ug/filter	5.0	92	85	115			
Lead		92.1	ug/filter	1.0	92	85	115			
Manganese		462	ug/filter	5.0	92	85	115			
Molybdenum		88.6	ug/filter	1.0	89	85	115			
Zinc		93.2	ug/filter	5.0	93	85	115			
Lab ID: **LCSD-187449**	7	Laboratory Control Sample Duplicate				Run: ICPMS208-B_240229A				03/01/24 03:52
Arsenic		91.3	ug/filter	1.0	91	85	115			
Cadmium		44.9	ug/filter	1.0	90	85	115			
Copper		96.3	ug/filter	5.0	96	85	115			
Lead		90.2	ug/filter	1.0	90	85	115			
Manganese		460	ug/filter	5.0	92	85	115			
Molybdenum		87.5	ug/filter	1.0	88	85	115			
Zinc		92.4	ug/filter	5.0	92	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B24021464

Login completed by: Danielle N. Harris
Date Received: 2/23/2024
Reviewed by: lleprowse
Received by: DNH
Reviewed Date: 2/29/2024
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	3.0°C Blue Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Brown-Argott
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ■Email
Purchase Order	MTR221018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources / Greely School PW
Sampler Name	Sampler Phone
Sample Origin State	Montana
EPA/State Compliance	■ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes: A - Air; W - Water; S - Soils/Solids; V - Vegetation; B - Bioassay; O - Other; DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Particulate filter #C1708131 Pine ST TSP	1/22/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					B24021464
2	Particulate filter #C1708132 Walnut ST TSP	1/22/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					
3	Particulate filter #C1708133 Walnut ST TSP	1/25/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					
4	Particulate filter #PC1708134 Pine ST TSP	1/25/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					
5	Particulate filter #C1708135 Lab Blank	1/12/24	1245	1	on Teflon filter	x	x	x	x	x	x	x					
6	Particulate filter #C1708136 Pine ST TSP	1/31/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					
7	Particulate filter #C1708137 Walnut ST TSP	1/31/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					
8	Particulate filter #C1708138 Pine ST TSP	2/5/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					
9	Particulate filter #C1708139 Field Blank	2/4/24	1412	1	on Teflon filter	x	x	x	x	x	x	x					
10	Particulate filter #C1708140 Walnut ST TSP	2/5/24	24 hr composite	1	on Teflon filter	x	x	x	x	x	x	x					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	2/23/24 1618	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Danielle Frost	2/23/24 1618	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

March 22, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B24030571 Quote ID: B4795

Project Name: Montana Resources/Greely School PW

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 3/11/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B24030571-001	Particulate Filter C17334561 TSP Pine St Composite	02/11/24 00:00	03/11/24	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B24030571-002	Particulate Filter C1733457 TSP Walnut St Composite	02/11/24 00:00	03/11/24	Air	Same As Above
B24030571-003	Particulate Filter C1733458 TSP Pine St Composite	03/03/24 00:00	03/11/24	Air	Same As Above
B24030571-004	Particulate Filter C1733459 Lab Blank	02/07/24 13:00	03/11/24	Air	Same As Above
B24030571-005	Particulate Filter C1733460 TSP Walnut St Composite	02/19/24 00:00	03/11/24	Air	Same As Above
B24030571-006	Particulate Filter C1733461 TSP Pine St Composite	02/24/24 00:00	03/11/24	Air	Same As Above
B24030571-007	Particulate Filter C1733462 TSP Field Blank	03/04/24 13:25	03/11/24	Air	Same As Above
B24030571-008	Particulate Filter C1733463 TSP Walnut St Composite	02/24/24 00:00	03/11/24	Air	Same As Above
B24030571-009	Particulate Filter C1733464 TSP Walnut St Composite	02/28/24 00:00	03/11/24	Air	Same As Above
B24030571-010	Particulate Filter C1733465 TSP Pine St Composite	02/28/24 00:00	03/11/24	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Bison Engineering
Project: Montana Resources/Greely School PW
Work Order: B24030571

Report Date: 03/22/24

CASE NARRATIVE

Per client request, results are based on the final concentration using 25 mL of extraction solution per filter.

All "J" qualified analyte concentrations are below the laboratory minimum recommended Reporting Limit (RL) and above the lowest method detection limit (MDL)/Limit of Detection (LOD). Inorganic analytes reported with "J" qualifiers should be verified against the corresponding method blank and continuing calibration blanks. Inorganic "J" quantitations near the MDL/LOD may be suspect due to possible method background levels, sample matrix effects, and/or daily variability in instrument signal-to-noise levels.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-001
Client Sample ID: Particulate Filter C17334561 TSP Pine St Composite

Report Date: 03/22/24
Collection Date: 02/11/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:03 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:03 / aem
Copper	1.4	ug/filter		1.0		E200.8	03/14/24 03:03 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 12:53 / aem
Manganese	0.38	ug/filter	J	1.0		E200.8	03/14/24 03:03 / aem
Molybdenum	0.11	ug/filter	J	1.0		E200.8	03/14/24 03:03 / aem
Zinc	0.81	ug/filter	J	1.0		E200.8	03/14/24 03:03 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-002
Client Sample ID: Particulate Filter C1733457 TSP Walnut St Composite

Report Date: 03/22/24
Collection Date: 02/11/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:21 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:21 / aem
Copper	1.4	ug/filter		1.0		E200.8	03/14/24 03:21 / aem
Lead	0.090	ug/filter	J	1.0		E200.8	03/14/24 12:58 / aem
Manganese	0.34	ug/filter	J	1.0		E200.8	03/14/24 03:21 / aem
Molybdenum	0.081	ug/filter	J	1.0		E200.8	03/14/24 03:21 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 03:21 / aem

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-003
Client Sample ID: Particulate Filter C1733458 TSP Pine St Composite

Report Date: 03/22/24
Collection Date: 03/03/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:27 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:27 / aem
Copper	1.1	ug/filter		1.0		E200.8	03/14/24 13:04 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 13:04 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/14/24 03:27 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/14/24 03:27 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 03:27 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-004
Client Sample ID: Particulate Filter C1733459 Lab Blank

Report Date: 03/22/24
Collection Date: 02/07/24 13:00
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem
Copper	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 03:33 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-005
Client Sample ID: Particulate Filter C1733460 TSP Walnut St Composite

Report Date: 03/22/24
Collection Date: 02/19/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:39 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:39 / aem
Copper	1.6	ug/filter		1.0		E200.8	03/14/24 03:39 / aem
Lead	0.097	ug/filter	J	1.0		E200.8	03/14/24 13:10 / aem
Manganese	0.37	ug/filter	J	1.0		E200.8	03/14/24 03:39 / aem
Molybdenum	0.96	ug/filter	J	1.0		E200.8	03/14/24 03:39 / aem
Zinc	1.3	ug/filter		1.0		E200.8	03/14/24 03:39 / aem

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-006
Client Sample ID: Particulate Filter C1733461 TSP Pine St Composite

Report Date: 03/22/24
Collection Date: 02/24/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:44 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:44 / aem
Copper	1.3	ug/filter		1.0		E200.8	03/14/24 03:44 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 13:16 / aem
Manganese	0.24	ug/filter	J	1.0		E200.8	03/14/24 03:44 / aem
Molybdenum	0.095	ug/filter	J	1.0		E200.8	03/14/24 03:44 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 03:44 / aem

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-007
Client Sample ID: Particulate Filter C1733462 TSP Field Blank

Report Date: 03/22/24
Collection Date: 03/04/24 13:25
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:50 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:50 / aem
Copper	ND	ug/filter		1.0		E200.8	03/14/24 03:50 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 03:50 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/14/24 03:50 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/14/24 13:22 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 03:50 / aem

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-008
Client Sample ID: Particulate Filter C1733463 TSP Walnut St Composite

Report Date: 03/22/24
Collection Date: 02/24/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 03:56 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 03:56 / aem
Copper	0.32	ug/filter	J	1.0		E200.8	03/14/24 13:28 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 03:56 / aem
Manganese	0.20	ug/filter	J	1.0		E200.8	03/14/24 03:56 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/14/24 03:56 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 03:56 / aem

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-009
Client Sample ID: Particulate Filter C1733464 TSP Walnut St Composite

Report Date: 03/22/24
Collection Date: 02/28/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 04:02 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 04:02 / aem
Copper	0.41	ug/filter	J	1.0		E200.8	03/14/24 13:49 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 04:02 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/14/24 04:02 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/14/24 04:02 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 04:02 / aem

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Project: Montana Resources/Greely School PW
Lab ID: B24030571-010
Client Sample ID: Particulate Filter C1733465 TSP Pine St Composite

Report Date: 03/22/24
Collection Date: 02/28/24
DateReceived: 03/11/24
Matrix: Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS IN AIR							
Arsenic	ND	ug/filter		1.0		E200.8	03/14/24 04:08 / aem
Cadmium	ND	ug/filter		1.0		E200.8	03/14/24 04:08 / aem
Copper	0.51	ug/filter	J	1.0		E200.8	03/14/24 13:55 / aem
Lead	ND	ug/filter		1.0		E200.8	03/14/24 04:08 / aem
Manganese	ND	ug/filter		1.0		E200.8	03/14/24 04:08 / aem
Molybdenum	ND	ug/filter		1.0		E200.8	03/14/24 04:08 / aem
Zinc	ND	ug/filter		1.0		E200.8	03/14/24 04:08 / aem

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B24030571 **Report Date:** 03/22/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS207-B_240313A	
Lab ID: QCS	7	Initial Calibration Verification Standard								03/14/24 00:01
Arsenic		0.0493	mg/L	0.0050	99	90	110			
Cadmium		0.0240	mg/L	0.0010	96	90	110			
Copper		0.0492	mg/L	0.010	98	90	110			
Lead		0.0482	mg/L	0.0010	96	90	110			
Manganese		0.248	mg/L	0.0050	99	90	110			
Molybdenum		0.0463	mg/L	0.0050	93	90	110			
Zinc		0.0505	mg/L	0.0050	101	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard								03/14/24 01:47
Arsenic		0.0490	mg/L	0.0050	98	90	110			
Cadmium		0.0498	mg/L	0.0010	100	90	110			
Copper		0.0508	mg/L	0.010	102	90	110			
Lead		0.0476	mg/L	0.0010	95	90	110			
Manganese		0.0452	mg/L	0.0050	90	90	110			
Molybdenum		0.0483	mg/L	0.0050	97	90	110			
Zinc		0.0478	mg/L	0.0050	96	90	110			
Lab ID: CCV	7	Continuing Calibration Verification Standard								03/14/24 03:09
Arsenic		0.0471	mg/L	0.0050	94	90	110			
Cadmium		0.0475	mg/L	0.0010	95	90	110			
Copper		0.0486	mg/L	0.010	97	90	110			
Lead		0.0467	mg/L	0.0010	93	90	110			
Manganese		0.0474	mg/L	0.0050	95	90	110			
Molybdenum		0.0470	mg/L	0.0050	94	90	110			
Zinc		0.0480	mg/L	0.0050	96	90	110			
Method: E200.8									Batch: 187762	
Lab ID: MB-187762	7	Method Blank				Run: ICPMS207-B_240313A				03/14/24 02:40
Arsenic		ND	ug/filter	0.08						
Cadmium		ND	ug/filter	0.009						
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Manganese		ND	ug/filter	0.2						
Molybdenum		ND	ug/filter	0.07						
Zinc		ND	ug/filter	0.8						
Lab ID: LCS-187762	7	Laboratory Control Sample				Run: ICPMS207-B_240313A				03/14/24 02:46
Arsenic		96.7	ug/filter	1.0	97	85	115			
Cadmium		50.0	ug/filter	1.0	100	85	115			
Copper		99.6	ug/filter	5.0	100	85	115			
Lead		96.4	ug/filter	1.0	96	85	115			
Manganese		484	ug/filter	5.0	97	85	115			
Molybdenum		96.1	ug/filter	1.0	96	85	115			
Zinc		98.5	ug/filter	8.0	99	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B24030571 **Report Date:** 03/22/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 187762
Lab ID: LCSD-187762	7	Laboratory Control Sample Duplicate				Run: ICPMS207-B_240313A				03/14/24 02:52
Arsenic		95.5	ug/filter	1.0	95	85	115			
Cadmium		49.0	ug/filter	1.0	98	85	115			
Copper		98.6	ug/filter	5.0	99	85	115			
Lead		96.4	ug/filter	1.0	96	85	115			
Manganese		484	ug/filter	5.0	97	85	115			
Molybdenum		94.1	ug/filter	1.0	94	85	115			
Zinc		98.6	ug/filter	8.0	99	85	115			
Method: E200.8										Analytical Run: ICPMS207-B_240314A
Lab ID: QCS	3	Initial Calibration Verification Standard								03/14/24 10:53
Copper		0.0505	mg/L	0.010	101	90	110			
Lead		0.0475	mg/L	0.0010	95	90	110			
Molybdenum		0.0485	mg/L	0.0050	97	90	110			
Lab ID: CCV	3	Continuing Calibration Verification Standard								03/14/24 12:23
Copper		0.0506	mg/L	0.010	101	90	110			
Lead		0.0461	mg/L	0.0010	92	90	110			
Molybdenum		0.0481	mg/L	0.0050	96	90	110			
Lab ID: CCV	3	Continuing Calibration Verification Standard								03/14/24 13:34
Copper		0.0542	mg/L	0.010	108	90	110			
Lead		0.0461	mg/L	0.0010	92	90	110			
Molybdenum		0.0521	mg/L	0.0050	104	90	110			
Method: E200.8										Batch: 187762
Lab ID: MB-187762	3	Method Blank				Run: ICPMS207-B_240314A				03/14/24 12:35
Copper		ND	ug/filter	0.3						
Lead		ND	ug/filter	0.09						
Molybdenum		ND	ug/filter	0.07						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B24030571

Login completed by: Danielle N. Harris
Date Received: 3/11/2024

Reviewed by: gmccartney
Received by: DNH

Reviewed Date: 3/14/2024
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	2.6°C Blue Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

For all samples, the sample identification begin with C1667 on the Chain of Custody. The sample containers for all samples begin with C1733 for the sample identification. Proceeded with the sample identification on the sample containers or until further notified by the client. A voicemail was left for Don Milmine on 3/11/24.

Chain of Custody & Analytical Request Record

ENERGY LABORATORIES — Trust our People. Trust our Data.

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering, Inc.
Contact	Shelley Argott-Brown
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MTR223018
Quote	
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

Analyze per history

Project Information

Project Name, PWSID, Permit, etc.	Momtana Resources/Greely School PW
Sampler Name	Sampler Phone
Sample Origin State	Montana
EPA/State Compliance	☒ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air, W - Water, S - Soils/Solids, V - Vegetation, B - Bioassay, O - Other, DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	Particulate filter C1664561TSP Pine St	2/11/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					B2403057-1
2	Particulate filter C1667457 TSP Walnut St	2/11/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					
3	Particulate filter C1667458 TSP Pine St	3/3/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					
4	Particulate filter C1667459 Lab Blank	2/7/24	1300	1	On Teflon filter	X	X	X	X	X	X	X					
5	Particulate filter C1667460 TSP Walnut St	2/19/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					
6	Particulate filter C1667461 TSP Pine St	2/24/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					
7	Particulate filter C1667462 TSP Field Blank	3/4/24	1325	1	On Teflon filter	X	X	X	X	X	X	X					
8	Particulate filter C1667463 TSP Walnut St	2/24/24	33.5 hr composite	1	On teflon filter	X	X	X	X	X	X	X					
9	Particulate filter C1667464 TSP Walnut St	2/28/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					
10	Particulate filter C1667465 TSP Pine St	2/28/24	24 hr Composite	1	On Teflon filter	X	X	X	X	X	X	X					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	3/11/24 1518	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Danielle Farris	3/11/24 1518	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number *(cash/check only)*

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

ANALYTICAL SUMMARY REPORT

May 14, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: B24050157 Quote ID: B4795

Project Name: Montana Resources/ Greely School PW

Energy Laboratories Inc Billings MT received the following 10 samples for Bison Engineering on 5/1/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B24050157-001	Particulate filter C1733451 TSP Pine St	03/07/24 0:00	05/01/24	Air	Metals on air filter by ICP/ICPMS Nitric acid-extraction by 40CFR50G
B24050157-002	Particulate filter C1733452 TSP Walnut St	03/07/24 0:00	05/01/24	Air	Same As Above
B24050157-003	Particulate filter C1733453 TSP Pine St	03/14/24 0:00	05/01/24	Air	Same As Above
B24050157-004	Particulate filter C1733454 Lab Blank	02/27/24 0:00	05/01/24	Air	Same As Above
B24050157-005	Particulate filter C1733455 TSP Walnut St	03/14/24 0:00	05/01/24	Air	Same As Above
B24050157-006	Particulate filter C1733476 TSP Pine St	03/19/24 0:00	05/01/24	Air	Same As Above
B24050157-007	Particulate filter C1733477 TSP Walnut St	03/19/24 0:00	05/01/24	Air	Same As Above
B24050157-008	Particulate filter C1733478 TSP Pine St	03/27/24 0:00	05/01/24	Air	Same As Above
B24050157-009	Particulate filter C1733479 TSP Field Blank	03/20/24 0:00	05/01/24	Air	Same As Above
B24050157-010	Particulate filter C1733480 TSP Pine St	03/27/24 0:00	05/01/24	Air	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733451 TSP Pine St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-001
Collection Date: 03/07/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 06:19 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	450	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 06:19 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	450	189242
Copper	5.1	ug/filter		1.0	0.16	E200.8	05/08/24 06:19 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	450	189242
Lead	0.25	ug/filter	J	1.0	0.042	E200.8	05/10/24 05:53 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	433	189242
Manganese	0.60	ug/filter	J	1.0	0.18	E200.8	05/08/24 06:19 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	450	189242
Molybdenum	0.34	ug/filter	J	1.0	0.0050	E200.8	05/08/24 06:19 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	450	189242
Zinc	0.72	ug/filter	J	1.0	0.30	E200.8	05/08/24 06:19 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	450	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733452 TSP Walnut St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-002
Collection Date: 03/07/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 06:37 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	453	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 06:37 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	453	189242
Copper	1.8	ug/filter		1.0	0.16	E200.8	05/08/24 06:37 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	453	189242
Lead	0.16	ug/filter	J	1.0	0.042	E200.8	05/10/24 05:59 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	434	189242
Manganese	0.40	ug/filter	J	1.0	0.18	E200.8	05/08/24 06:37 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	453	189242
Molybdenum	0.079	ug/filter	J	1.0	0.0050	E200.8	05/08/24 06:37 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	453	189242
Zinc	0.38	ug/filter	J	1.0	0.30	E200.8	05/08/24 06:37 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	453	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733453 TSP Pine St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-003
Collection Date: 03/14/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 06:43 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	454	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 06:43 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	454	189242
Copper	0.90	ug/filter	J	1.0	0.16	E200.8	05/08/24 06:43 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	454	189242
Lead	0.072	ug/filter	J	1.0	0.042	E200.8	05/10/24 06:17 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	437	189242
Manganese	ND	ug/filter		1.0	0.18	E200.8	05/08/24 06:43 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	454	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 06:43 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	454	189242
Zinc	ND	ug/filter		1.0	0.30	E200.8	05/08/24 06:43 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	454	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733454 Lab Blank
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-004
Collection Date: 02/27/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242
Copper	ND	ug/filter		1.0	0.16	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242
Lead	ND	ug/filter		1.0	0.042	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242
Manganese	ND	ug/filter		1.0	0.18	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242
Zinc	ND	ug/filter		1.0	0.30	E200.8	05/08/24 06:48 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	455	189242

Report Definitions: RL - Analyte Reporting Limit MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733455 TSP Walnut St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-005
Collection Date: 03/14/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 06:54 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	456	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 06:54 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	456	189242
Copper	0.62	ug/filter	J	1.0	0.16	E200.8	05/10/24 06:23 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	438	189242
Lead	0.083	ug/filter	J	1.0	0.042	E200.8	05/08/24 06:54 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	456	189242
Manganese	ND	ug/filter		1.0	0.18	E200.8	05/08/24 06:54 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	456	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 06:54 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	456	189242
Zinc	ND	ug/filter		1.0	0.30	E200.8	05/08/24 06:54 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	456	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733476 TSP Pine St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-006
Collection Date: 03/19/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 07:00 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	457	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 07:00 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	457	189242
Copper	3.1	ug/filter		1.0	0.16	E200.8	05/08/24 07:00 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	457	189242
Lead	0.18	ug/filter	J	1.0	0.042	E200.8	05/10/24 06:29 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	439	189242
Manganese	0.39	ug/filter	J	1.0	0.18	E200.8	05/08/24 07:00 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	457	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 07:00 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	457	189242
Zinc	0.32	ug/filter	J	1.0	0.30	E200.8	05/08/24 07:00 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	457	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733477 TSP Walnut St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-007
Collection Date: 03/19/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 07:06 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	458	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 07:06 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	458	189242
Copper	1.3	ug/filter		1.0	0.16	E200.8	05/08/24 07:06 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	458	189242
Lead	0.18	ug/filter	J	1.0	0.042	E200.8	05/10/24 06:35 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	440	189242
Manganese	0.52	ug/filter	J	1.0	0.18	E200.8	05/08/24 07:06 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	458	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 07:06 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	458	189242
Zinc	0.48	ug/filter	J	1.0	0.30	E200.8	05/08/24 07:06 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	458	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733478 TSP Pine St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-008
Collection Date: 03/27/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 07:12 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	459	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 07:12 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	459	189242
Copper	0.67	ug/filter	J	1.0	0.16	E200.8	05/08/24 07:12 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	459	189242
Lead	0.060	ug/filter	J	1.0	0.042	E200.8	05/10/24 06:41 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	441	189242
Manganese	ND	ug/filter		1.0	0.18	E200.8	05/08/24 07:12 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	459	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 07:12 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	459	189242
Zinc	ND	ug/filter		1.0	0.30	E200.8	05/08/24 07:12 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	459	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733479 TSP Field Blank
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-009
Collection Date: 03/20/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242
Copper	ND	ug/filter		1.0	0.16	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242
Lead	ND	ug/filter		1.0	0.042	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242
Manganese	ND	ug/filter		1.0	0.18	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242
Zinc	ND	ug/filter		1.0	0.30	E200.8	05/08/24 07:18 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	460	189242

Report Definitions: RL - Analyte Reporting Limit MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Bison Engineering
Client Sample ID: Particulate filter C1733480 TSP Pine St
Project: Montana Resources/ Greely School PW
Matrix: Air

Lab ID: B24050157-010
Collection Date: 03/27/24
DateReceived: 05/01/24
Report Date: 05/14/24

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS IN AIR												
Arsenic	ND	ug/filter		1.0	0.058	E200.8	05/08/24 07:24 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	461	189242
Cadmium	ND	ug/filter		1.0	0.0063	E200.8	05/08/24 07:24 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	461	189242
Copper	0.55	ug/filter	J	1.0	0.16	E200.8	05/10/24 06:47 / ae	05/03/24 08:55	40CFR50	ICPMS208-B_240508A	442	189242
Lead	0.076	ug/filter	J	1.0	0.042	E200.8	05/08/24 07:24 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	461	189242
Manganese	0.22	ug/filter	J	1.0	0.18	E200.8	05/08/24 07:24 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	461	189242
Molybdenum	ND	ug/filter		1.0	0.0050	E200.8	05/08/24 07:24 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	461	189242
Zinc	ND	ug/filter		1.0	0.30	E200.8	05/08/24 07:24 / ae	05/03/24 08:55	40CFR50	ICPMS207-B_240506A	461	189242

Report Definitions:
RL - Analyte Reporting Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B24050157 **Report Date:** 05/14/24

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS207-B_240506A	
Lab ID: QCS	Initial Calibration Verification Standard								05/08/24 00:39
Arsenic	0.0486	mg/L	0.0050	97	90	110			
Cadmium	0.0232	mg/L	0.0010	93	90	110			
Copper	0.0512	mg/L	0.010	102	90	110			
Lead	0.0490	mg/L	0.0010	98	90	110			
Manganese	0.264	mg/L	0.0050	106	90	110			
Molybdenum	0.0487	mg/L	0.0050	97	90	110			
Zinc	0.0494	mg/L	0.0050	99	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								05/08/24 05:15
Arsenic	0.0470	mg/L	0.0050	94	90	110			
Cadmium	0.0482	mg/L	0.0010	96	90	110			
Copper	0.0486	mg/L	0.010	97	90	110			
Lead	0.0492	mg/L	0.0010	98	90	110			
Manganese	0.0478	mg/L	0.0050	96	90	110			
Molybdenum	0.0484	mg/L	0.0050	97	90	110			
Zinc	0.0478	mg/L	0.0050	96	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								05/08/24 06:25
Arsenic	0.0461	mg/L	0.0050	92	90	110			
Cadmium	0.0476	mg/L	0.0010	95	90	110			
Copper	0.0488	mg/L	0.010	98	90	110			
Lead	0.0481	mg/L	0.0010	96	90	110			
Manganese	0.0478	mg/L	0.0050	96	90	110			
Molybdenum	0.0477	mg/L	0.0050	95	90	110			
Zinc	0.0466	mg/L	0.0050	93	90	110			
Method: E200.8								Batch: 189242	
Lab ID: MB-189242	Method Blank				Run: ICPMS207-B_240506A				05/08/24 04:45
Arsenic	ND	ug/filter	0.06						
Cadmium	ND	ug/filter	0.006						
Copper	ND	ug/filter	0.2						
Lead	ND	ug/filter	0.04						
Manganese	ND	ug/filter	0.2						
Molybdenum	ND	ug/filter	0.005						
Zinc	ND	ug/filter	0.3						
Lab ID: LCS-189242	Laboratory Control Sample				Run: ICPMS207-B_240506A				05/08/24 04:51
Arsenic	98.7	ug/filter	1.0	99	85	115			
Cadmium	48.8	ug/filter	1.0	98	85	115			
Copper	98.8	ug/filter	5.0	99	85	115			
Lead	98.6	ug/filter	1.0	99	85	115			
Manganese	507	ug/filter	5.0	101	85	115			
Molybdenum	100	ug/filter	1.0	100	85	115			
Zinc	104	ug/filter	5.0	104	85	115			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Bison Engineering **Work Order:** B24050157 **Report Date:** 05/14/24

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Batch: 189242
Lab ID: **LCSD-189242**	Laboratory Control Sample Duplicate				Run: ICPMS207-B_240506A				05/08/24 04:57
Arsenic	99.6	ug/filter	1.0	100	85	115			
Cadmium	49.1	ug/filter	1.0	98	85	115			
Copper	99.3	ug/filter	5.0	99	85	115			
Lead	95.8	ug/filter	1.0	96	85	115			
Manganese	504	ug/filter	5.0	101	85	115			
Molybdenum	99.6	ug/filter	1.0	100	85	115			
Zinc	110	ug/filter	5.0	110	85	115			
Method: **E200.8**									Analytical Run: ICPMS208-B_240508A
Lab ID: **QCS**	Initial Calibration Verification Standard								05/09/24 02:12
Copper	0.0512	mg/L	0.010	102	90	110			
Lead	0.0502	mg/L	0.0010	100	90	110			
Lab ID: **QCS**	Initial Calibration Verification Standard								05/09/24 22:00
Copper	0.0513	mg/L	0.010	103	90	110			
Lead	0.0499	mg/L	0.0010	100	90	110			
Lab ID: **CCV**	Continuing Calibration Verification Standard								05/10/24 04:52
Copper	0.0500	mg/L	0.010	100	90	110			
Lead	0.0490	mg/L	0.0010	98	90	110			
Lab ID: **CCV**	Continuing Calibration Verification Standard								05/10/24 06:05
Copper	0.0506	mg/L	0.010	101	90	110			
Lead	0.0483	mg/L	0.0010	97	90	110			
Method: **E200.8**									Batch: 189242
Lab ID: **MB-189242**	Method Blank				Run: ICPMS208-B_240508A				05/10/24 04:40
Copper	ND	ug/filter	0.2						
Lead	ND	ug/filter	0.04						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Bison Engineering

B24050157

Login completed by:	Chrystal N. Sheaff	Date Received:	5/1/2024
Reviewed by:	cindy	Received by:	AAG
Reviewed Date:	5/5/2024	Carrier name:	Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	3.2°C Blue Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None

(2)

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Bison Engineering, Inc.
Contact	Shelley Argott-Brown
Phone	(406) 442-5768
Mailing Address	3143 E Lyndale Avenue
City, State, Zip	Helena MT, 59601
Email	sbrown-argott@bison-eng.com
Receive Invoice	☐Hard Copy ■Email
Receive Report	☐Hard Copy ☐Email
Purchase Order	MTR223018
Quote	
Bottle Order	

Report Information (if different than Account Information)

Company/Name	Bison Engineering, Inc.
Contact	Don Milmine
Phone	(406) 208-4833
Mailing Address	2751 Enterprise Avenue Suite 2
City, State, Zip	Billings, MT 59102
Email	dmilmine@bison-eng.com
Receive Report	☐Hard Copy ■Email

Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Analyze per history

Project Information

Project Name, PWSID, Permit, etc.	Momtana Resources/Greely School PW
Sampler Name	Sampler Phone
Sample Origin State	Montana
EPA/State Compliance	■ Yes ☐ No

URANIUM MINING CLIENTS MUST indicate sample type.
☐ NOT Source or Byproduct Material
☐ Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Arsenic	Cadmium	Copper	Lead	Manganese	Molybdenum	Zinc			See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 Particulate filter C1733451TSP Pine St	3/7/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					B24050157
2 Particulate filter C1733452 TSP Walnut St	3/7/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
3 Particulate filter C1733453 TSP Pine St	3/14/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
4 Particulate filter C1733454 Lab Blank	2/27/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
5 Particulate filter C1733455 TSP Walnut St	3/14/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
6 Particulate filter C1733476 TSP Pine St	3/19/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
7 Particulate filter C1733477TSP Walnut St	3/19/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
8 Particulate filter C1733478 TSP Pine St	3/27/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
9 Particulate filter C1733479 TSP Field Blank	3/20/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					
10 Particulate filter C1733480 TSP Pine St	3/27/24	24 hr Composite	1	on Teflon filter	x	x	x	x	x	x	x					

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Don Milmine	5/1/24 1525	Don V. Milmine			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Christ A.	1 May 24 1525	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)
								1825	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-10/18 v.3

APPENDIX C: LABORATORY ANALYSIS REPORTS - DUSTFALL

ANALYTICAL SUMMARY REPORT

February 28, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: H24020176 Quote ID: H16951

Project Name: Montana Resources Dustfall

Energy Laboratories Inc Helena MT received the following 4 samples for Bison Engineering on 2/7/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24020176-001	DF-GREELEY-006	02/01/24 13:00	02/07/24	Solid	Metals by ICP/ICPMS, Total Client Provided Field Parameters Total Metals Digestion by SW3050B Soil Preparation USDA1
H24020176-002	DF-PINE-006	02/01/24 12:45	02/07/24	Soil	Metals by ICP/ICPMS, Total Client Provided Field Parameters Total Metals Digestion by SW3050B
H24020176-003	DF-WALNUT-006	02/01/24 13:15	02/07/24	Soil	Same As Above
H24020176-004	DF-FB-006	02/01/24 13:20	02/07/24	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020176-001
Client Sample ID: DF-GREELEY-006

Report Date: 02/28/24
Collection Date: 02/01/24 13:00
DateReceived: 02/07/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	29	mg/kg		10		SW6020	02/24/24 17:58 / dck
Cadmium	7	mg/kg		1		SW6020	02/24/24 17:58 / dck
Copper	4260	mg/kg		10		SW6020	02/24/24 17:58 / dck
Lead	152	mg/kg		8		SW6020	02/24/24 17:58 / dck
Manganese	562	mg/kg		10		SW6020	02/24/24 17:58 / dck
Molybdenum	4280	mg/kg		5		SW6020	02/24/24 17:58 / dck
Zinc	762	mg/kg		40		SW6020	02/24/24 17:58 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	228	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb
Dry Wt, g	0.0243	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020176-002
Client Sample ID: DF-PINE-006

Report Date: 02/28/24
Collection Date: 02/01/24 12:45
DateReceived: 02/07/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	15	mg/kg		5		SW6020	02/24/24 18:02 / dck
Cadmium	2	mg/kg		1		SW6020	02/24/24 18:02 / dck
Copper	3030	mg/kg		5		SW6020	02/24/24 18:02 / dck
Lead	73	mg/kg		4		SW6020	02/24/24 18:02 / dck
Manganese	341	mg/kg		4		SW6020	02/24/24 18:02 / dck
Molybdenum	1410	mg/kg		2		SW6020	02/24/24 18:02 / dck
Zinc	474	mg/kg		20		SW6020	02/24/24 18:02 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	281	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb
Dry Wt, g	0.0566	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020176-003
Client Sample ID: DF-WALNUT-006

Report Date: 02/28/24
Collection Date: 02/01/24 13:15
DateReceived: 02/07/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	11	mg/kg		6		SW6020	02/24/24 18:06 / dck
Cadmium	2	mg/kg		1		SW6020	02/24/24 18:06 / dck
Copper	2670	mg/kg		5		SW6020	02/24/24 18:06 / dck
Lead	73	mg/kg		4		SW6020	02/24/24 18:06 / dck
Manganese	447	mg/kg		5		SW6020	02/24/24 18:06 / dck
Molybdenum	1320	mg/kg		2		SW6020	02/24/24 18:06 / dck
Zinc	506	mg/kg		20		SW6020	02/24/24 18:06 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	250	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb
Dry Wt, g	0.0499	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020176-004
Client Sample ID: DF-FB-006

Report Date: 02/28/24
Collection Date: 02/01/24 13:20
DateReceived: 02/07/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	ND	mg/kg	D	20		SW6020	02/28/24 13:38 / dck
Cadmium	ND	mg/kg	D	3		SW6020	02/28/24 13:38 / dck
Copper	87	mg/kg		80		SW6020	02/28/24 13:38 / dck
Lead	ND	mg/kg	D	50		SW6020	02/28/24 13:38 / dck
Manganese	590	mg/kg		100		SW6020	02/28/24 13:38 / dck
Molybdenum	ND	mg/kg	D	20		SW6020	02/28/24 13:38 / dck
Zinc	ND	mg/kg	D	300		SW6020	02/28/24 13:38 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	169	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb
Dry Wt, g	0.0038	g	*	0.00010	0.0001	FIELD	02/08/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020176 **Report Date:** 02/28/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS205-H_240228B	
Lab ID: ICV	7	Initial Calibration Verification Standard							02/28/24 12:20	
Arsenic		0.0575	mg/L	0.0010	96	90	110			
Cadmium		0.0292	mg/L	0.0010	97	90	110			
Copper		0.0585	mg/L	0.0010	98	90	110			
Lead		0.0566	mg/L	0.0010	94	90	110			
Manganese		0.289	mg/L	0.0010	96	90	110			
Molybdenum		0.0574	mg/L	0.0010	96	90	110			
Zinc		0.0574	mg/L	0.0013	96	90	110			
Lab ID: ICSA	7	Interference Check Sample A							02/28/24 12:29	
Arsenic		0.0000860	mg/L	0.0010						
Cadmium		0.000124	mg/L	0.0010						
Copper		0.000184	mg/L	0.0010						
Lead		0.0000308	mg/L	0.0010						
Manganese		0.000368	mg/L	0.0010		0	0			
Molybdenum		0.890	mg/L	0.0010	111	70	130			
Zinc		0.000775	mg/L	0.0013						
Lab ID: ICSAB	7	Interference Check Sample AB							02/28/24 12:35	
Arsenic		0.0104	mg/L	0.0010	104	70	130			
Cadmium		0.0103	mg/L	0.0010	103	70	130			
Copper		0.0201	mg/L	0.0010	101	70	130			
Lead		0.0000194	mg/L	0.0010		0	0			
Manganese		0.0206	mg/L	0.0010	103	70	130			
Molybdenum		0.883	mg/L	0.0010	110	70	130			
Zinc		0.0106	mg/L	0.0013	105	70	130			
Lab ID: CCV	7	Continuing Calibration Verification Standard							02/28/24 13:26	
Arsenic		0.0496	mg/L	0.0010	99	90	110			
Cadmium		0.0492	mg/L	0.0010	98	90	110			
Copper		0.0500	mg/L	0.0010	100	90	110			
Lead		0.0483	mg/L	0.0010	97	90	110			
Manganese		0.0490	mg/L	0.0010	98	90	110			
Molybdenum		0.0502	mg/L	0.0010	100	90	110			
Zinc		0.0496	mg/L	0.0013	99	90	110			
Method: SW6020									Batch: 70376	
Lab ID: MB-70376	7	Method Blank				Run: ICPMS205-H_240228B			02/28/24 13:35	
Arsenic		ND	mg/kg	0.06						
Cadmium		ND	mg/kg	0.01						
Copper		ND	mg/kg	0.3						
Lead		ND	mg/kg	0.2						
Manganese		ND	mg/kg	0.4						
Molybdenum		ND	mg/kg	0.09						
Zinc		ND	mg/kg	1						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020176 **Report Date:** 02/28/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-H_240224A	
Lab ID: ICV	7	Initial Calibration Verification Standard							02/24/24 15:29	
Arsenic		0.0596	mg/L	0.0010	99	90	110			
Cadmium		0.0298	mg/L	0.0010	99	90	110			
Copper		0.0605	mg/L	0.0010	101	90	110			
Lead		0.0550	mg/L	0.0010	92	90	110			
Manganese		0.298	mg/L	0.0010	99	90	110			
Molybdenum		0.0576	mg/L	0.0010	96	90	110			
Zinc		0.0598	mg/L	0.0010	100	90	110			
Lab ID: ICSA	7	Interference Check Sample A							02/24/24 15:40	
Arsenic		-7.59E-06	mg/L	0.0010						
Cadmium		0.000203	mg/L	0.0010						
Copper		0.0000270	mg/L	0.0010						
Lead		0.0000213	mg/L	0.0010						
Manganese		0.000325	mg/L	0.0010		0	0			
Molybdenum		0.905	mg/L	0.0010	113	70	130			
Zinc		-0.00160	mg/L	0.0010						
Lab ID: ICSAB	7	Interference Check Sample AB							02/24/24 15:47	
Arsenic		0.0113	mg/L	0.0010	113	70	130			
Cadmium		0.0115	mg/L	0.0010	115	70	130			
Copper		0.0223	mg/L	0.0010	111	70	130			
Lead		0.0000298	mg/L	0.0010		0	0			
Manganese		0.0226	mg/L	0.0010	113	70	130			
Molybdenum		0.950	mg/L	0.0010	119	70	130			
Zinc		0.0105	mg/L	0.0010	105	70	130			
Lab ID: CCV	7	Continuing Calibration Verification Standard							02/24/24 17:37	
Arsenic		0.0516	mg/L	0.0010	103	90	110			
Cadmium		0.0525	mg/L	0.0010	105	90	110			
Copper		0.0522	mg/L	0.0010	104	90	110			
Lead		0.0477	mg/L	0.0010	95	90	110			
Manganese		0.0514	mg/L	0.0010	103	90	110			
Molybdenum		0.0525	mg/L	0.0010	105	90	110			
Zinc		0.0509	mg/L	0.0010	102	90	110			
Method: SW6020									Batch: 70376	
Lab ID: MB-70376	7	Method Blank				Run: ICPMS206-H_240224A			02/24/24 17:44	
Arsenic		ND	mg/kg	0.3						
Cadmium		ND	mg/kg	0.01						
Copper		ND	mg/kg	0.3						
Lead		ND	mg/kg	0.2						
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.1						
Zinc		ND	mg/kg	0.9						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020176 **Report Date:** 02/28/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 70376
Lab ID: LCS-70376	7	Laboratory Control Sample				Run: ICPMS206-H_240224A			02/24/24 17:48	
Arsenic		153	mg/kg	1.0	78	66.4	104			
Cadmium		97.4	mg/kg	1.0	98	79.2	121			
Copper		115	mg/kg	1.0	84	73.9	113			
Lead		97.0	mg/kg	1.0	92	71.6	128			
Manganese		377	mg/kg	1.0	87	74.4	123			
Molybdenum		112	mg/kg	1.0	88	61.3	124			
Zinc		235	mg/kg	1.9	102	83.1	125			
Lab ID: LFB-70376	7	Laboratory Fortified Blank				Run: ICPMS206-H_240224A			02/24/24 17:51	
Arsenic		23.9	mg/kg	1.0	96	80	120			
Cadmium		13.4	mg/kg	1.0	108	80	120			
Copper		24.3	mg/kg	1.0	97	80	120			
Lead		24.8	mg/kg	1.0	99	80	120			
Manganese		114	mg/kg	1.0	91	80	120			
Molybdenum		24.7	mg/kg	1.0	99	80	120			
Zinc		24.5	mg/kg	1.0	98	80	120			
Lab ID: LFBD-70376	7	Laboratory Fortified Blank Duplicate				Run: ICPMS206-H_240224A			02/24/24 17:55	
Arsenic		24.0	mg/kg	1.0	96	80	120			
Cadmium		13.2	mg/kg	1.0	105	80	120			
Copper		24.5	mg/kg	1.0	98	80	120			
Lead		25.7	mg/kg	1.0	103	80	120			
Manganese		118	mg/kg	1.0	95	80	120			
Molybdenum		24.1	mg/kg	1.0	96	80	120			
Zinc		25.1	mg/kg	1.0	100	80	120			
Lab ID: H24020176-001ADIL	7	Serial Dilution				Run: ICPMS206-H_240224A			02/24/24 18:13	
Arsenic		ND	mg/kg	62		0	0		10	
Cadmium		3.90	mg/kg	3.0		0	0		10	N
Copper		4420	mg/kg	53		0	0	3.6	10	
Lead		131	mg/kg	41		0	0		10	N
Manganese		546	mg/kg	51		0	0	3.0	10	
Molybdenum		3890	mg/kg	23		0	0	9.5	10	
Zinc		784	mg/kg	190		0	0		10	N
Lab ID: H24020176-001AMS	7	Sample Matrix Spike				Run: ICPMS206-H_240224A			02/24/24 18:16	
Arsenic		417	mg/kg	12	94	75	125			
Cadmium		443	mg/kg	1.0	106	75	125			
Copper		4530	mg/kg	11		75	125			A
Lead		523	mg/kg	8.2	90	75	125			
Manganese		894	mg/kg	10	81	75	125			
Molybdenum		4610	mg/kg	4.5		75	125			A
Zinc		1150	mg/kg	39	94	75	125			
Lab ID: H24020176-001AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS206-H_240224A			02/24/24 18:20	
Arsenic		423	mg/kg	12	96	75	125	1.4	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

N - Analyte concentration was not sufficiently high to calculate a Relative Percent Difference (RPD) for the serial dilution test

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020176 **Report Date:** 02/28/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 70376
Lab ID: H24020176-001AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS206-H_240224A			02/24/24 18:20	
Cadmium		454	mg/kg	1.0	109	75	125	2.4	20	
Copper		4660	mg/kg	11		75	125	3.0	20	A
Lead		532	mg/kg	8.2	93	75	125	1.7	20	
Manganese		886	mg/kg	10	79	75	125	0.8	20	
Molybdenum		4500	mg/kg	4.5		75	125	2.5	20	A
Zinc		1160	mg/kg	39	98	75	125	1.4	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

Work Order Receipt Checklist

Bison Engineering

H24020176

Login completed by:	Wanda Johnson	Date Received:	2/7/2024
Reviewed by:	rsponholz	Received by:	RRS
Reviewed Date:	2/8/2024	Carrier name:	Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	4.7°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

No date or time on sample containers, used information from the COC. wjj 2/7/2024

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering Inc.
Contact	Steve Heck
Phone	406-498-4199
Mailing Address	3143 E Lyndale Ave
City, State, Zip	Helena, MT 59601
Email	sheck@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	H16951
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☐Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

These are dustfall samples.
Collected from 01-02-2024 to 02-01-2024.

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources Dustfall
Sampler Name	Steve Heck
Sampler Phone	406-498-4199
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☐ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested: Gravimetric - total mass	Analysis Requested: As, Cd, Cu, Pb, Mn, Mo, Zn	Analysis Requested: See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	DF-GREELEY-006	02/01/2024	1:00 pm	1	A	✓	✓			H24020176
2	DF-PINE-006	02/01/2024	12:45 pm	1	A	✓	✓			
3	DF-WALNUT-006	02/01/2024	1:15 pm	1	A	✓	✓			
4	DF-FB-006	02/01/2024	1:20 pm	1	A	✓	✓			
5										
6										
7										
8										
9										

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Steve Heck	2-7-1400	S. Heck			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				N SPONHOLZ	020724 1400	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number *(cash/check only)*
HAND	Y	Y (N) C B	Y N	4.7 °C	Y (N)	Y (N)	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-01/21 v.4

ANALYTICAL SUMMARY REPORT

March 18, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: H24020699 Quote ID: H16951

Project Name: Montana Resources Dustfall

Energy Laboratories Inc Helena MT received the following 4 samples for Bison Engineering on 2/29/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24020699-001	DF-GREELEY-007	02/29/24 12:17	02/29/24	Solid	Metals by ICP/ICPMS, Total Client Provided Field Parameters Total Metals Digestion by SW3050B Soil Preparation USDA1
H24020699-002	DF-PINE-007	02/29/24 12:45	02/29/24	Solid	Metals by ICP/ICPMS, Total Client Provided Field Parameters Total Metals Digestion by SW3050B
H24020699-003	DF-WALNUT-007	02/29/24 13:15	02/29/24	Solid	Same As Above
H24020699-004	DF-FB-007	02/29/24 13:18	02/29/24	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020699-001
Client Sample ID: DF-GREELEY-007

Report Date: 03/18/24
Collection Date: 02/29/24 12:17
DateReceived: 02/29/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	10	mg/kg		2		SW6020	03/12/24 18:15 / dck
Cadmium	2	mg/kg		1		SW6020	03/12/24 18:15 / dck
Copper	2120	mg/kg		6		SW6020	03/13/24 16:55 / dck
Lead	78	mg/kg		2		SW6020	03/12/24 18:15 / dck
Manganese	344	mg/kg		6		SW6020	03/13/24 16:55 / dck
Molybdenum	1390	mg/kg		1		SW6020	03/12/24 18:15 / dck
Zinc	382	mg/kg		20		SW6020	03/13/24 16:55 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	719	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb
Dry Wt, g	0.0411	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020699-002
Client Sample ID: DF-PINE-007

Report Date: 03/18/24
Collection Date: 02/29/24 12:45
DateReceived: 02/29/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	25	mg/kg		9		SW6020	03/13/24 16:59 / dck
Cadmium	3	mg/kg		1		SW6020	03/12/24 18:22 / dck
Copper	4150	mg/kg		7		SW6020	03/13/24 16:59 / dck
Lead	108	mg/kg		2		SW6020	03/12/24 18:22 / dck
Manganese	515	mg/kg		7		SW6020	03/13/24 16:59 / dck
Molybdenum	2740	mg/kg		3		SW6020	03/13/24 16:59 / dck
Zinc	675	mg/kg		30		SW6020	03/13/24 16:59 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	680	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb
Dry Wt, g	0.0349	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020699-003
Client Sample ID: DF-WALNUT-007

Report Date: 03/18/24
Collection Date: 02/29/24 13:15
DateReceived: 02/29/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	15	mg/kg		5		SW6020	03/13/24 17:03 / dck
Cadmium	2	mg/kg		1		SW6020	03/12/24 18:25 / dck
Copper	2440	mg/kg		4		SW6020	03/13/24 17:03 / dck
Lead	87	mg/kg		1		SW6020	03/12/24 18:25 / dck
Manganese	400	mg/kg		4		SW6020	03/13/24 17:03 / dck
Molybdenum	722	mg/kg		1		SW6020	03/12/24 18:25 / dck
Zinc	432	mg/kg		10		SW6020	03/13/24 17:03 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	721	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb
Dry Wt, g	0.0629	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24020699-004
Client Sample ID: DF-FB-007

Report Date: 03/18/24
Collection Date: 02/29/24 13:18
DateReceived: 02/29/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL - EPA SW846							
Arsenic	ND	mg/kg		1		SW6020	03/12/24 18:29 / dck
Cadmium	ND	mg/kg		1		SW6020	03/12/24 18:29 / dck
Copper	0.3	mg/kg	J	1		SW6020	03/12/24 18:29 / dck
Lead	ND	mg/kg		1		SW6020	03/12/24 18:29 / dck
Manganese	ND	mg/kg		1		SW6020	03/12/24 18:29 / dck
Molybdenum	ND	mg/kg		1		SW6020	03/12/24 18:29 / dck
Zinc	ND	mg/kg		1		SW6020	03/12/24 18:29 / dck
CLIENT PROVIDED FIELD PARAMETERS							
Wet Wt, g	205	g	*	0.00010	0.0001	FIELD	03/18/24 00:00 / kjb
Dry Wt, g	ND	g		0.00010	0.0001	FIELD	03/18/24 00:00 / kjb

Report Definitions:

RL - Analyte Reporting Limit
QCL - Quality Control Limit
* - The result exceeds the Maximum Contaminant Level (MCL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020699 **Report Date:** 03/18/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-H_240312A	
Lab ID: ICV	7	Initial Calibration Verification Standard							03/12/24 12:55	
Arsenic		0.0611	mg/L	0.0010	102	90	110			
Cadmium		0.0315	mg/L	0.0010	105	90	110			
Copper		0.0626	mg/L	0.0010	104	90	110			
Lead		0.0590	mg/L	0.0010	98	90	110			
Manganese		0.311	mg/L	0.0010	104	90	110			
Molybdenum		0.0592	mg/L	0.0010	99	90	110			
Zinc		0.0635	mg/L	0.0010	106	90	110			
Lab ID: ICSA	7	Interference Check Sample A							03/12/24 13:05	
Arsenic		-0.0000381	mg/L	0.0010						
Cadmium		0.000222	mg/L	0.0010						
Copper		0.000162	mg/L	0.0010						
Lead		0.0000253	mg/L	0.0010						
Manganese		0.000268	mg/L	0.0010		0	0			
Molybdenum		0.847	mg/L	0.0010	106	70	130			
Zinc		0.000283	mg/L	0.0010						
Lab ID: ICSAB	7	Interference Check Sample AB							03/12/24 13:12	
Arsenic		0.00980	mg/L	0.0010	98	70	130			
Cadmium		0.0103	mg/L	0.0010	103	70	130			
Copper		0.0194	mg/L	0.0010	97	70	130			
Lead		0.0000212	mg/L	0.0010		0	0			
Manganese		0.0198	mg/L	0.0010	99	70	130			
Molybdenum		0.777	mg/L	0.0010	97	70	130			
Zinc		0.0114	mg/L	0.0010	114	70	130			
Lab ID: CCV	7	Continuing Calibration Verification Standard							03/12/24 18:04	
Arsenic		0.0510	mg/L	0.0010	102	90	110			
Cadmium		0.0496	mg/L	0.0010	99	90	110			
Copper		0.0503	mg/L	0.0010	101	90	110			
Lead		0.0499	mg/L	0.0010	100	90	110			
Manganese		0.0511	mg/L	0.0010	102	90	110			
Molybdenum		0.0483	mg/L	0.0010	97	90	110			
Zinc		0.0512	mg/L	0.0010	102	90	110			
Method: SW6020									Batch: 70744	
Lab ID: MB-70744	7	Method Blank				Run: ICPMS206-H_240312A			03/12/24 18:11	
Arsenic		ND	mg/kg	0.1						
Cadmium		ND	mg/kg	0.006						
Copper		0.1	mg/kg	0.1						
Lead		ND	mg/kg	0.08						
Manganese		ND	mg/kg	0.1						
Molybdenum		ND	mg/kg	0.04						
Zinc		ND	mg/kg	0.4						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020699 **Report Date:** 03/18/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 70744
Lab ID: H24020699-001ADIL	3	Serial Dilution				Run: ICPMS206-H_240312A			03/12/24 18:18	
Cadmium		1.88	mg/kg	1.0		0	0		10	N
Lead		81.2	mg/kg	9.7		0	0		10	N
Molybdenum		1410	mg/kg	5.3		0	0	0.9	10	
Lab ID: LCS-70744	7	Laboratory Control Sample				Run: ICPMS206-H_240312A			03/12/24 18:36	
Arsenic		137	mg/kg	1.0	70	66.4	104			
Cadmium		92.6	mg/kg	1.0	94	79.2	121			
Copper		105	mg/kg	1.0	77	73.9	113			
Lead		93.0	mg/kg	1.0	89	71.6	128			
Manganese		347	mg/kg	1.0	80	74.4	123			
Molybdenum		107	mg/kg	1.0	85	61.3	124			
Zinc		206	mg/kg	1.0	89	83.1	125			
Lab ID: LFB-70744	7	Laboratory Fortified Blank				Run: ICPMS206-H_240312A			03/12/24 18:39	
Arsenic		20.9	mg/kg	1.0	84	80	120			
Cadmium		13.0	mg/kg	1.0	104	80	120			
Copper		20.9	mg/kg	1.0	84	80	120			
Lead		25.5	mg/kg	1.0	102	80	120			
Manganese		103	mg/kg	1.0	82	80	120			
Molybdenum		24.8	mg/kg	1.0	99	80	120			
Zinc		20.9	mg/kg	1.0	84	80	120			
Lab ID: LFBD-70744	7	Laboratory Fortified Blank Duplicate				Run: ICPMS206-H_240312A			03/12/24 18:42	
Arsenic		20.8	mg/kg	1.0	83	80	120	0.7	20	
Cadmium		12.8	mg/kg	1.0	102	80	120	1.7	20	
Copper		20.8	mg/kg	1.0	83	80	120	0.5	20	
Lead		25.0	mg/kg	1.0	100	80	120	2.0	20	
Manganese		100	mg/kg	1.0	80	80	120	2.0	20	
Molybdenum		24.5	mg/kg	1.0	98	80	120	1.2	20	
Zinc		20.9	mg/kg	1.0	84	80	120	0.1	20	
Lab ID: H24020699-001AMS	7	Sample Matrix Spike				Run: ICPMS206-H_240312A			03/12/24 18:45	
Arsenic		91.8	mg/kg	2.9	84	75	125			
Cadmium		95.3	mg/kg	1.0	96	75	125			
Copper		1950	mg/kg	2.5		75	125			A
Lead		172	mg/kg	1.9	96	75	125			
Manganese		393	mg/kg	2.4	100	75	125			
Molybdenum		1450	mg/kg	1.1		75	125			A
Zinc		418	mg/kg	9.2	95	75	125			
Lab ID: H24020699-001AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS206-H_240312A			03/12/24 18:49	
Arsenic		92.7	mg/kg	2.9	85	75	125	0.9	20	
Cadmium		97.9	mg/kg	1.0	99	75	125	2.7	20	
Copper		1980	mg/kg	2.5		75	125	1.5	20	A
Lead		175	mg/kg	1.9	99	75	125	1.6	20	
Manganese		394	mg/kg	2.4	101	75	125	0.2	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

N - Analyte concentration was not sufficiently high to calculate a Relative Percent Difference (RPD) for the serial dilution test

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020699 **Report Date:** 03/18/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 70744
Lab ID: H24020699-001AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS206-H_240312A			03/12/24 18:49	
Molybdenum		1560	mg/kg	1.1		75	125	7.3	20	A
Zinc		425	mg/kg	9.2	102	75	125	1.8	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24020699 **Report Date:** 03/18/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-H_240313A	
Lab ID: ICV	5	Initial Calibration Verification Standard							03/13/24 13:45	
Arsenic		0.0613	mg/L	0.0010	102	90	110			
Copper		0.0630	mg/L	0.0010	105	90	110			
Manganese		0.308	mg/L	0.0010	103	90	110			
Molybdenum		0.0575	mg/L	0.0010	96	90	110			
Zinc		0.0630	mg/L	0.0010	105	90	110			
Lab ID: ICSA	5	Interference Check Sample A							03/13/24 13:57	
Arsenic		-0.0000439	mg/L	0.0010						
Copper		0.000135	mg/L	0.0010						
Manganese		0.000284	mg/L	0.0010		0	0			
Molybdenum		0.872	mg/L	0.0010	109	70	130			
Zinc		0.000352	mg/L	0.0010						
Lab ID: ICSAB	5	Interference Check Sample AB							03/13/24 14:04	
Arsenic		0.0103	mg/L	0.0010	103	70	130			
Copper		0.0200	mg/L	0.0010	100	70	130			
Manganese		0.0207	mg/L	0.0010	103	70	130			
Molybdenum		0.831	mg/L	0.0010	104	70	130			
Zinc		0.0118	mg/L	0.0010	118	70	130			
Lab ID: CCV	5	Continuing Calibration Verification Standard							03/13/24 16:44	
Arsenic		0.0511	mg/L	0.0010	102	90	110			
Copper		0.0501	mg/L	0.0010	100	90	110			
Manganese		0.0504	mg/L	0.0010	101	90	110			
Molybdenum		0.0486	mg/L	0.0010	97	90	110			
Zinc		0.0513	mg/L	0.0010	103	90	110			
Method: SW6020									Batch: 70744	
Lab ID: MB-70744	7	Method Blank				Run: ICPMS206-H_240313A			03/13/24 16:51	
Arsenic		ND	mg/kg	0.3						
Cadmium		ND	mg/kg	0.01						
Copper		ND	mg/kg	0.3						
Lead		ND	mg/kg	0.2						
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.1						
Zinc		ND	mg/kg	0.9						
Lab ID: H24020699-003ADIL	7	Serial Dilution				Run: ICPMS206-H_240313A			03/13/24 17:06	
Arsenic		ND	mg/kg	24		0	0		10	
Cadmium		1.87	mg/kg	1.2		0	0		10	N
Copper		2560	mg/kg	20		0	0	4.7	10	
Lead		94.4	mg/kg	16		0	0		10	N
Manganese		416	mg/kg	20		0	0	3.9	10	
Molybdenum		785	mg/kg	8.7		0	0	2.0	10	
Zinc		473	mg/kg	75		0	0		10	N

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

N - Analyte concentration was not sufficiently high to calculate a Relative Percent Difference (RPD) for the serial dilution test

Work Order Receipt Checklist

Bison Engineering

H24020699

Login completed by:	Wanda Johnson	Date Received:	2/29/2024
Reviewed by:	tjones	Received by:	RAT
Reviewed Date:	2/29/2024	Carrier name:	Hand Deliver

Shipping container/cooler in good condition?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	18.8°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

No collection date or time on bottles. Used date and time from COC. wjj 2/29/2024

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering Inc.
Contact	Steve Heck
Phone	406-498-4199
Mailing Address	3143 E Lyndale Ave
City, State, Zip	Helena, MT 59601
Email	sheck@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	H16951
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☐Email
Special Report/Formats:	☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

These are dustfall samples.
Collected from 02-01-2024 to 02-29-2024.

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources Dustfall
Sampler Name	Steve Heck
Sampler Phone	406-498-4199
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☐ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested: Gravimetric - total mass	Analysis Requested: As, Cd, Cu, Pb, Mn, Mo, Zn	See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	DF-GREELEY-007	02/29/2024	1217	1	A	✓	✓			H240206-08
2	DF-PINE-007	02/29/2024	1245	1	A	✓	✓			H240206-09
3	DF-WALNUT-007	02/29/2024	1315	1	A	✓	✓			
4	DF-FB-007	02/29/2024	1318	1	A	✓	✓			
5										
6										
7										
8										
9										

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Steven R Heck	2-29 1330	S Heck	Daniel A. Bitz	2-29-24 13:30	Daniel A. Bitz
	Daniel A. Bitz	2-29-24 15:50	Daniel A. Bitz	Received by Laboratory (print) Rebecca Tooke	Date/Time 2-29-24 1550	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number *(cash/check only)*
Fedex	NA	Y (N) C B	Y N	18.8 °C	Y (N)	Y (N)	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ANALYTICAL SUMMARY REPORT

April 19, 2024

Bison Engineering
3143 E Lyndale Ave
Helena, MT 59601-6401

Work Order: H24040198 Quote ID: H16951

Project Name: Montana Resources Dustfall

Energy Laboratories Inc Helena MT received the following 4 samples for Bison Engineering on 4/4/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24040198-001	DF-GREELEY-008	04/01/24 9:45	04/04/24	Solid	Metals by ICP/ICPMS, Total Total Metals Digestion by SW3050B Soil Parameters
H24040198-002	DF-PINE-008	04/01/24 9:56	04/04/24	Solid	Same As Above
H24040198-003	DF-WALNUT-008	04/01/24 10:17	04/04/24	Solid	Same As Above
H24040198-004	DF-FB-008	04/01/24 10:20	04/04/24	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24040198-001
Client Sample ID: DF-GREELEY-008

Report Date: 04/19/24
Collection Date: 04/01/24 09:45
DateReceived: 04/04/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Dry Wt, g	0.086	g				USDA1	04/16/24 09:00 / kjb
Wet Wt, g	491	g				USDA1	04/16/24 09:00 / kjb
METALS, TOTAL - EPA SW846							
Arsenic	12	mg/kg		4		SW6020	04/18/24 16:18 / dck
Cadmium	1	mg/kg		1		SW6020	04/18/24 16:18 / dck
Copper	1620	mg/kg		3		SW6020	04/18/24 16:18 / dck
Lead	62	mg/kg		2		SW6020	04/18/24 16:18 / dck
Manganese	325	mg/kg		3		SW6020	04/18/24 16:18 / dck
Molybdenum	1070	mg/kg		1		SW6020	04/18/24 16:18 / dck
Zinc	367	mg/kg		10		SW6020	04/18/24 16:18 / dck

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24040198-002
Client Sample ID: DF-PINE-008

Report Date: 04/19/24
Collection Date: 04/01/24 09:56
DateReceived: 04/04/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Dry Wt, g	0.080	g				USDA1	04/16/24 09:00 / kjb
Wet Wt, g	616	g				USDA1	04/16/24 09:00 / kjb
METALS, TOTAL - EPA SW846							
Arsenic	25	mg/kg		4		SW6020	04/18/24 16:25 / dck
Cadmium	3	mg/kg		1		SW6020	04/18/24 16:25 / dck
Copper	3050	mg/kg		3		SW6020	04/18/24 16:25 / dck
Lead	100	mg/kg		2		SW6020	04/18/24 16:25 / dck
Manganese	507	mg/kg		3		SW6020	04/18/24 16:25 / dck
Molybdenum	2100	mg/kg		1		SW6020	04/18/24 16:25 / dck
Zinc	610	mg/kg		10		SW6020	04/18/24 16:25 / dck

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24040198-003
Client Sample ID: DF-WALNUT-008

Report Date: 04/19/24
Collection Date: 04/01/24 10:17
DateReceived: 04/04/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Dry Wt, g	0.10	g				USDA1	04/16/24 09:00 / kjb
Wet Wt, g	603	g				USDA1	04/16/24 09:00 / kjb
METALS, TOTAL - EPA SW846							
Arsenic	15	mg/kg		3		SW6020	04/18/24 16:28 / dck
Cadmium	2	mg/kg		1		SW6020	04/18/24 16:28 / dck
Copper	1890	mg/kg		2		SW6020	04/18/24 16:28 / dck
Lead	74	mg/kg		2		SW6020	04/18/24 16:28 / dck
Manganese	440	mg/kg		2		SW6020	04/18/24 16:28 / dck
Molybdenum	714	mg/kg		1		SW6020	04/18/24 16:28 / dck
Zinc	447	mg/kg		9		SW6020	04/18/24 16:28 / dck

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Bison Engineering
Project: Montana Resources Dustfall
Lab ID: H24040198-004
Client Sample ID: DF-FB-008

Report Date: 04/19/24
Collection Date: 04/01/24 10:20
DateReceived: 04/04/24
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Dry Wt, g	0.00030	g				USDA1	04/16/24 09:00 / kjb
Wet Wt, g	157	g				USDA1	04/16/24 09:00 / kjb
METALS, TOTAL - EPA SW846							
Arsenic	ND	mg/kg		1		SW6020	04/18/24 16:31 / dck
Cadmium	ND	mg/kg		1		SW6020	04/18/24 16:31 / dck
Copper	0.5	mg/kg	J	1		SW6020	04/18/24 16:31 / dck
Lead	0.4	mg/kg	J	1		SW6020	04/18/24 16:31 / dck
Manganese	0.4	mg/kg	J	1		SW6020	04/18/24 16:31 / dck
Molybdenum	ND	mg/kg		1		SW6020	04/18/24 16:31 / dck
Zinc	2	mg/kg		1		SW6020	04/18/24 16:31 / dck

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24040198 **Report Date:** 04/19/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Analytical Run: ICPMS206-H_240418A	
Lab ID: ICV	7	Initial Calibration Verification Standard								04/18/24 14:18
Arsenic		0.0597	mg/L	0.0010	100	90	110			
Cadmium		0.0299	mg/L	0.0010	100	90	110			
Copper		0.0609	mg/L	0.0010	101	90	110			
Lead		0.0574	mg/L	0.0010	96	90	110			
Manganese		0.309	mg/L	0.0010	103	90	110			
Molybdenum		0.0574	mg/L	0.0010	96	90	110			
Zinc		0.0617	mg/L	0.0010	103	90	110			
Lab ID: ICSA	7	Interference Check Sample A								04/18/24 14:28
Arsenic		-0.0000232	mg/L	0.0010						
Cadmium		0.000149	mg/L	0.0010						
Copper		0.0000262	mg/L	0.0010						
Lead		0.000423	mg/L	0.0010						
Manganese		0.000262	mg/L	0.0010		0	0			
Molybdenum		0.801	mg/L	0.0010	100	70	130			
Zinc		0.000220	mg/L	0.0010						
Lab ID: ICSAB	7	Interference Check Sample AB								04/18/24 14:34
Arsenic		0.00965	mg/L	0.0010	96	70	130			
Cadmium		0.00969	mg/L	0.0010	97	70	130			
Copper		0.0186	mg/L	0.0010	93	70	130			
Lead		0.0000582	mg/L	0.0010		0	0			
Manganese		0.0193	mg/L	0.0010	97	70	130			
Molybdenum		0.800	mg/L	0.0010	100	70	130			
Zinc		0.0108	mg/L	0.0010	108	70	130			
Lab ID: CCV	7	Continuing Calibration Verification Standard								04/18/24 16:08
Arsenic		0.0492	mg/L	0.0010	98	90	110			
Cadmium		0.0525	mg/L	0.0010	105	90	110			
Copper		0.0507	mg/L	0.0010	101	90	110			
Lead		0.0482	mg/L	0.0010	96	90	110			
Manganese		0.0505	mg/L	0.0010	101	90	110			
Molybdenum		0.0528	mg/L	0.0010	106	90	110			
Zinc		0.0504	mg/L	0.0010	101	90	110			
Method: SW6020										Batch: 71358
Lab ID: MB-71358	7	Method Blank				Run: ICPMS206-H_240418A				04/18/24 16:15
Arsenic		ND	mg/kg	0.3						
Cadmium		ND	mg/kg	0.01						
Copper		ND	mg/kg	0.3						
Lead		ND	mg/kg	0.2						
Manganese		ND	mg/kg	0.2						
Molybdenum		ND	mg/kg	0.1						
Zinc		ND	mg/kg	0.9						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24040198 **Report Date:** 04/19/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020									Batch: 71358	
Lab ID: H24040198-001ADIL	7	Serial Dilution				Run: ICPMS206-H_240418A			04/18/24 16:21	
Arsenic		ND	mg/kg	18		0	0		10	
Cadmium		1.53	mg/kg	1.0		0	0		10	N
Copper		1700	mg/kg	15		0	0	4.9	10	
Lead		64.7	mg/kg	12		0	0		10	N
Manganese		344	mg/kg	14		0	0	6.0	10	
Molybdenum		1050	mg/kg	6.4		0	0	2.0	10	
Zinc		408	mg/kg	55		0	0		10	N
Lab ID: LCS-71358	7	Laboratory Control Sample				Run: ICPMS206-H_240418A			04/18/24 16:35	
Arsenic		150	mg/kg	1.0	76	66.4	104			
Cadmium		99.7	mg/kg	1.0	101	79.2	121			
Copper		115	mg/kg	1.0	84	73.9	113			
Lead		100	mg/kg	1.0	95	71.6	128			
Manganese		393	mg/kg	1.0	91	74.4	123			
Molybdenum		117	mg/kg	1.0	92	61.3	124			
Zinc		224	mg/kg	1.9	97	83.1	125			
Lab ID: LFB-71358	7	Laboratory Fortified Blank				Run: ICPMS206-H_240418A			04/18/24 16:38	
Arsenic		23.1	mg/kg	1.0	92	80	120			
Cadmium		13.0	mg/kg	1.0	104	80	120			
Copper		23.9	mg/kg	1.0	96	80	120			
Lead		25.3	mg/kg	1.0	101	80	120			
Manganese		121	mg/kg	1.0	97	80	120			
Molybdenum		24.8	mg/kg	1.0	99	80	120			
Zinc		23.7	mg/kg	1.0	95	80	120			
Lab ID: LFBD-71358	7	Laboratory Fortified Blank Duplicate				Run: ICPMS206-H_240418A			04/18/24 16:41	
Arsenic		22.8	mg/kg	1.0	91	80	120			
Cadmium		12.8	mg/kg	1.0	102	80	120			
Copper		23.4	mg/kg	1.0	94	80	120			
Lead		24.7	mg/kg	1.0	99	80	120			
Manganese		118	mg/kg	1.0	94	80	120			
Molybdenum		24.5	mg/kg	1.0	98	80	120			
Zinc		23.4	mg/kg	1.0	93	80	120			
Lab ID: H24040198-001AMS	7	Sample Matrix Spike				Run: ICPMS206-H_240418A			04/18/24 16:44	
Arsenic		116	mg/kg	3.5	89	75	125			
Cadmium		121	mg/kg	1.0	103	75	125			
Copper		1710	mg/kg	3.0		75	125			A
Lead		177	mg/kg	2.3	99	75	125			
Manganese		427	mg/kg	2.9	88	75	125			
Molybdenum		1220	mg/kg	1.3		75	125			A
Zinc		468	mg/kg	11	86	75	125			
Lab ID: H24040198-001AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS206-H_240418A			04/18/24 16:47	
Arsenic		117	mg/kg	3.5	90	75	125	0.3	20	
Cadmium		120	mg/kg	1.0	101	75	125	1.1	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

N - Analyte concentration was not sufficiently high to calculate a Relative Percent Difference (RPD) for the serial dilution test

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Bison Engineering **Work Order:** H24040198 **Report Date:** 04/19/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 71358
Lab ID: H24040198-001AMSD	7	Sample Matrix Spike Duplicate				Run: ICPMS206-H_240418A			04/18/24 16:47	
Copper		1740	mg/kg	3.0		75	125	1.6	20	A
Lead		175	mg/kg	2.3	97	75	125	0.9	20	
Manganese		432	mg/kg	2.9	93	75	125	1.2	20	
Molybdenum		1190	mg/kg	1.3		75	125	2.6	20	A
Zinc		474	mg/kg	11	91	75	125	1.3	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

Work Order Receipt Checklist

Bison Engineering

H24040198

Login completed by: Rebecca A. Tooke
Date Received: 4/4/2024

Reviewed by: rsponholz
Received by: RAT

Reviewed Date: 4/4/2024
Carrier name: Hand Deliver

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	19.6°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

Sample collection date and time were not provided on the sample containers. Proceeded with information provided on the COC. 4/4/24 rt

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information *(Billing information)*

Company/Name	Bison Engineering Inc.
Contact	Steve Heck
Phone	406-498-4199
Mailing Address	3143 E Lyndale Ave
City, State, Zip	Helena, MT 59601
Email	sheck@bison-eng.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	H16951
Bottle Order	

Report Information *(if different than Account Information)*

Company/Name	
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☐Email

Special Report/Formats:
☐ LEVEL IV ☐NELAC ☐ EDD/EDT *(contact laboratory)* ☐ Other_____

Comments

These are dustfall samples.
Collected from 02-29-2024 to 04-01.2024

Project Information

Project Name, PWSID, Permit, etc.	Montana Resources Dustfall
Sampler Name	Steve Heck
Sampler Phone	406-498-4199
Sample Origin State	Montana
EPA/State Compliance	☐ Yes ☒ No

URANIUM MINING CLIENTS MUST indicate sample type
☐ Unprocessed Ore
☐ Processed Ore (Ground or Refined) **CALL BEFORE SENDING
☐ 11(e)2 Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes
A - Air
W - Water
S - Soils/ Solids
V - Vegetation
B - Bioassay
O - Oil
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification *(Name, Location, Interval, etc.)*	Collection Date	Collection Time	Number of Containers	Matrix *(See Codes Above)*	Analysis Requested: Gravimetric - total mass	Analysis Requested: As, Cd, Cu, Pb, Mn, Mo, Zn	Analysis Requested: See Attached	RUSH TAT	ELI LAB ID *Laboratory Use Only*
1	DF-GREELEY-008	04/01/2024	9:45 am	1	A	✓	✓			H24040198
2	DF-PINE-008	04/01/2024	9:56 am	1	A	✓	✓			
3	DF-WALNUT-008	04/01/2024	10:17 am	1	A	✓	✓			
4	DF-FB-008	04/01/2024	10:20 am	1	A	✓	✓			
5										
6										
7										
8										
9										

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were **NOT** used, please attach your preservative information with this COC.

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Steve Heck	4/4e1215				
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Rebecca Toothe	4-4 24 1215	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number *(cash/check only)*
hand	B55	Y (N) C B	Y N	19.6 °C	Y (N)	Y (N)	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

APPENDIX D: COMMON GUIDELINES FOR AIRBORNE CONTAMINANTS

Dose and Risk Assessment References

Pollutant	Organization	Standard Type	Description	Value	Units	Time Period	Reference
Arsenic							
	WHO	Air Quality Guideline		0.0015	Unit Risk	Life-time	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	NIOSH	REL		2	µg/m^3	15 min	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	ACGIH	TLV (TWA)		10	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	General - organic As	200	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	General - inorganic As	10	µg/m^3	8-hour	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	OSHA	PEL (TWA)	Construction - organic	500	µg/m^3	8-hour	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	OSHA	PEL (TWA)	Shipyard - organic	500	µg/m^3	8-hour	https://www.atsdr.cdc.gov/toxprofiles/tp2-c8.pdf
	EPA	EPA- Ca	Noncancer	0.015	µg/m^3		https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	IRIS	Risk = 10^{-6} (lifetime)	0.043	µg/m^3	Life-time	https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	REL		0.20	µg/m^3	1-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RfC	Inorganic As	0.015	µg/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL	Cancer Risk @ 10^{-6}	0.65	ng/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL	HI = 1	0.016	µg/m^3		https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Cadmium							
	ACGIH	TLV (TWA)	(total)	10	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	ACGIH	TLV (TWA)	(respirable)	2	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)		5	µg/m^3		https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	EPA	ATSDR	Noncancer - Cd Compounds	0.01	µg/m^3	Chronic	https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	IRIS	Cancer - Cd Compounds	2	µg/m^3	Chronic	https://www.epa.gov/sites/production/files/2014-05/documents/table1.pdf
	EPA	MRL	Cd Compounds	0.03	µg/m^3	Acute	
	EPA	AEGL-1 (1-hr)	Cd Compounds	100	µg/m^3	1-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	AEGL-1 (8-hr)	Cd Compounds	41	µg/m^3	8-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RfC	Cd (water)	0.01	µg/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL: TR @ 10^{-6}	Cd (water) (Cancer Risk)	1.60	ng/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RSL: HI = 1	Cd (water) (Noncancer Risk)	10	ng/m^3	HI=1	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Copper							
	ACGIH	TLV (TWA)	(dust & mist)	1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)		1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)		1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
Lead (Pb)							
	ACGIH	TLV (TWA)	(inorganic)	50	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)	(inorganic+ organic salts)	50	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	(inorganic)	50	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	EPA	NAAQS		0.150	µg/m^3	3-month mean	40 CFR 50.12 (and Appendix R)
	NIOSH	IGHL/10	Lead compounds	10	mg/m^3		https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RSL: HI = 1	Pb (Noncancer Risk)	0.15	µg/m^3	HI=1	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Manganese							
	ACGIH	TLV (TWA)	(compounds + fumes)	20	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)	(compounds + fumes)	1,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	(compounds + fumes)	5,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	ATSDR	Screen for Risk Assessment	Noncancer - Mn Compounds	0.30	µg/m^3	Chronic	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	NIOSH	IGHL/10	Manganese compounds	50	mg/m^3		https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	USDOE	TEEL-1	MnO, MO_2 & $MnSO_4$	4.7	mg/m^3	1-Hour	https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf
	EPA	RSL: HI = 1	Mn (non-diet) (Noncancer Risk)	0.052	µg/m^3	HI=1	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
	EPA	RfC	Mn (non-diet)	0.05	µg/m^3	Life-time	https://semspub.epa.gov/work/HQ/401635.pdf - (November, 2021)
Molybdenum							
	ACGIH	TLV (TWA)	(soluble compounds)*	500	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	NIOSH	REL (TWA)	(soluble compounds)*	N/A	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	OSHA	PEL (TWA)	(soluble compounds)*	5,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
			* Higher limits for insoluble compounds				

Zinc (Zn)

ACGIH	TLV (TWA)	(zinc oxide - respirable)	2,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
	STEL	(zinc oxide - respirable)	10,000	µg/m^3	15 minutes	https://www.osha.gov/dsg/annotated-pels/tablez-1.html
OSHA	PEL (TWA)	(inorganic)	5,000	µg/m^3	8-hour	https://www.osha.gov/dsg/annotated-pels/tablez-1.html

Term	Definition
ACGIH	American Congress of Governmental Industrial Hygienists
AEGL-1	Acute exposure guideline levels for mild effects: 1-hour and 8-hour
ATSDR	Agency for Toxic Substances & Disease Registry
HI (EPA)	Hazardous Index: Aggregate exposures below a HI of 1.0 will likely not result in adverse noncancer health effects over a lifetime of exposure. A respiratory HI greater than 1.0 can be best described as indicating that a potential may exist for adverse irritation to the respiratory system. https://archive.epa.gov/airtoxics/nata/web/html/gloss.html
IDHL/10	One-tenth of levels determined by NIOSH to be imminently dangerous to life and death.
IRIS	Integrated Risk Information System
NAAQS	National Ambient Air Quality Standards: 40 CFR 50.12
NIOSH	National Institute of Occupational Safety and Health (part of CDC)
PEL	Permissible Exposure Limits (expressed as 8-hour time weighted average (TWA)) 29 CFR 1910.1000 Z-1 Table
REL (NIOSH)	Recommended exposure limit: Level at which NIOSH believes protects worker safety and health over a working lifetime.
REL (Ca EPA)	California EPA concentration level at which no adverse health effect are anticipated. Includes most sensitive individuals Levels exceeding REL does not automatically indicate an adverse health impact.
RfC	Reference Concentration (EPA) is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetim https://www.epa.gov/sites/default/files/2015-08/documents/technical_appendix_a_toxicity_v2_3_3.pdf
RSL	Residential Regional Screening Level (EPA Region X) @ 10^{-6} Cancer Risk or (Noncancer) Hazardous Index (HI) = 1 (based on Hazard Quotient (HQ) of 1. https://semspub.epa.gov/work/HQ/401635.pdf Last (EPA) Table Update: November 2021
STEL	Short-Term Exposure Limit (15-minutes)
TEEL-1	Temporary emergency exposure limits for mild transient effects for 1-hour exposure
TLV	Threshold Limit Value
TWA	Time Weighted Average
WHO	World Health Organization

APPENDIX E: CALIBRATIONS

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 01/29/2024	Time: 1445-1505 MST	Sampler Serial Number: 90133	
Performed By: Steve Heck		Location (field or lab): Pine St	
Ref Standard & S/N: 1) Swift 25.0 SN D16202		Certification Date: 1) 11-08-2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	629 mm Hg	628.8 mmHg	+0.2
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	12.1 C	12.6 C	-0.5 C
Filter Temperature	14.5 C	14.9 C	-0.4 C
Leak Check			
Vacuum Readings (cm H_2O)	Start 141	End 140	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	17.20	-2.9%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	17.20	16.7	+3.0%

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 02/22/2024	Time: 1201-1220 MST	Sampler Serial Number: 90133	
Performed By: Steve Heck		Location (field or lab): Pine St	
Ref Standard & S/N: 1) Swift 25.0 SN D16202		Certification Date: 1) 11-08-2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	626 mm Hg	627.0 mmHg	-1.0
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	2.5 C	2.7 C	-0.2 C
Filter Temperature	5.3 C	4.4 C	+0.9 C
Leak Check			
Vacuum Readings (cm H_2O)	Start 135	End 134	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.70	0.0%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.70	16.7	0.0%

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 03/15/2024	Time: 1345 - 1407 MST	Sampler Serial Number: 90133	
Performed By: Steve Heck		Location (field or lab): Pine St	
Ref Standard & S/N: 1) Swift 25.0 SN D16202		Certification Date: 1) 11-08-2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	627 mm Hg	627.3 mmHg	-0.3
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	5.4 C	5.9 C	-0.5 C
Filter Temperature	8.6 C	8.3 C	+0.3 C
Leak Check			
Vacuum Readings (cm H_2O)	Start 137	End 136	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	17.25	-3.2%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	17.25	16.7	+3.3%

Performed multipoint flow cal.

As left: 15.0 LPM: 15.03 18.4 LPM: 18.40 16.7 LPM: 16.69

As-left operating flow: 16.69 LPM

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 04/11/2024	Time: 1400 - 1418 MST	Sampler Serial Number: 90133	
Performed By: Steve Heck		Location (field or lab): Pine St	
Ref Standard & S/N: 1) Swift 25.0 SN D16202		Certification Date: 1) 11-08-2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	621 mm Hg	621.4 mmHg	-0.4
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	15.0 C	15.4 C	-0.4 C
Filter Temperature	16.8 C	17.0 C	-0.2 C
Leak Check			
Vacuum Readings (cm H_2O)	Start 140	End 139	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	17.17	-2.7%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	17.17	16.7	+2.8%

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 01/29/2024	Time: 1540-1602 MST	Sampler Serial Number: 90129	
Performed By: Steve Heck		Location (field or lab): Walnut St	
Ref Standard & S/N: 1) Swift 25.0 SN D16202		Certification Date: 1) 11-08-2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	629	629.7	-0.7
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	12.5 C	13.4 C	-0.9 C
Filter Temperature	13.4 C	13.6 C	-0.2 C
Leak Check			
Vacuum Readings (cm H_2O)	Start 137	End 136	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.88	-1.1%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.88	16.7	+1.1%

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 02/22/2024	Time: 1251-1303	Sampler Serial Number: 90129	
Performed By: Steve Heck		Location (field or lab): Walnut St	
Ref Std: Swift 25.0 SN D16202		Certification Date: 11/08/2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	626	627.8	-1.8
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	3.0	3.8	-0.8
Filter Temperature	5.6	5.1	+0.5
Leak Check			
Vacuum Readings (cm H_2O)	Start 130	End 129	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.76	-0.4%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.76	16.7	+0.4%

Comments:

Performed before replacing old main PC board SN 221250101

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 02/22/2024	Time: 1407-1424	Sampler Serial Number: 90129	
Performed By: Steve Heck		Location (field or lab): Walnut St	
Ref Std: Swift 25.0 SN D16202		Certification Date: 11/08/2023	

Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	627	627.4	-0.4

Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	3.8	3.9	-0.1
Filter Temperature	6.1	5.1	+1.0

Leak Check			
Vacuum Readings (cm H_2O)	Start 134	End 133	Pass ~~Fail~~

Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.73	-0.2%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.73	16.7	+0.2%

Comments:

Performed after installing new main PC board SN 221250093

Performed multipoint flow calibration:
At 15.0 LPM setting flow = 15.04
At 16.7 LPM setting flow = 16.75
At 18.4 LPM setting flow = 18.42

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 03/15/2024	Time: 1435 - 1500	Sampler Serial Number: 90129	
Performed By: Steve Heck		Location (field or lab): Walnut St	
Ref Std: Swift 25.0 SN D16202		Certification Date: 11/08/2023	

Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	628	627.8	+0.2

Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	6.3	6.6	-0.3
Filter Temperature	8.7	8.9	-0.2

Leak Check			
Vacuum Readings (cm H_2O)	Start 137	End 135	Pass ~~Fail~~

Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	16.85	-0.9%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	16.85	16.7	+0.9%

Comments:

BGI PQ200 TSP Sampler – Monthly Calibration Checks			
Date: 04/11/2024	Time: 1425 - 1440	Sampler Serial Number: 90129	
Performed By: Steve Heck		Location (field or lab): Walnut St	
Ref Std: Swift 25.0 SN D16202		Certification Date: 11/08/2023	
Barometric Pressure Sensor Verification			
Reading (mm Hg)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 10)
Ambient Pressure	622	622.2	-0.2
Temperature Sensor Verification			
Reading (degrees Celsius)	Sampler (a)	Reference Standard (b)	Difference (a - b) (must be ≤ ± 2ºC)
Ambient Temperature	14.2	14.7	-0.5
Filter Temperature	15.9	16.0	-0.1
Leak Check			
Vacuum Readings (cm H_2O)	Start 138	End 137	Pass ~~Fail~~
Flow Rate Verification			
Reading (liters per minute)	Sampler (a)	Reference Standard (b)	% Difference 100*(a – b)/b (must be ≤ ± 4%)
Operating flow rate check	16.7	17.03	-1.9%
Reading (liters per minute)	Reference Standard (b)	Design Flow Rate Standard (c)	% Difference 100*(b–16.7)/16.7 (must be ≤ ± 5%)
Design flow rate calculation	17.03	16.7	+2.0%
Comments:			

APPENDIX F: CALIBRATION STANDARD CERTIFICATION SHEETS

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 149645-04122023
TetraCal Serial Number: 149645
Calibration Technician: Melissa Sardoni
Date: 4-Dec-2023
Recommended Recal Date: 4-Dec-2024

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20004	6 - 30.00 LPM	Calibration Due:	25-Sep-2024
TE20006	1.40 - 6.0 LPM	Calibration Due:	25-Sep-2024
TE20008	0.40 - 1.20 LPM	Calibration Due:	26-Sep-2024

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 24.40 °C
Brand: Eutechnics

TE Number: TE12312 **Serial Number:** 358921
Std Cal Date: 1-Sep-23 **Std Cal Due Date:** 1-Sep-24

Ambient Temperature (set): 24.8 °C
Aux (filter) Temperature (set): 24.4 °C

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number: TE20203 **Serial Number:** U1220936
Std Cal Date: 6-Jun-23 **Std Cal Due Date:** 6-Jun-24

TetraCal:

Barometric pressure (set): 617.20 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi

TE20004	Q1 = 5.45324	ΔP ^	0.51821	Overall Uncertainty: 0.35%
TE20006	Q2 = 1.17346	ΔP ^	0.52812	Overall Uncertainty: 0.35%
TE20008	Q3 = 0.21591	ΔP ^	0.52812	Overall Uncertainty: 0.35%

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Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for TetraCal

Unit Type: TetraCal TC12	Date	Technician	
Flow Range: 1.20 -30.00 LPM	04Dec2023	Melissa Sardoni	
Serial No. : 149645	Ambient Pressure:	617	mmHg
Firmware Version: 3.41P	Ambient Temperature:	24.4	°C

Range 1: 1.2 - 6.00 LPM		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi	TE20004	1	122.34	617.7	5.968	5.975	0.117
Type	1A	2	363.64	617.7	18.103	17.991	-0.619
Flow range	6 - 30.00 LPM	3	594.51	617.7	29.713	29.903	0.639
		Maximum allowable error at any flow rate is 0.75%.				Average	0.046
						Result	PASS

Range 2: 6.00 - 30.0 LPM		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi	TE20006	1	107.98	617.7	1.503	1.496	-0.466
Type	2A	2	232.85	617.7	3.309	3.295	-0.423
Flow range	1.40 - 6.0 LPM	3	416.30	617.7	5.961	5.987	0.436
		Maximum allowable error at any flow rate is 0.75%.				Average	-0.151
						Result	PASS

Range 3: NP		Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
Venturi	TE20008	1	218.27	617.2	0.499	0.496	-0.601
Type	3A	2	342.63	617.2	0.800	0.796	-0.500
Flow range	0.40 - 1.20 LPM	3	507.69	617.7	1.199	1.197	-0.167
		Maximum allowable error at any flow rate is 0.75%.				Average	-0.423
						Result	PASS

Performed By: Melissa Sardoni **Date:** 4-Dec-2023

Melissa Sardoni

Approved By: Leonard Rainert
Quality Specialist **Date:** 06Dec2023

Leonard Rainert

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Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As-Found data for TetraCal

Unit Type:	TetraCal TC12	Date	Technician
Flow Range:	1.20 -30.00 LPM	04Dec2023	Melissa Sardoni
Serial No. :	149645	Ambient Pressure:	617 mmHg
Firmware Version:	3.41P	Ambient Temperature:	24.4 °C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	**Standard**	**Diff**	**+/- 1 mmHg**	**DUT**	**Standard**	**Diff**	**+/-1 mmHg**
$Pres_{AMB}$ mmHg	616.5	616.7	-0.2	Pass	617.2	617.1	0.1	Pass
	DUT	**Standard**	**Diff**	**+/- 1 °C**	**DUT**	**Standard**	**Diff**	**+/- 1 °C**
$Temp_{AMB}$ °C	23.3	23.2	0.1	Pass	24.8	24.4	0.4	Pass
$Temp_{Filter}$ °C	24.4	24.4	0	Pass	24.4	24.4	0	Pass

	Offset	New Offset
PresAMB	-47	-46.8
TempAMB	0.25	0.15
Temp Filter	0.15	0.15

Range 1: 1.2 - 6.00 LPM

Venturi	TE20004
Type	1A
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	124.11	617.0	6.058	6.006	-0.858
2	365.22	617.5	18.17	18.008	-0.892
3	594.39	617.0	29.711	29.788	0.259
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.497
				Result	FAIL

Range 2: 6.00 - 30.0 LPM

Venturi	TE20006
Type	2A
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	109.62	617.0	1.526	1.505	-1.376
2	235.68	617.0	3.349	3.310	-1.165
3	419.04	617.5	5.994	5.981	-0.217
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.919
				Result	FAIL

Range 3: NP

Venturi	TE20008
Type	3A
Flow range	0.40 - 1.20 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	217.24	617.5	0.495	0.496	0.202
2	346.69	617.5	0.808	0.803	-0.619
3	507.24	617.5	1.198	1.196	-0.167
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.195
				Result	PASS

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 1288-03012024
DeltaCal Serial Number: 1288
Calibration Technician: Elsy Lasky
Date: 3-Jan-2024
Recommended Recal Date: 3-Jan-2025

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20005	6 - 30.00 LPM	Calibration Due:	1-Aug-2024
TE20007	1.40 - 6.0 LPM	Calibration Due:	2-Aug-2024

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 22.90 °C

Brand: Eutechnics
TE Number: TE12348 **Serial Number:** A11146
Std Cal Date: 29-Sep-23 **Std Cal Due Date:** 29-Sep-24

Ambient Temperature (set): 23.0 °C
Aux (filter) Temperature (set): 23.0 °C

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number: TE12311 **Serial Number:** H0850001
Std Cal Date: 6-Aug-23 **Std Cal Due Date:** 6-Aug-24

DeltaCal:
Barometric pressure (set): 616.00 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi				
TE20005	Q= 4.02226	ΔP ^	0.51536	Overall Uncertainty: 0.35%
TE20007	Q= 3.95205	ΔP ^	0.52799	Overall Uncertainty: 0.35%

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Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	1288
Firmware Version:	4.00P

Date	Technician
03Jan2024	Elsy Lasky

Ambient Pressure:	616.2	mmHg
Ambient Temperature:	22.9	°C

Range 1

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.39	615.4	6.530	6.504	-0.398
2	205.14	615.4	10.048	10.005	-0.428
3	267.02	615.4	13.124	13.040	-0.640
4	326.09	615.4	16.061	15.978	-0.517
5	368.21	615.4	18.155	18.063	-0.507
6	403.83	615.4	19.926	19.806	-0.602
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.515
				Result	PASS

Range 2

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	139.56	615.9	1.941	1.953	0.618
2	206.07	615.9	2.895	2.908	0.449
3	261.31	615.9	3.687	3.713	0.705
4	322.98	615.9	4.571	4.569	-0.044
5	371.60	615.9	5.268	5.248	-0.380
6	417.85	615.9	5.931	5.904	-0.455
	Maximum allowable error at any flow rate is 0.75%.			Average	0.149
				Result	PASS

Performed By: Elsy Lasky **Date:** 3-Jan-2024

Elsy Lasky

Approved By: TROY THACKER **Date:** 03JAN2024

Troy Thacker

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Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As-Found data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	1288
Firmware Version:	4.00P

Date	Technician
03Jan2024	Elsy Lasky

Ambient Pressure:	616.2	mmHg
Ambient Temperature:	22.9	°C

	As Received Temp. Press. Calibration				As Shipped Temp. Press. Calibration			
	DUT	**Standard**	**Diff**	**+/- 1 mmHg**	**DUT**	**Standard**	**Diff**	**+/-1 mmHg**
$Pres_{AMB}$ mmHg	618	617.9	0.1	Pass	615.9	616.2	-0.3	Pass
	DUT	**Standard**	**Diff**	**+/- 1 °C**	**DUT**	**Standard**	**Diff**	**+/- 1 °C**
$Temp_{AMB}$ °C	22.5	22.5	0	Pass	23	22.9	0.1	Pass
$Temp_{Filter}$ °C	22.5	22.5	0	Pass	23	22.9	0.1	Pass

	Offset	New Offset
PresAMB	3	2.9
TempAMB	0	0
Temp Filter	0	0

Range 1

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.61	616.0	6.533	6.499	-0.520
2	204.39	616.0	9.997	9.938	-0.590
3	264.52	616.0	12.983	12.893	-0.693
4	326.16	616.0	16.043	15.927	-0.723
5	369.74	616.0	18.208	18.082	-0.692
6	404.37	616.0	19.927	19.820	-0.537
	Maximum allowable error at any flow rate is 0.75%.			Average	-0.626
				Result	PASS

Range 2

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	139.22	616.0	1.935	1.952	0.879
2	200.99	616.5	2.818	2.814	-0.142
3	267.78	616.5	3.775	3.782	0.185
4	318.96	616.5	4.507	4.505	-0.044
5	370.03	616.5	5.239	5.244	0.095
6	422.60	616.5	5.992	5.995	0.050
	Maximum allowable error at any flow rate is 0.75%.			Average	0.171
				Result	FAIL

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Certificate of Calibration

Model Swift 25.0

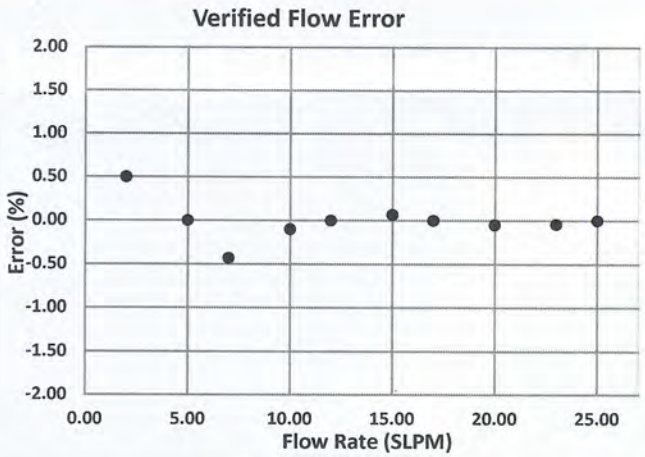
Serial Number : D16202

Firmware: R1.0.2

Calibrated Date: 11/8/2023

Calibrated By: J.Taylor

Verified Flow Data Points			
Standard (SLPM)	Swift 25.0 (SLPM)	Acceptable Range	In Tolerance
2	2.01	1.98 - 2.02	Pass
5	5.00	4.95 - 5.05	Pass
7	6.97	6.93 - 7.07	Pass
10	9.99	9.90 - 10.10	Pass
12	12.00	11.88 - 12.12	Pass
15	15.01	14.85 - 15.15	Pass
17	17.00	16.83 - 17.17	Pass
20	19.99	19.80 - 20.20	Pass
23	22.99	22.77 - 23.23	Pass
25	25.00	24.75 - 25.75	Pass



Internal Temperature		
Standard (SLPM)	Swift 25.0 (SLPM)	In Tolerance
19.51	19.51	Pass
Temp Accuracy: ± °C		

Pressure		
Standard (mbar)	Swift 25.0 (mbar)	In Tolerance
992.3	992.9	Pass
Pressure Accuracy: ± 0.6 mbar		

External Temperature Probe		
Standard (°C)	Swift 25.0 (°C)	In Tolerance
19.51	19.52	Pass
Temp Accuracy: ± 0.01 °C		

RH %		
Standard (RH%)	Swift 25.0 (RH%)	In Tolerance
46	43	Pass
Relative Humidity Accuracy: ± 3 %RH		

Calibration Procedure: Swift 25.0-6100
Recommended Calibration Interval: 12 months from the first day of use

Standards	Model	SN	Cal Due
Air Flow Meter	M-50SLPM-D	306982	8/31/2024
RH &TEMPERATURE	HC2-S & HP22-A	61174458	6/1/2024
BAROMETRIC PRESSURE	092	T17328	August 21,2024

This instrument has been tested and calibrated to meet the manufacturer's published specifications at an ISO-9001 certified facility. The standards used for the calibration are on record and traceable to the National Institute of Standards and Technology (NIST) and have accuracies equal to or greater than the instrument being tested. The calibration system complies with MIL-STD-45662A. Complete test records for each unit are maintained by Met One Instruments, Inc. and are available upon request.